

Making Sense of Wildflower Meadows

Wildflower meadows can be very beautiful and it can be an enticing prospect to try and create such a feature in miniature in a garden. Gardening books, magazines, and seed catalogues are full of references to 'meadows', with enticing, romantic photographs. Unfortunately the muddled and inadequate information that often goes alongside the photographs can leave the gardener in a fog of confusion and, worse, can lead to a disastrous failure of the gardener's meadow-making efforts, with much effort and good intentions leading to a mass of coarse weeds and deep disappointment.

Well, I created a mini-meadow from scratch in our London back garden, and after several years the result was very satisfactory. It was a real learning experience and led me to visit and photograph a number of ancient hay meadows, to get a feel for what a good quality meadow should look like, and what I was aiming for.

In the rest of this article I give you a basic explanation of the three different approaches to growing flowers and grass together that can be employed in a garden situation. Read on, and hopefully all will become clear.

The three approaches to growing flowers and grasses together are these:

1. **Cornfield Annuals**
2. **A 'Traditional Hay Meadow'**
3. **Low-growing Flowers in a Lawn**

1: Cornfield Annuals

From the gardener's point of view, this is the easiest to create of the three approaches. It consists of sowing the colourful *annual* flowers that used to grow in cereal fields before the days of selective herbicides. Such flowers typically include the scarlet Field Poppies (Papaver Rhoeas), blue Cornflower (Centaurea cyanus) and yellow Corn Marigold (Chrysanthemum segetum). Special garden seed mixes are also available which also include species from North America. Pictures of such cornfields are frequently described as 'meadows' in magazines and seed catalogues, which is misleading. Ecologically speaking, these cornfields have nothing in common with perennial hay meadows, which I describe below.

The key to understanding the cornfield flowers is that they and the grasses (i.e. the cereal cops) that they typically grow amongst are quick-growing annuals or short-lived biennials. They do not persist after they have flowered. They grow quickly from seed as the weather warms up in Spring, flower in their first summer and die at the end of summer. The ground has to be cleared of dead stems ('straw') and then cultivated in the autumn or winter, when it will be bare soil.

The 'cornfield' will typically need to be re-sown each autumn or spring after you have cultivated (i.e. dug or raked) the soil. It follows that 'cornfield' will do well and look good if the soil is modestly fed (e.g. with compost) during its annual cultivation. You may well need to hand-weed the young 'cornfield' in spring as many annual garden weeds (Red leg, Fat Hen, Goosegrass, Chickweed, Nipplewort, Sow Thistle) also follow this pattern of growth, and were indeed traditional cornfield weeds.

The nearest equivalent to the cornfield in conventional horticulture is the annual border, and I would say it is best to consider a garden 'cornfield' (whatever its size) as a *special type of annual border*. You can if you wish put various other annuals, especially ones from North America such as *Coreopsis tinctoria* or *Phacelia tanacetifolia* in your cornfield seed mix. An enterprise in Sheffield has developed carefully researched 'Pictorial Meadow Mixes' based on this approach. [www.pictorialmeadows.co.uk] This kind of mix attracts a lot of pollinating insects, especially hoverflies. It is not so good for bumblebees, which generally prefer the perennial hay meadow flowers.

I don't recommend attempting to grow cornfield annuals mixed up with the perennial wild flowers that are described in the next section - it may not work and you will be wasting your money. The perennial flowers of grassland are far slower-growing than cornfield annuals, can take more than one winter simply to germinate from seed and then take several years to build up, and require a poor, unfertilised soil - this is the precise opposite to the cornfield situation!

2: A 'Traditional Hay Meadow'

Let's change gear now and take a look at a completely different habitat, uncommon nowadays but once very common, before the introduction of selective herbicides and farmers' switch to silage. This type of grassland lays the strongest claim to the word 'meadow' and this is what I think of as a meadow. Traditionally it consisted of a mixture of *perennial grasses* and *perennial wildflowers*. Most typical flowers would include Lesser Knapweed, Birdsfoot trefoil, Red Clover, and a number of Vetches and Hawkweeds, and the parasitic Yellow Rattle.

Typically the farmer would exclude grazing animals and leave it unmown from about February until sometime in June or July when it would be mown and the cuttings dried in rows on the ground to form a nutritious winter stock feed (hay). Note that it was cut while green, so that the hay would be full of protein for the animals in winter. This practice tended to remove nitrogen from the field and keep the nutrient level of the field fairly low, which encouraged wild flowers. If mowing was left until the grasses and flower stems were brown, the nitrogen would have returned to the roots of the perennial grasses and flowers and the product of the cut stems would then be straw. This is high in carbon, is not a stock feed, and has to be used for animal bedding.

After cutting the meadow there would be a re-growth of the grasses and flowers, called the 'aftermath', and livestock would be generally allowed in to graze on the field in autumn and/or winter. The poorer the soil, the weaker the grass and the greater the diversity of wild flowers. Not necessarily what the farmers wanted, but excellent forage for insects that live on nectar and pollen such as butterflies, bumblebees, solitary bees, and hoverflies. It is this group of organisms that you are supporting if you create a new wildflower meadow, plus the birds and bats that live off insects.

Understanding the traditional meadow cycle is the key to successfully creating a mini-meadow in a garden situation, or indeed in an urban park or nature reserve.

The key points to bear in mind if you wish to create a traditional meadow are:

- the meadow soil must be low in nutrients. Over-fertile soil is the common reason for failure.
- by cutting while green and removing the cuttings ('hay') you remove nitrogen and will keep the meadow low in nutrients. If you leave cutting late so that the cuttings are brown and dead you will not be removing nitrogen.
- the poorer the soil, the better the wildflowers. Unlike a cornfield, you should never apply fertiliser or compost to your meadow.
- during autumn and winter you should continue to mow (to replicate grazing) and remove the cuttings.
- In a young meadow the summer cut ought to be in June or July (or even earlier, and several times, if weeds invade) and you may well have to cut flowers that are in bloom. You must steel yourself to do it at the required time, as it is essential in the early years of the meadow to impose this discipline of cutting and remove the green hay, to lower nutrients in the soil and weaken the grasses.

Do not leave cutting a young meadow until too late in the season - another common reason for failure. Lots of 'wildflower meadows' created in urban nature parks look coarse and lack the flowers they ought to have because they were not sufficiently mowed in their early stages, allowing coarser perennials grasses such as Yorkshire Fog to dominate. Only very tough perennials flowers such as Meadow Cranesbill and Ox eye Daisy will persist in such grassland, and its value as insect forage is greatly diminished.

Of course cutting a garden meadow which still contains flowers in bloom deprives insects of some pollen and nectar, and it gets rid of the tussocky habitat required by Grasshoppers, Crickets, Frogs, Grass Snakes and Slow Worms. Many invertebrates hibernate in the winter in tussocky grass that has not been cut. The answer to the insect forage question is to grow other nectar and pollen rich flowers nearby in flowerbeds or a special 'pollinator border'. If your garden is big enough I would also recommend an area of long grass somewhere else that you rarely cut, to create an alternative habitat for these creatures.

Mixed regimes of annuals and perennials

It follows that annual flowers such as cornflowers and poppies will not thrive in a hay meadow regime and there is no point in sowing them in a meadow mix as they will be mowed away in June (or even earlier in the year in a newly-sown meadow if weeds invade).

If you do incorporate annual flowers, as is done in many commercially available 'wildflower meadow' seed mixes, there will be a huge temptation to leave the meadow so that they all flower - this is a mistake, as it will surely allow weeds and more vigorous grasses to get a hold at the expense of the slower growing perennial wildflowers that you are trying to encourage. If you intend to buy a seed mixture, check the list of constituent species carefully before purchasing. If it is not to your liking, specify your own mixture instead. If the full contents are not listed, don't touch with a bargepole - you could be buying anything. There is no legal definition of 'wild flower' and you could be getting the wild flowers of another country, another continent even. It is best to avoid the unpredictable 'wildflower mixes' sold in colourful packets and go for something more suitable from specialist, reputable wildflower seed suppliers such as Emorsgate Wild Seeds or Scotia Seeds.

Reading

There are two very good books on this subject: *Meadows* by Christopher Lloyd, and *Making Wildflower Meadows* by Pam Lewis. Both of these are reviewed in my Bibliography, which you can download from the Reading page.

Problematic Ox eye Daisy

Oxeye Daisy (*Leucanthemum vulgare*) is a bit of a wild card - its habit of growth seems to lie somewhere between that of cornfield annual and meadow perennial and it can survive in both habitats. My experience has been that it is too invasive and quick growing for a young garden meadow and out-competes the slower growing perennials and can smother them with its basal leaves, and I had to remove it in quantity by hand from my mini- meadow. This is feasible if you have a small scale meadow of a few square metres in your back garden, but not if you have something bigger! My advice is to sow a seed mix which excludes it. If you find that you are growing it in your young meadow, be certain to cut the meadow and remove the cuttings in June before the Ox eye daisy drops its to seed; this will help to stop it taking over and becoming a problem.

It is a paradox that some ancient flower- filled hay meadows seem to support a few Ox eye Daisies here and there that never become dominant. But these meadows have had decades, sometimes centuries, for all the flowers to settle down and reach some sort of equilibrium with each other. Your newly-created mini-meadow is much more unstable and needs the gardener's intervention, as a 'referee' if you like, until it all settles down.

Weeds

Winsome gardeners quote the sentimental adage that 'a weed is simply a flower in the wrong place', but I find this misleading, and in the context of creating a successful meadow, a trap. Ecologically speaking a weed is simply a quick-growing opportunist that takes advantage of newly-cultivated soil and has evolved to out-compete slower-growing plants. It follows that weeds are the last thing that you want in your young newly-sown wildflower meadow, because they will smother the slower growing perennial flowers and meadow grasses. Many garden wildflower meadows have failed because of weed invasions that were not controlled. To avoid this, intervene as necessary and mow the young meadow in spring or early summer of its first season - more than once if necessary, with the blades set high. The weeds cannot stand being mown, while the wildflower meadow grasses and perennials can.

Weedy sites and herbicides

In any event you should sow your meadow on a soil that is as free of weed seeds as possible. In a very weedy site it may be desirable to leave the site fallow for a few months to let weed seeds germinate, and then remove them before re-sowing with the wildflower meadow seed, ideally after covering the site with a layer of coarse sand or grit.

If the site of your future meadow is full of perennial weeds with deep roots (Docks, Bindweed, Ground Elder, Creeping Thistle and Japanese Knotweed) you have a real problem on your hands. Many conservation bodies faced with such a situation would apply a contact herbicide (i.e. glyphosate) to kill the weeds. I would also advocate this if you cannot physically remove the weed roots, and if you don't have an objection to using this chemical, which is not thought to be persistent. (I refer here only to glyphosate). Several applications may be necessary. It is in fact the only garden chemical I would ever consider using - I don't condone the use of any pesticides, even 'organic' ones, as they kill the insects that are at the bottom of the food chain. I think this is one issue that separates wildlife gardeners from organic gardeners. But I digress, so let's look at the third option:

3. Low-growing Flowers in a lawn

The third combination of grasses and flowers in the traditional farmed countryside was **pasture** - i.e. grassland that is more or less continuously grazed (by livestock or wild rabbits) throughout the year and not cut for hay. The analogy to this in the garden is the lawn that is fairly regularly mown during the summer but with the blades on a high setting, allowing low-growing lawn flowers to survive the cut. Where it works this can be very satisfying - the typical flowers that like this regime are White Clover, Germander Speedwell, Self-heal, lemon yellow Cat's Ear, Autumn Hawkbit, and on starved soils, Birdsfoot Trefoil. In a damp lawn you might manage Bugle and Cuckoo Flower instead.

Unfortunately this approach only works on starved, low-nutrient lawns, preferably old lawns with fine grasses. It is unlikely to work on lawns that have been fertilised, or have been recently created on rich soil, or consist mostly of vigorous perennial ryegrass hybrids, from the modern grass seed that is sold for tough, hard-wearing utility lawns. Persistent mowing and removing the clippings of a number of seasons will help to reduce the vigour of the lawn and may make it more suitable for this regime.

The advantage of this approach is that it is not disruptive - you don't have to dig up an area and re-sow, you may need to insert plugs of the wild flowers mentioned above in an existing fairly sparse lawn, or you may find that some of them are growing there anyway; you can still walk and play on the lawn during the summer; and if it is not successful you simply set the mower lower and return to a closer-cropped sward.

Although White Clover is typical of this situation (being a creeping plant adapted to a pasture habitat) it also has the property of increasing the nitrogen (i.e. fertility) of the soil, which tends to favour grasses at the expense of flowers. So there is a bit of a balancing act with the mowing and it may not work in your situation.

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