

**Attention to weed control and vegetation management is the key to successful tree establishment. Woodland Consultant Eamonn Wall considers some of the management options available.**

Turn over a new

# leaf

Cost effective tree establishment depends on many factors such as site conditions and the size of the area being planted. Over the past ten years the UK has experienced a large increase in the amount of tree planting on lowland ex-agricultural land, much of it now golf courses. These planting schemes once composed just the odd field corner and small shelter belts and have grown with the aid of the Farm Woodland Schemes to the point where a 100 acre scheme or larger is not now unusual.

Many of the smaller schemes utilised tree shelters with an after care herbicide regime consisting of propyzamide (eg Kerb granules or liquid) or glyphosate (eg Roundup). This is still a fairly robust and common practice as long as other pests have been taken into account such as hares and deer, either by correct choice of shelter size, fencing or shooting control. If the tubes haven't been pushed a wee bit into the ground, voles can gain access and kill trees by bark removal and shoot nibbling. However, usually tubes will provide adequate protection on the whole from voles. Care must be taken to remove tubes if they start to restrict tree girth and to screef all vegetation from the base of the tube before planting to prevent grass smothering the trees within the tubes.

Spiral guards with or without the support of bamboo canes reduce the cost of protection by about half. Again it is advisable to remove canes when their support is no longer required and check that the spirals are unravelling as the tree grows.

As planting schemes become larger, the use of individual tree protection is no longer cost effective and bare planting takes over. The skilled use of chemical herbicides becomes a greater issue and this also applies to the establishment of hedges now being greatly encouraged by such grant schemes as the Countryside Premium Scheme in Scotland.

When establishing trees into grass sward, spot weeding with a graminicide (ie grass herbicide) can turn the

field of grass into a field of nasty weeds. The removal of grass provides broad leaved weed seeds the opportunity to germinate, such as thistle, nettle, willowherb, docks and ragwort. Even though these generally don't provide trees with too much competition, they are disliked by farmers and their neighbours. However on arable sites, these weeds can overcome and smother trees and also provide stiff competition to the establishment of hedges.

Ground cultivation such as mounding provides the tree with an elevated planting position and a weed free space for the first growing season. This elevation can sometimes deter voles. When voles are a problem the use of tree shelters or simple 300mm vole guards are required. On larger ex-arable sites and Christmas tree plantations, a bare ground regime is usually successful in deterring voles as they have no cover from predation. Often one hears that it is preferable to sow a slow growing grass mix into the field prior to planting to exclude the influx of farm weeds. This is good idea but doesn't deal with the vole problem and would necessitate the use of vole guards. The annoying thing about voles is that some sites are much worse affected than others.

The effective use of chemical herbicides to (1) promote tree growth, (2) provide a bare ground space around each tree or throughout the entire planting scheme to deter voles, and (3) to keep noxious weeds under control, is best attained by the use of a small number of herbicides whose application is fully understood.

#### Types of herbicides

Herbicides can be divided into three broad groups:

1. Residual herbicides. These products act via the soil where they are taken up through the roots of weeds. It is important that these herbicides are applied to damp soil and that rain allows application to move them into the top 2-3cm of the soil. If these products are applied to dry soil and little or no rainfall follows

application, weed control will be poor. Residual herbicides must be applied to a firm fine tilth; if large clods are present at the time of herbicide application, these will weather and crumble, exposing untreated soil allowing prolific weed growth.

2. Foliar acting herbicides. These are absorbed through the point of contact on the leaf and stem and are independent of the condition of the soil. The timing of application will be determined by the growth stage of the target weed. Foliar acting herbicides give best results when they are applied to actively growing weeds.

3. Residual and foliar acting herbicides. These are herbicides which have a combination of the two modes of action listed here.

#### Pre and post planting use

Herbicides can be used effectively before or after planting. There may be opportunities to control perennial weeds in the previous crop, eg use of selective herbicides in pasture or the use of glyphosate pre-harvest in cereals and other arable crops. Such treatments can reduce the subsequent vigour of weeds such as creeping thistle or couch grass. Foliar acting herbicides can be used to clean up undisturbed stubbles before planting.

Where long-term weed control is required after planting the use of residual herbicides is the best option. It is vital to match the weed control spectrum of the herbicide to that of the weed species on the site. Many residual herbicides generally only control weeds pre-emergence and must therefore be applied to bare earth. If bare soil is to be maintained all year round, treatment may be repeated in the autumn and the spring. However, in practice, weeds resistant to the residual herbicides may require the use of foliar acting herbicides (sometimes applied as a tank mixture). As an alternative to a year-round bare-soil system, some vegetation cover may be allowed to develop in the autumn and winter when it is not competitive and then be killed by a spring applied foliar-acting herbicide. A spring applied

residual treatment will then delay reinvasion.

#### Chemical update

Some useful chemicals are as follows:

Glyphosate (foliar contact herbicide) which was originally only available as Roundup is now available in about 40 formulations. However with prices reducing, it now seems wise to use Roundup Biactive for best results and safety to those using it. The Forestry Commission has carried out trials overspraying conifers and broadleaves with glyphosate and can now recommend the practice. Such practice is common among Christmas tree growers as part of their regime for a year-round bare-soil treatment. During the growing season when spot weeding near birch extra care must be taken as it is very susceptible to glyphosate. As glyphosate is a contact herbicide, it should be noted that grasses treated in early April will invade and re-establish themselves by May/June if it is a warm moist spring. If this occurs, a second application will be required.

Propyzamide (such as Kerb granules or flo liquid) is a soil acting herbicide which slowly volatilises in cold soil and is taken up by germinating weeds and through the roots of existing weeds especially grasses. A limited range of herbaceous broad leaved weeds are also susceptible form germination to the true leaf stages particularly grasses. Such weeds which emerge late in the season, however, will only be partially controlled.

Propyzamide slowly breaks down in the soil, lasting for three-six months. All commonly planted forest trees are tolerant. Application via granules (using pepper spots) and liquids (using knapsack sprayer, spot gun, etc) can take place any time between 1 October to 31 January north of a line from Aberystwyth to London and to 31 December south of this line. In practice it appears that few extra weeks make little odds, presumably depending on sea-

son.

A winter application of Kerb followed by a glyphosate application during the summer to treat subsequent broad leaved weed invasions is a useful programme to consider for broad leaved/conifer planting schemes.

Isoxaben (Flexidor 125 or Gallery 125). This is a pre-emergent liquid herbicide sprayed on bare soil to control broad leaved weeds. It is useful when applied mixed with kerb (ie liquid) when treating dense grass as the kerb kills the existing invading grass for three-six months and the Isoxaben prevents colonisation of the broad leaved weeds. Their action in the tank-mix is complementary leading to effective control of grasses and broad leaved weeds. Expensive, though Flexidor is cheaper than Gallery. It is also one of the few herbicides that control willowherb.

Atrazine has both foliar contact and residual soil action and is an old favourite among some foresters though its safety is under question. It is most useful on soft grasses but will give some control of broad leaved species and the coarse grasses. Its timing of application follows on after that of Kerb, from February and March up to May. Though all broadleaves are sensitive while in leaf and should only be treated before the start of bud burst in the spring.

#### Hedges

The control of weed in hedges is difficult and some of the following chemicals and regimes can work well.

Heavy grass sites - Prespray planting strip with glyphosate and post treat with Kerb granules or better still Kerb/Flexidor mix. A summer spray of glyphosate along the outside on each side will help keep back invading weeds but doesn't help much within the rows.

Bare - Ex arable sites - When planting into a bare soil site (either as a result of screening or ex arable), the use of Premier Granules is available. This is a mixture of

Trifluralin and Isoxaben and while not a very strong chemical, is quite useful, applied at the rate of 100kg/ha during February/March. Also useful as a top-up later in the year to Kerb treated hedges. A liquid alternative would be Atrazine and Stomp at the rate of three litres/five litres/ha respectively. Atrazine used as Stomp not good on all grasses. Alternatively Butisan could be used where cleavers not a problem.

After two growing seasons, the use of Casoron G granules is available at the rate of 100kg/ha. This chemical controls a very wide spectrum of grasses and broad leaved weeds including grasses, thistle, nettle, dock, willowherb and cleavers. The active ingredient is Dichlobenil, a soil acting residual herbicide best applied February/March.

One further chemical sometimes used is Cyanazine (eg Fortrol), which is a liquid applied soil and foliar acting herbicide for the control of annual dicotyledons and annual grasses in farm forestry and is often recommended as a tank mix with Atrazine.

#### Conclusion

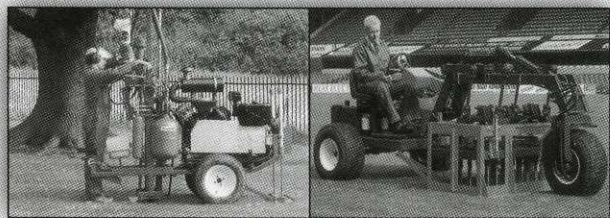
Successful tree establishment depends on the correct species choice, followed by good planning, planting, weeding and maintenance.

Chemical herbicides are a great aid to the woodland manager and their correct use is both an economical and effective means of ensuring that the trees we plant today will be the quality woods of tomorrow. However, on lowland sites the removal of grasses leaves ground open to colonisation by all sorts of unwanted weeds. Care must be taken to prevent the spread of ragwort and the like and to control voles where often the use of 300mm vole guards is the best protection.

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