



WILDFLOWER SPECIES FOR PARTICULAR HABITATS

Wild flowers (and other wild species) are sown for one or more of the following reasons. The first is to achieve a purely **Economic Objective**, which gives priority either to the establishment costs or the costs of long term maintenance. The **Aesthetic Objective** aims to establish vegetation which is pleasant to look at. Finally, an **Ecological Objective** aims to achieve benefits which are not solely human-related, with supporting wildlife biodiversity being a common aim.

These objectives are not mutually exclusive, and with effective planning and careful species selection they can be combined to achieve a vegetation cover which is cheap to maintain, pleasant to look at and affords a valuable habitat for wildlife. Thus a mixture of slow growing grasses and wildflowers established on a motorway verge can provide a visually attractive succession of wild flowers throughout the summer, support butterflies and ground nesting birds, while having minimal maintenance requirements.

1. Economic objectives.

When the costs of establishment are considered in isolation, the cheapest form of acceptable vegetation cover is pure grass established by sowing commercial varieties of agricultural and amenity grasses. The reason is that commercial grass seed is very cheap in comparison to wild grass and wildflower seed (£3/kg. for commercial grass, £100/kg. for many wildflower species). However, most areas of pure grass look unsightly unless mown several times per year, thus annual maintenance costs (mainly mowing) are high. Pure grass is visually uninteresting and of low wildlife value. By including selected low-cost wildflowers, a much more aesthetically and ecologically valuable cover can be established at little additional cost. The additional cost of seed will be recovered by the reduced mowing cost after the vegetation is established, a reduction of mowing intensity being made acceptable by the succession of flowers blooming throughout the summer.

A suitable low-cost seed mixture for this purpose is Herbiseed's 'WF22 Economy wildflower grassland', available at £18 per kilogram, £360 per hectare, a small cost in comparison to both the civil engineering costs of highway project and much less than cutting the grass three times per year for three years.

2. Aesthetic objectives.

A simple approach to producing a 'wildflower meadow' is to sow a standard mixture of 80% slow growing grasses and 20% wildflower species selected for a wide tolerance of habitats and ready public appreciation of their flowers. This type of mixture requires no more soil preparation than grass, can establish effectively on practically all soil types, will produce a succession of flowers throughout the summer and can be managed with low maintenance costs. The simplest aesthetic mixture is Herbiseed's 'WF21 General-

purpose wildflower meadow' costing £35/kg. However, better results can be obtained if you select a mixture specially formulated for your specific soil type such as 'wildflower mix for chalk soils' or 'wildflower mix for wet soils' etc. The full range of mixtures for all soil types is available at www.herbiseed.com/wildflowers .

If you are producing a wildflower meadow mainly for aesthetic purposes, you can derive greater pleasure by considering its potential to provide additional benefits to wildlife. If there is a requirement to establish a vegetation cover rapidly for erosion control or client satisfaction, a fast germinating annual grass can be sown at 10-20kg. per hectare in addition to the wildflower mixture. This annual grass is intended to cover the soil for the first few months, then die out, leaving space for the slower growing perennial grasses and wildflowers. Herbiseed recommends native annual foxtail, *Alopecurus myosuroides* for this purpose. It is less competitive and less likely to persist into the second year than the annual ryegrasses, *Lolium multiflorum* and *Lolium westerwoldicum*, which are usually recommended for this purpose.

Since many biennial and perennial wildflowers do not flower until the second year after sowing, it can be advantageous to add 5kg. to 10kg. per hectare of annual wildflowers to the perennial mixture. These species, such as poppy, cornflower, corn marigold and corncockle, will flower in the first summer but seldom persist into subsequent years. This technique can be a great asset in achieving client satisfaction in the first year after sowing.

The standard mixture may be made more appropriate to a particular purpose or soil type by adding species selected from the lists of species in the following section.

3. Ecological Objectives

Establishing vegetation primarily to achieve ecological objectives requires a precise definition of the project objectives and careful selection of species to meet these objectives. Factors to consider are:

- The objectives of the project; both human and wildlife related.
- Constraints; ecological, cost, time, future management.
- Soil type.
- 'Natural' flora in the vicinity.
- The likely trend of ecological succession on the site.
- The future management of the area.

In most situations, grasses will be sown together with other wild plants to provide a naturalistic ground cover. Often a mixture of 20% wildflower seed and 80% grasses is used, but this can be varied according to the project requirements. It is highly desirable to use natural wild grasses in this context rather than mixtures of agricultural and amenity grasses. Agricultural grasses have been bred for vigour and high herbage production, amenity varieties of *Festuca rubra* tend to form a dense mat which inhibits weed growth, and consequently also inhibits the growth of wildflowers. For more information on the unsuitability of modern grass cultivars in ecological projects, see www.herbiseed.com/local-native-populations and www.floralocale.org.uk.

The grasses in the majority of Herbiseed's wildflower mixtures are natural grass species harvested from 'Park Meadow', an ancient meadow in the Thames Valley which has been managed organically and not been sprayed or reseeded within living memory. These are genuine wild grasses which are less competitive than agricultural and amenity grasses, thus offering a better opportunity for the wildflowers to establish and flourish. See www.herbiseed.com/park-meadow .

An appropriate standard mixture from the Herbiseed range can be used for most ecological objectives, or can form a base to which selected species are added. Alternatively, the ecologist can specify a mixture specifically for the site and have it purpose-formulated by Herbiseed. In this case it is advisable to discuss the price and availability of the species with Herbiseed before finalising the composition of the mixture.

Establishing rapid cover and early flowers

In some circumstances the establishment of a rapid cover to control erosion, suppress annual weeds or to provide client satisfaction may be an additional requirement in a project. In other situations, quick-flowering showy annual species can be added to the mixture to provide a visual interest in the first season before the perennials are sufficiently established to flower. By choice of suitable species, these immediate objectives can be attained without compromising the objective of a varied wildflower meadow in the long term.

The following lists of species suitable for specified habitats have been selected for their suitability for establishment from seed.

Explanation: * = tolerates the soil type
 ** = grows well on the soil type
 *** = characteristic of the soil type

PERENNIAL AND BIENNIAL SPECIES FOR PERMANENT MEADOWS

| SPECIES | COMMON NAME | SOIL SUITABILITY | | | HEIGHT (CM) | PRICE (£/KG.) |
|----------------------|-------------------|------------------|-------|------|-------------|---------------|
| | | SAND | CHALK | CLAY | | |
| Achillea millefolium | Yarrow | ** | ** | ** | 40 | 60 |
| Agrimonia eupatoria | Agrimony | ** | ** | ** | 50 | 110 |
| Anthylis vulneraria | Kidney vetch | ** | *** | | 20 | 140 |
| Centaurea nigra | Knapweed | * | * | ** | 50 | 220 |
| Centaurea scabiosa | Greater knapweed | ** | *** | | 100 | 300 |
| Cichorium intybus | Chicory | ** | * | ** | 100 | 110 |
| Daucus carota | Wild carrot | *** | ** | * | 70 | 85 |
| Echium vulgare | Vipers bugloss | ** | ** | | 100 | 110 |
| Erigeron acer | Blue fleabane | * | *** | | 20 | 500 |
| Filipendula vulgaris | Dropwort | * | *** | | 30 | 240 |
| Galium mollugo | Hedge bedstraw | | * | ** | 30 | 60 |
| Galium verum | Ladies' bedstraw | ** | ** | ** | 20 | 80 |
| Geranium pratense | Meadow cranesbill | | ** | * | 30 | 350 |
| Hypericum perforatum | St. John's wort | ** | ** | * | 30 | 150 |
| Knautia arvensis | Field scabious | * | * | * | 20 | 210 |
| Leucanthemum vulgare | Oxeye daisy | ** | ** | ** | 40 | 120 |
| Linaria vulgaris | Yellow toadflax | ** | ** | ** | 30 | 310 |
| Lotus corniculatus | Birdsfoot trefoil | ** | ** | ** | 20 | 120 |
| Malva moschata | Musk mallow | ** | ** | ** | 40 | 150 |
| Medicago lupulina | Black medick | ** | ** | ** | 20 | 50 |
| Pastinacia sativa | Wild parsnip | ** | ** | ** | 100 | 150 |
| Pimpinella saxifraga | Burnet saxifrage | ** | ** | ** | 40 | 150 |
| Plantago media | Hoary plantain | * | *** | | 20 | 70 |
| Plantago lanceolata | Ribwort plantain | ** | ** | ** | 30 | 40 |
| Primula veris | Cowslip | * | ** | ** | 20 | 430 |

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|----------------------|-------------------|----|-----|----|----|-----|
| Prunella vulgaris | Selfheal | ** | ** | ** | 10 | 60 |
| Ranunculus acris | Meadow buttercup | ** | ** | ** | 30 | 80 |
| Ranunculus bulbosus | Bulbous buttercup | * | * | ** | 20 | 250 |
| Reseda lutea | Wild mignonette | * | *** | * | 30 | 150 |
| Rhinanthus minor | Yellow rattle | * | ** | ** | 20 | 300 |
| Rumex acetosa | Sorrel | ** | ** | ** | 30 | 90 |
| Salvia horminoides | Wild clary | * | ** | ** | 30 | 100 |
| Sanguisorba minor | Salad burnet | * | *** | * | 20 | 50 |
| Silene alba | White campion | ** | ** | * | 30 | 50 |
| Silene dioica | Red campion | * | * | ** | 30 | 50 |
| Silene vulgaris | Bladder campion | ** | ** | ** | 20 | 120 |
| Stachys officinalis | Betony | ** | ** | ** | 30 | 150 |
| Tanacetum parthenium | Feverfew | ** | ** | ** | 40 | 140 |
| Tanacetum vulgare | Tansy | ** | ** | ** | 80 | 110 |
| Taraxacum officinale | Dandelion | ** | ** | ** | 20 | 140 |
| Thymus pulegoides | Wild thyme | ** | *** | | 20 | 250 |
| Tragopogon pratensis | Goat's beard | * | * | ** | 30 | 220 |
| Trifolium dubium | Lesser trefoil | ** | ** | ** | 20 | 90 |
| Trifolium repens | White clover | ** | ** | ** | 20 | 30 |
| Trifolium pratense | Red clover | ** | ** | ** | 30 | 30 |
| Verbascum nigrum | Dark mullein | ** | ** | * | 40 | 120 |
| Verbascum thapsus | Tall mullein | ** | ** | * | 80 | 90 |

PERMANENT GRASSES FOR WILD FLOWER MEADOWS

| | | | | | | |
|---------------------|------------------|----|----|----|----|----|
| Agrostis capillaris | Common bent | ** | ** | ** | 20 | 24 |
| Cynosurus cristatus | Crested dogstail | ** | ** | | 20 | 30 |
| Festuca rubra | Red fescue | ** | ** | ** | 30 | 15 |
| Hordeum secalinum | Meadow barley | ** | * | ** | 20 | 80 |

ANNUAL GRASSES FOR INITIAL COVER

| | | | | | | |
|------------------------|-----------------|----|----|----|----|----|
| Alopecurus myosuroides | Annual foxtail | * | * | ** | 30 | 60 |
| Bromus secalinus | Rye brome | ** | ** | ** | 40 | 80 |
| Lolium westerwoldicum | Annual ryegrass | ** | ** | ** | 30 | 20 |

HEDGE AND WOODLAND WILD FLOWERS

| SPECIES | COMMON NAME | COMMENTS | (£/KG.) |
|----------------------------|--------------------|------------------------------------|----------------|
| Alliaria petiolata | Hedge garlic | 50cm, foodplant of orange tip | 70 |
| Anthriscus sylvestris | Hedge parsley | 50-70cm. | 90 |
| Arctium minus | Lesser burdock | 40-60cm. | 120 |
| Arum maculatum | Lords and ladies | 20 cm, fl.,lvs.,fr.,all attractive | 450 |
| Chamaenerion angustifolium | Rosebay willowherb | 60-150cm, colourful but invasive | 750 |
| Carex pendula | Pendulous sedge | 50cm., tufted , architectural . | 180 |
| Clematis vitalba | Old man's beard | 5 meters, rapid climber | 280 |
| Digitalis purpurea | Foxglove | 50-80cm. | 90 |

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| <i>Dipsacus sylvestris</i> | Teasle | 80-150cm, seeds for finches | 70 |
| <i>Epilobium hirsutum</i> | Hairy willowherb | 100cm, late flowers (July) | 650 |
| <i>Galium mollugo</i> | Hedge bedstraw | 50cm, midsummer flowers | 60 |
| <i>Geum urbanum</i> | Wood avens | 30cm, midsummer flowers | 60 |
| <i>Hyacinthoides non-scriptus</i> | Bluebell | 30cm, use seed or bulbs | 250 |
| <i>Lamium album</i> | White deadnettle | 30cm, can be invasive | (plants) |
| <i>Lonicera periclymenum</i> | Honeysuckle | 3 meters, climber, red berries | 350 |
| <i>Primula vulgaris</i> | Primrose | 20cm, seed expensive | 2000 |
| <i>Silene dioica</i> | Red campion | 30cm midsummer flowers | 60 |
| <i>Solanum dulcamara</i> | Woody nightshade | 2 meters, climber | 500 |
| <i>Stellaria holostea</i> | Greater stitchwort | 30cm, April flowers | 410 |
| <i>Tamus communis</i> | Black bryony | 2 meters, climber, red berries | 270 |
| <i>Teucrium scorodonia</i> | Wood sage | 20cm. | 210 |
| <i>Viola odorata</i> | Sweet violet | 10cm. | 250 |

WETLAND AND POND MARGIN SPECIES

| SPECIES | COMMON NAME | COMMENTS | (£/KG.) |
|---------------------------------|------------------------|------------------------------|----------------|
| <i>Alisma plantago-aquatica</i> | Water plantain | 50 cm, pale violet flowers | 150 |
| <i>Angelica sylvestris</i> | Wild angelica | 50-150 cm, white umbels | 190 |
| <i>Arctium majus</i> | Great burdock | 150 cm, interesting fruits | 130 |
| <i>Bidens tripartita</i> | Bur marigold | 30cm, annual | 80 |
| <i>Butomus umbellatus</i> | Flowering rush | 60cm, established by plants | (plants) |
| <i>Caltha palustris</i> | Marsh marigold | 30cm, early flowers (April). | 750 |
| <i>Filipendula ulmeria</i> | Meadowsweet | 50-80cm, heavy scent | 200 |
| <i>Geum rivale</i> | Water avens | 30cm. | 410 |
| <i>Impatiens glandulifera</i> | Policeman's helmet | 150-200 cm. invasive | 280 |
| <i>Iris pseudacorus</i> | Yellow flag | 50cm. | 160 |
| <i>Lychnis flos-cuculi</i> | Ragged robin | 50cm. | 180 |
| <i>Lycopus europaeus</i> | Gypsywort | 50-80cm. | 210 |
| <i>Lythrum salicaria</i> | Purple loosestrife | 60-100cm, late pink colour | 220 |
| <i>Oenanthe fistulosa</i> | Tubular water dropwort | 60-100cm, statuesque | 75 |
| <i>Ranunculus flamula</i> | Lesser spearwort | 60cm, can be invasive | (plants) |
| <i>Sambucus ebulus</i> | Danewort | 40-60cm, autumn berries | 250 |

SPECIFYING A MIXTURE

In most situations where wildflowers are specified for aesthetic objectives, consideration needs to be given to the desired height of the vegetation, the way in which it is to be managed (e.g. frequency of mowing, acceptable height), and selecting a mix of species to achieve a succession of flowers throughout the growing season. The interest of the area can be extended into the winter by including species with persistent seed heads (teasle, tansy,) and interesting fruits such as bryony. This is relatively simple with wildflower meadows and wetland plants, but in dense woodland habitats most species

tend to flower early. Selecting later flowering and climbing species and those with interesting leaves or fruits for the woodland margins and open glades can help extend the visual interest of these areas.

A number of wildflower species establish reliably in many situations, these species tend to be relatively cheap (<£100/kg.) and are used in several standard wildflower mixtures. Other species may be less readily available, more expensive as seed, and less predictable in their establishment. Herbiseed welcomes enquiries from ecologists and site managers about the cost, availability and suitability of particular species, and will willingly discuss the options available for achieving the desired visual or ecological effect versus cost in wildflower establishment on a particular project.

SEED SUPPLIES, MIXTURE FORMULATION AND ADVICE

Herbiseed's ecologist provides scientifically based practical advice in a user-friendly manner. We can formulate and despatch standard mixtures within 24 hours.

MINIMUM ORDER VALUE: £25.00

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