



## **LAND PREPARATION FOR SOWING WILDFLOWERS**

### **INTRODUCTION**

Wildflowers are not plants that can survive in any rough patch of land and compete with a mass of robust weeds. In fact the opposite is true. Many wild flowers are becoming rare because they have precise growing requirements which are much more difficult to satisfy than those of common weeds. Poor management of weed growth before and after planting is a common cause of unsatisfactory wildflower establishment, particularly on fertile sites.

Land on which wildflowers are to be sown needs care and preparation to ensure their survival. This means preparing a soil or subsoil which can supply adequate air, water and nutrients to plant roots and is free of weeds.

### **DRAINAGE AND AERATION**

Poorly drained or compacted soils are acceptable only where there is an adequate supply of moisture throughout the summer to support the growth of wetland species and a wetland is the desired end use of the area. Non-wetland species will drown in winter on poorly drained sites, whereas wetland species will die if the site becomes dry in summer. Except on true wetland sites, adequate soil aeration is a necessity. This is because plant roots need oxygen and die in its absence. Agricultural land is normally well aerated, but reclamation sites and urban areas have often been compacted by heavy vehicles. This compaction needs to be alleviated by deep ripping or subsoiling.

### **PLANT NUTRIENTS**

Most agricultural soils have adequate or even excessive levels of nutrients to establish grass and wildflower mixtures. Excessive levels of nutrient are undesirable because they encourage weeds and grass to grow more rapidly than the wildflowers. There is therefore a justification for stripping all but a few centimetres of topsoil from rich farmland if the objective is to establish a low-maintenance wildflower meadow.

Very sandy soils and most subsoils are frequently deficient in nutrients, particularly phosphate (P) and nitrogen (N). Potash (K) tends to be limiting only on inland sands and gravels. This can be an advantage in favouring the growth of wildflowers, which are better adapted to low levels of nutrient than many grasses and weeds. However, extreme nutrient deficiency retards the initial establishment of wild flower and grass seedlings.

Thus application of moderate levels of N, P and K at seed sowing can be advantageous to plant establishment only on very poor subsoils or crushed masonry provided the substrate is free of

weed seeds. Particularly on pure sand, gravel, chalk or other quarry waste, a top dressing of nitrogen may be advantageous a few months after sowing to ensure good plant establishment. (Herbiseed is aware that this recommendation is contrary to many popular writings on wildflower establishment. Our recommendation is derived from our own practical experience in revegetating former industrial sites, and is restricted to sowing wildflowers on sites without topsoil and where effective management has ensured that the substrate is essentially free of weed seeds).

## **WEED CONTROL**

Effective weed management both before and after wildflower sowing is of crucial importance to the success of establishing wildflower grassland. Whatever is the substrate (soil or subsoil) into which the wildflowers are to be planted, it must be essentially free of weed seeds. There is no practical means, chemical or physical, of removing weeds from a grass and wildflower mixture after sowing. Thus, no weeds must be permitted to flower on or near the substrate which is to be used for wildflower sowing during the seasons preceding the landscaping phase of a project. If this golden rule has not been followed, weed seeds must be removed from the soil before wildflowers are sown.

The methods of weed control appropriate to the types of weeds present are as follows:

### **Annual weeds**

Almost all top soils have a seed bank of dormant weed seeds, which readily germinate when conditions are right. Every time the soil is cultivated, new seeds are brought to the surface and eventually germinate. The best means of reducing the annual weed seed population is to fallow the land. This entails preparing a fine, firm seed bed and cultivating it to a depth of 20 mm. each time a flush of green seedlings develops. This is most effective in warm damp weather. In this way, the seed supply near the soil surface is reduced, and provided soil cultivations do not bring seeds up from deeper layers, few weeds will germinate after sowing the wildflower seed.

The final flush of weeds to occur before sowing is then killed with a foliar spray of a rapidly inactivated herbicide such as glyphosate or gluphosinate. Then sow the wildflower seed without further cultivation to avoid bringing more weed seeds to the surface.

### **Perennial weeds**

These are often present on derelict land, abandoned fields and old pasture, particularly pony paddocks. Their extensive root systems often require repeated applications of herbicide to eliminate them.

Identify the species present and select the appropriate foliar applied systemic herbicide to use. Glyphosate is best for grass control and has some effect on other perennials. It has no soil residual effect and is therefore safe to wildflowers sown subsequently. It can be used up to one day before sowing. 'Shield' (chlorpyralid) is best for thistles but can kill some wildflowers (*Compositae* and *Leguminosae*) sown several months after application. Asulam is highly effective against docks but can have a soil residual effect. Hormones such as 2,4-D and CMPP are adequate for thistles and docks, are good on nettles and decompose within weeks in agricultural soils (possibly lasting longer in subsoils with low bacterial activity). Do not use any sulphonylurea, imidazolinone or picloram herbicide where wildflowers are to be sown within 12

months of application.

Where both grasses and perennial dicotyledons occur extensively, spray glyphosate first then the dicotyledon herbicide several days later. This is because glyphosate is antagonised by most other herbicides.

When applying any herbicide, spray the foliage thoroughly, but not to the point where the liquid runs off onto the soil. Glyphosate is the only systemic herbicide which can safely be sprayed over more than 10 per cent of an area less than two months before sowing. If perennial dicotyledons occupy more than 10 per cent of the area, they must be controlled with two applications of systemic herbicide spaced over six weeks and sowing delayed for at least two months.

### **Weed control programme**

If a wildflower mixture is to be successfully established on a high fertility site such as former agricultural or equestrian soils, adequate time must be available to achieve complete weed control before the planned sowing date

The following steps are recommended:

1 Visit the site with a BASIS certified agronomist.

- Determine what weeds are present
- Assess the extent of perennial weeds and the weed seed bank
- Plan necessary weed control measures
- Determine probable sowing date from weed control and climatic constraints - not solely from a date in a civil engineer's contract! Control of an established infestation of perennial weeds should be commenced at least 6 months, annual weeds 2 months, before the planned sowing date,

2 Where perennials are present, commence with perennial weed control sprays. In general, couch grass can be controlled by a single glyphosate application, nettles by one or two hormone sprays, creeping thistle by three sprays. Docks are best sprayed with asulam, rotavated a month later and the regrowth from the chopped roots resprayed, possibly with a less residual herbicide.

3 Do not cultivate until several days after the perennials have been sprayed, since cultivation breaks up parts of the root system which are then not reached by foliar applied systemic herbicides.

4 Subsoil, and cultivate as necessary.

5 Wait for weed seeds to germinate, irrigating if possible during dry periods to encourage germination. Then cultivate to no more than 20 mm. to kill the weed seedlings.

6 Repeat as often as necessary until no further weeds germinate under warm, consistently moist conditions.

7 When eventually only a sparse weed flush occurs even under warm, consistently moist conditions, spray these weeds with glyphosate or gluphosinate.

8 Sow at least one day later without further cultivation.

9 Harrow lightly ensuring that the soil is not disturbed more than 10 mm. deep.

10 Roll, except for autumn and winter sowings on soils which are liable to cap (Heavy rain caps fine sands and all clays).

## TIMING

On most soils, wildflower mixtures are best sown in late August to early September, but can be successful if sown up to April. Sowings in late spring and summer are dependent upon adequate rainfall for at least a month after germination. If a high weed pressure is expected, autumn sowing is likely to be more successful because many weeds are biologically programmed to germinate and grow most rapidly in spring.

Heavy clay is the one soil type on which a spring sowing has a better chance of success than sowing in autumn. Clay is difficult to break down into an adequately fine seed bed in autumn, and then tends to slump and cap in the winter rains. It is best treated by levelling and cultivating during dry conditions in summer to produce a surface of fist sized clods. These break up in winter frosts and can be power-harrowed into a good seed bed in spring. This seed bed should not be worked too fine or it will cap before the seedlings emerge.

## SEED MIXTURES

Suitable seed mixtures are usually based around slow-growing grasses to achieve low maintenance requirements, and wildflowers suitable for the soil type and other site conditions. The simplest method is to sow one of the standard mixtures in the Herbiseed range. Where the requirement is for a specially prepared seed mixture, please discuss your requirements with Herbiseed, who will be happy to create a site-specific mixture.

Seed and further advice can be obtained from the Herbiseed:

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