Devon hedges and modern farming, management cycle and fencing

For farmers, hedges have both advantages and disadvantages. This section describes these, discusses where the balance lies, and presents ways in which hedges may become a valued part of farm businesses. It also suggests ways in which the direct costs of retaining and managing hedges can be reduced. Finally, it gives practical ideas about the ways hedge management can be planned, in particular introducing the concept of managing hedges on a long term cycle, to keep them healthy and productive. Hedge fencing is also covered.

Hedges provide shelter and shade for livestock like these Devon cattle. ©Robert Wolton

Pressures for change

Devon's landscape is a changing one, with hedges being created and being removed from time to time over many centuries, perhaps millennia. Nevertheless, the end result is about 53,000 km (33,000 miles) of hedges providing a hedged landscape that is probably the best in Europe, a truly remarkable cultural and environmental asset and one that is highly valued both by residents and visitors.

We must recognise that further change is inevitable and necessary to keep the countryside alive and vibrant. There will, and should be, changes in our hedges over the coming decades and centuries. This is not to be feared or fought against. Rather, our challenge is to ensure that Devon's hedged landscape continues to be exceptional and highly valued, and the network intact. It must remain resilient yet flexible, capable of meeting the varied needs of both farmers and wider society for a long time to come.

The pros and cons of hedges from a farming perspective

Advantages

✔ Hedges remain important as stock proof barriers, although less and less so with the increasing use of barbed wire and stock fencing.

✔ Hedges provide shelter for livestock from wind, driving rain and snow, and shade from summer sun. Thus they reduce chilling and mortality in young animals and heat stress, and increase growth rates and milk yield.

✔ Hedges provide wind protection for crops, reducing damage, lodging and water loss. This is particularly useful for broad-leaved crops, but even with cereals can increase yield by as much as 25% in exposed areas. Acting as windbreaks, hedges typically reduce wind speed over a distance of 12 times the height of the hedge on the downwind side, and 4 times on the upwind side. In coastal areas, they reduce damage from salt spray.

Advantages (continued)

- ✔ Hedges can be managed to provide cost-effective crops of firewood, the resulting fuel being much cheaper than purchased heating oil or electricity. Most Devon hedges, if managed appropriately, can produce useful firewood crops, with 100 to 200 metres of hedge being sufficient to heat a typical four bedroom, leaky, farmhouse over a year. Please see the separate *Wood fuel from hedges* handbook detailed in *Further information* on page 25.

- ✔ Hedges that follow contours on slopes, and those alongside watercourses, can help to prevent pollutants entering streams and rivers, reduce loss of soil, and decrease the risk of flooding of downstream farmland and properties. Public payments may be available to reward farmers for retaining and maintaining such hedges.

- ✔ Hedges can decrease the need for pesticides to be used in adjacent crops because the banks and margins provide breeding grounds and overwintering refuges for predators of crop pests, like ground beetles, hoverflies and spiders.

- ✔ Hedges are important for the survival of healthy populations of pollinators in the landscape, and are likely to improve crop pollination rates. Hedges provide breeding sites, food when crops are not in flower, shelter, protection and flight lines. They are of particular importance for nesting bumblebees, which are active in temperatures too low for other pollinating insects.

- ✔ Hedges, including their banks, ditches and margins, provide a very important habitat for a huge variety of wildlife, making the farm a much more interesting place to live and work.

- ✔ Hedges can influence the availability of water for crops in a variety of ways. Although in areas with freely-draining soils and under drought conditions these effects may be harmful, on the heavy wet soils characteristic of much of Devon, hedges can reduce waterlogging and promote growth of adjacent grass and crops.

- ✔ Cattle and sheep will frequently supplement their diet with hedge plants, and may self-medicate in this way, obtaining minerals lacking in ryegrass-dominated pastures.

- ✔ Hedges, together with ungrazed wildlife strips, can reduce bovine TB incidence: an increase in hedge length of 1 km per 100 ha is associated with a decrease in risk of herd breakdowns of about 12.5% (Oxford University research published in 2006, see *Further information* on page 8).

- ✔ The presence of hedges often helps farmers to meet the environmental requirements of public support payments (e.g. greening measures and cross compliance rules).

- ✔ Well grown thick hedges are very valuable to a farm shoot. They provide cover from predators, food for game birds and important links between cover crops, copses and woods.

- ✔ Visitors to farms for B&B and Self Catering expect to find a traditional Devon landscape of hedges. The sale value of a farm may be increased if it has many hedges in good condition because of their amenity value.

- ✔ Hedges are a valued part of the landscape for the majority of Devon residents and visitors, including farmers.

Disadvantages

✘ Hedges often occupy land that could be used to produce grass and other crops (although their removal may result in the need for expensive land drainage).

✘ Hedges can hinder the movements of large farm machinery, with small fields (less than about 4 ha) being more difficult and therefore expensive to manage than large ones, especially if irregular. Hedgerow trees can make hedge trimming more costly.

✘ Hedge management is expensive. It is estimated that hedges cost Devon farmers £6.5 million a year to maintain. Annual trimming is costly and laying, coppicing and bank maintenance often prohibitively so. Many commercial farms will spend several thousand pounds a year on hedge management, although for a few this may be offset or covered by environmental payments.

✘ The shade cast by tall hedges can reduce production on adjacent land, over a distance of up to three times the height of the hedge. However, the productivity of headlands is often low for other reasons, relating to soil compaction, physical damage from machinery, weeds and pests (e.g. rabbits).

✘ This shade, together with windbreak effects, delays crop ripening, so the crop in the centre of the field is ready before that on the edge, and reduces the rate at which cut grass dries, especially where the hedges are high.

✘ Hedges may also reduce the growth of grass and crops for some distance into the field through intercepting rainfall and competing for moisture and nutrients.

✘ Trees falling out of tall hedges can significantly reduce the cropping area of fields unless removed, itself a time-consuming activity.

Hedges are important for maintaining healthy populations of pollinators of crops and wildflowers, like this hoverfly Eristalis arbustorum. ©Robert Wolton

Asset or burden?

The presence of hedges is, understandably, often seen as a burden on the farm business rather an asset, largely because of the high cost of their maintenance. Since they rarely provide a direct economic return, it is easy to overlook their wider benefits to both farm and society. This is particularly true on arable farms, where stock proof boundaries are unnecessary and welfare benefits to livestock irrelevant.

Managing hedges to produce a woodfuel crop, whether woodchips or logs, is feasible and cost effective, and is a way of generating a direct economic return from hedges that is proving increasingly attractive. Other possible ways in which hedges can generate, or save, money is as a source of forage for livestock, as cover for game birds, or perhaps as a source of fruit.

The main consideration for many farmers will be public attitudes towards hedges and the way they are becoming increasingly linked to receipt of public support payments, as through the Common Agricultural Policy, because of their multiple environmental benefits.

Reducing the costs of hedges

The main hedge cost to most farmers arises from trimming. As explained in the section *Devon hedge management 3: trimming* (page 59), cutting less frequently usually saves money. Likewise, managing hedges for woodfuel, when they should not be top cut, can save substantial sums.

Traditional hedge steeping (laying) is very expensive, often prohibitively so without grants. One alternative is to coppice rather than lay, since this is a faster operation (and better for generating fuel). Other alternatives are to adopt quicker styles of hedge laying, (see section 10: *Devon hedge management 2: steeping and coppicing*), or even mechanical laying with a swing shovel - when done on an appropriate hedge at the right growth stage by a careful and experienced operator, this can be remarkably successful.

Bank repair and maintenance is usually done nowadays on farms using wheeled diggers or small tracked swing shovels rather than by hand, saving time and money. A skilled operator is essential! In the long term, regular maintenance and prevention of erosion by livestock and rain, is likely to save money, rather than waiting until major repair is needed.

Finally, advantage should be taken of the presence of hedges to draw down environmental grants and other public support payments.

Well-maintained and healthy hedges enhance the landscape, attract visitors to farm B&Bs and can increase farm sale value. ©Tom Hynes

Hedge management planning

To ensure their long term survival and maintain their various functions, all hedges ought to be taken through a cycle of management, each cycle starting with either new planting or the rejuvenation of existing shrubs and trees though steeping (laying) or coppicing. After that, the rate of growth and structure of the hedge can be regulated by trimming, perhaps with occasional re-shaping. Trimming is an effective and efficient way to keep hedges thick and dense, but no hedge can be locked at one stage in the management cycle indefinitely through repeated cutting - it will eventually become gappy and disappear. Sooner or later, hedges have to be allowed to grow up, to a point where they can be rejuvenated by laying or coppicing.

Hedge trimming using flail cutters helps to keep hedges thick and stock-proof. Sooner or later though, they need to be allowed to grow up and be laid or coppiced, or they will become full of gaps. ©Robert Wolton

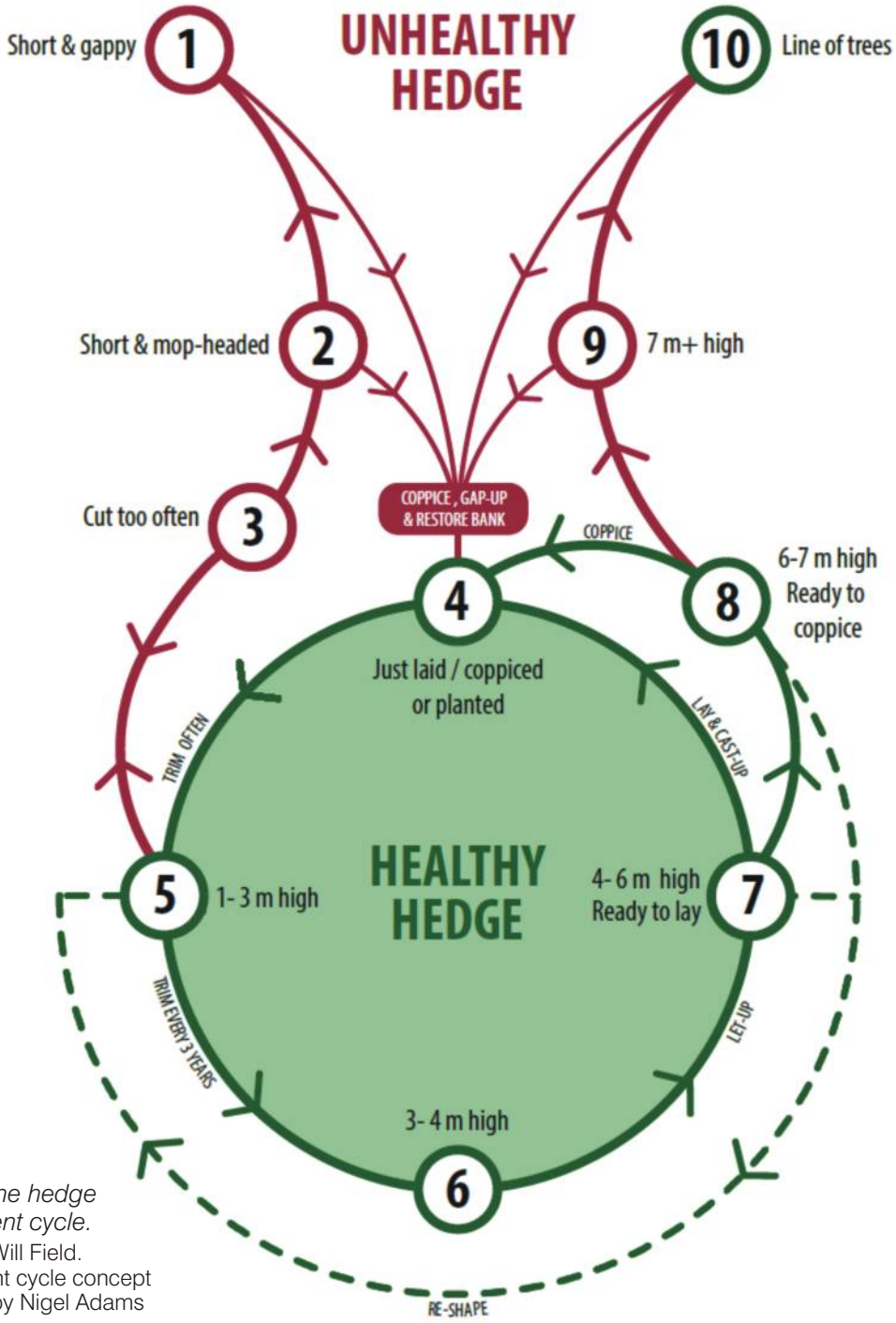

Figure 1. The hedge management cycle.
Artwork by Will Field.
Management cycle concept developed by Nigel Adams

The 10 steps of the management cycle are shown in Figure 1 and described in Table 1. The cycle shows a healthy green core and two unhealthy red offshoots. The aim should be to keep the hedge in the green part (steps 4 to 8), periodically laying or coppicing it, with trimming at appropriate intervals in between. If the hedge is not permitted to go through this cycle, it will either, if cut too often, become short and gappy (steps 1 to 3) or, if neglected, develop into a line of trees (steps 8 to 10). Fortunately, the typical species-rich Devon hedge is very resilient and a healthy cycle can often last 40 years or longer.

With practice, hedge managers will be able to 'read' their hedges to assess their stage in the management cycle, and so determine which management options are appropriate. However, there will always be some hedges that do not fit easily into the 10 point scale and others which have special management needs, often because of their position such as next to a road.

Table 1: The 10 point hedge management cycle

	Present condition of the hedge	Management action
1	Cut short with many gaps and sparse stems, the bases of the shrubs gnarled or rotting. Bank often badly eroded.	Coppice, restore bank and re-plant gaps. Grub out or poison undesirable species, such as elder.
2	Cut short and thin, with hard knuckle at trim line, shrubs have mop-headed growth form. Not yet gappy or moribund but stems still too far apart to be allowed to grow up for laying.	Coppice and re-plant any gaps. Restore bank if necessary.
3	Cut short yet still dense: hard knuckle at trim line and mop-headed growth appearing, and gaps developing at base. Stems sufficiently frequent that when allowed to grow up the hedge can be successfully laid.	Allow the hedge to grow up for between 8-20 years so that it can be laid, coppiced or re-shaped. Hedge may be trimmed as it grows up, but raise cutting height each time.
4	Recently laid, coppiced or planted.	In first 3-4 years trim often to create dense growth, initially low down, raising cutting height a few inches each year until Point 5 reached.
5	Dense with frequent healthy stems, at 1-3 m high (above bank).	Trim every 2-4 years, raising trimming height a few inches each time to prevent development of dense knuckle and mop-headed growth until Point 6 reached. Alternatively, if the hedge is trimmed every year, raise the cutting height each time.
6	Dense with frequent healthy stems, over 3 m high (above bank).	Allow the hedge to grow up ready for laying, or re-shape with circular saw to Point 5.
7	Frequent healthy stems more than 4 m high of right thickness to lay (typically 8-15 cm diameter).	Lay (or coppice), or re-shape with circular saw to Point 5.
8	Tall hedge with spreading canopy, typically 6-7 m high and some stems too large for laying (typically more than 15 cm in diameter).	Coppice, or re-shape with circular saw to Point 5, planting up gaps and restoring bank as necessary.
9	Tall, often gappy, hedge, typically over 7 m high with many ash, oak or beech stems, with sparse shrub layer and the bank at risk of collapse. Most stems too large for laying.	Coppice and plant up gaps, restoring bank as necessary.
10	Mature line of trees, usually oak, beech or ash.	Retain as line of trees for as long as possible. When the trees die or have to be felled, restore the bank and replant the hedge, in whole or in part as appropriate.

Farmers may find it helpful to mark the point in the management cycle of each hedge on a farm plan. Hedges that require restorative management (stages 1, 2, 3, 9 and 10) can then be highlighted. At the same time the opportunity can be taken to identify hedges that are particularly important for various reasons (e.g. wildlife, water purification, shelter or screening), as well as any hedges earmarked for firewood production (these should not be top cut).

After many years of trimming at the same height, this hedge has become gappy and should be allowed to grow up so it can be rejuvenated by steeping or coppicing. ©Robert Wolton

Fencing hedges

Fencing against stock is often desirable to protect new hedges and those that have been recently laid (steeped) or coppiced, to reduce physical damage to the bank through trampling and rubbing and to prevent gaps developing in the shrub layer. However, there are a number of disadvantages which should be considered:

- Fences can lead to thick growths of aggressive grasses, nettles, brambles and so forth, both swamping low growing herbs on bank sides like primroses and violets and, through casting dense shade, creating bare patches which are vulnerable to erosion.
- They make subsequent steeping or coppicing and bank repair more difficult, as well as cropping for firewood, etc.
- They pose a threat to deer, with legs becoming trapped between the top strands as individuals attempt to jump over them.
- They make the hedge redundant as a stock proof barrier, reducing its value to the farmer and the incentive to maintain it in good health.

Cattle damage to hedge sides can be reduced by one or two strands of barbed wire, or electric fencing, with the stakes positioned about 30 cm (1 foot) away from the base of the bank or on the field side of any deep ditch. To prevent damage to young shrubs and trees growing on the top of banks, it may be necessary to put the fence further out. This will certainly be so if horses are involved, because they can reach a long way; the top strand of wire needing to be 1.5 m (5 feet) or more away from vulnerable plants.

Sheep pose less of a risk to well maintained banks and the growth on top of them, and indeed some grazing of the base and sides of the bank is usually desirable, as noted above, to encourage flowers and a continuous protective layer of vegetation over the bank sides. If stock fencing is necessary, as it often is in intensive farming systems, then the netting should normally be placed close to the bank, no more than 30-40 cm (12-15 inches) away from the base, so the animals can graze through it.

Attempts to place stock fencing some distance away from hedges, perhaps 1.5-2 m (5-7 feet) away, so the bank sides and margins can be cut with a flail mower, are rarely successful. Not only is much land lost for cropping or grazing, but it is difficult to cut behind fences without damaging the stakes and wire, and a single annual cut is not as good as grazing at helping to establish or maintain species-rich herbaceous vegetation. Also, lambs may not be able to tuck into the base of the hedge for protection from harsh weather.

Hedge steeping and coppicing are made more difficult by fences some distance away from the hedge because the cut material cannot so easily be thrown or lifted over them. However, wherever they are placed, fences will have to be removed when casting up or restoring the bank - to make this much easier, take care not to hammer home staples! Be aware too that placing fences some distance away from the bank may have consequences for Basic Support Payments (or similar) under the Common Agricultural Policy - farmers should check this.

Stock fencing is often necessary to protect banks or new growth. It should usually be placed close to the hedge. ©Tom Hynes

Further information

1. Devon Hedge Group. 2014. *Wood fuel from hedges: How to manage and crop hedges in south-west England for fuel.* Tamar Valley AONB, Devon County Council & the Devon Hedge Group. Available from the Tamar Valley AONB and Devon Hedge Group. 22pp.
2. Hedgelink. 2013. *The complete hedge good management guide.* Leaflet. www.hedgelink.org.uk
3. Hedgelink. 2014. *How to manage hedges to maximise their benefits for people and farms.* Leaflet. www.hedgelink.org.uk
4. Mathews, F., Lovett, L., Rushton, S. and Macdonald, D W. 2006. Bovine tuberculosis in cattle: reduced risk on wildlife-friendly farms. *Royal Society, Biology Letters* 2, 271-274.