

Horticulture Diagnostic Laboratory



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Meadow Gardening

In recent years the cultivation of wildflower meadows has been of burgeoning interest in the Northeast. Attractive photographs of fields with colorful wildflowers seen in magazines and catalogs, combined with the misconception that meadow gardening is maintenance free, have probably contributed to its growing popularity. Now many seed companies are promoting that approach to gardening and are flooding the market with "meadow mixes."

Meadow gardening is in its infancy in the Northeast. There is much to be learned about it, and there may be some ecological concerns related to it. Successful meadow gardening is dependent on understanding the nature of meadows and learning what is involved in creating one. It is helpful if the gardener has a basic understanding of plant succession, a natural process whereby one assemblage of plants is replaced by another until a climax situation is reached. Climax situations are capable of sustaining themselves. For example, in the Northeast, woodlands dominated by red oaks, black oaks, and white oaks constitute a climax condition.

Next, it is necessary to understand what a meadow is and where one occurs. A natural meadow is a perpetual grassland -- a habitat of rolling or flat terrain where grasses predominate. Natural grasslands are climax ecosystems maintained by environmental factors that restrict the growth of woody plants. For instance, alpine meadows occur at high elevations and are maintained by harsh climatic conditions. Coastal meadows are maintained by salt sprays, and desert meadows by low precipitation. Prairies, the grasslands found on the continental plains of the Midwest and the West in North America, are maintained by periods of severe drought and are subject to fires.

What we often refer to as a meadow is more likely an old field that is in a state of early succession and destined to become woods again if left undisturbed. After farmland has been abandoned, grasses and other herbaceous plants will colonize its fields. The condition is only temporary, however, because the early colonizers will be shaded out when woody plants invade. Such sites must be intentionally kept in that state to maintain the meadow community.

In the Northeast the plants growing in disturbed sites are chiefly non-native. Such sites contain many Old World species that were inadvertently brought to this country in ship ballast's and livestock bedding, or that were intentionally imported for use in gardens or research projects. Those that escaped and were able to compete successfully with native species were naturalized and became what we loosely call wildflowers.

Many companies offer assortments of wildflower seeds, but be forewarned that your success with mixtures will depend somewhat on your careful evaluation of them. Beware of the pretty picture on the packet or the can and the enticing name of the mix. The picture may be the most attractive thing offered.

Most mixes contain combinations of seeds from Midwestern and western native wildflowers, as well as seeds from exotic wildflowers (species from foreign countries). Some mixes contain seeds of species already naturalized in our part of the country, but relatively few mixes contain species native to the Northeast. Mixes often have seeds of both annual and perennial plants.

Some commercial mixes include potentially invasive or noxious weeds. For example, companies may incorporate seeds of purple loosestrife, *Lythrum salicaria*, in their mixes. Although it is very attractive, purple loosestrife should be avoided at all costs. It has become an environmental pest and is posing a real threat to native wetland habitats. It is now found growing invasively through valuable wetlands in the Northeast and has moved into the Midwest and parts of Canada. The plant out competes wetland species that are beneficial to wildlife, such as rushes, sedges, cattails, and smartweeds. Purple loosestrife is not a food source for most wildlife, and its stems and roots trap debris over a period of time, slowly rising the surrounding ground level. Three years ago it was estimated that purple loosestrife had successfully invaded over one thousand acres of the six-thousand-acre Montezuma marshland refuge at the north end of Cayuga Lake. The plant was

first recorded as being sparse there in 1951, but within five years an estimated equivalent of one acre of purple loosestrife was growing there.

Some Predictions

Assume you sow a wildflower-seed mix in a tilled area and perform no other cultural practices, such as weeding and watering. If that mix contains exotic annual species, the following is likely to happen: the first year, the annuals will bloom, making an impressive show, but the plants will probably disappear by the next season. Very few, if any, will self-sow. If that mix consists of commonly naturalized wildflowers along with other wildflowers, the naturalized wildflowers that have already proven themselves tough in the area probably will out-compete the less-aggressive types. Finally, if that mix doesn't contain species already naturalized in the area, they probably will invade anyway, since tilling the field will have created an optimum condition for the growth of common weeds (naturalized wildflowers). You are most likely to succeed with mixes that contain native species, such as goldenrods and asters, and already naturalized species, such as chicory and black-eyed-Susan's. That being the case, you might wonder why you should sow anything at all after tilling.

Suggested Approaches

If you are interested in experimenting with meadow mixes, here are some general pointers. First, consider that you must approach the effort as you would any gardening venture. Scattering seeds over a weedy field will not produce an ornamental meadow. Success is most likely if you choose a small area, one that you can weed and tend easily while your meadow is establishing itself. The soil should be tilled and smoothed out as it would be for a planting bed. Tilling, however, is likely to bring to the surface many weed seeds that have lain dormant. Many a meadow gardening attempt has failed when the weeds triumphed, so be prepared with a plan for weed control.

Choose a mix most suitable for your site; consider soil moisture, available light, preferred season of bloom, plant heights, and your geographical region. Seeds can be sown in spring or fall. Fall sowing is often recommended because weeds may be less of a problem at that time of the year, and seeds requiring a period of cold before they germinate would have their requirement met during the winter. Annual mixes can be sown in the spring, but that means tilling and sowing seeds every year to maintain the meadow. Once your seeds have been sown, keep them moist so that they can germinate. And after the wildflowers have germinated, remember that moisture will be necessary so that the new plants can establish themselves.

Learn to recognize the seedlings you want to encourage, so that you can weed the plot. You will probably need to keep up with the weeds for the next two or three years.

When established, the meadow should be cut once a year in the spring for uniformity and to discourage the growth of woody plants. Some wildflower gardeners recommend fall cutting, too, but not until after the plants have matured their seed, to ensure that there will be a source of new seeds. Cut the meadow high by hand with a scythe. A lawn mower cannot be set high enough for the job.

Now, stop to consider whether you have the time, resources, and enthusiasm to do all that on a large scale.

An alternative would be to try something akin to an experiment being conducted by the New England Wildflower Society at Garden in the Woods. Their method, too, is labor intensive, and you will find that the more elaborate the meadow is, the more demanding the kind of gardening required. For their project, after preparing the site, the New England Wildflower Society introduced three thousand nursery-grown plants into a quarter acre. They had selected thirty species of competitive wildflowers that are native or naturalized in the northeastern part of the country. Then they sowed native grass seed at two times the recommended rate. Grasses were used because they are an integral component of natural meadows and will aid in weed control.

Another approach resulting in a somewhat different effect is what we have done in the Mundy Wildflower Garden at the Plantations. By mowing it annually, we intentionally keep the meadow in that garden in the temporary state of early succession I referred to earlier. A few years ago we removed all the woody species that had started to invade the site. The area was tilled, and we planted a modest number of native plant seedlings that thrive in full sun. Then we just sat back and let nature take over. Today, although some natives persist, it is a good place to see and study the kinds of non-native wildflowers that have become naturalized along roadsides and in old fields in our area.

Some Ecological Concerns

Some seed companies pride themselves on offering seeds collected in the wild by professionals. Plants that produce abundant seeds may not be endangered by that activity, but I wonder whether the seed collectors' activities will deplete the seed sources of some species of prairie plants. Today less than 1 percent of our nation's prairies exist in their natural state.

Instead, wheat and corn fields occupy that ground. If seeds sold in meadow mixes don't naturalize, then we aren't perpetuating or preserving the species. Will we be noticing a detrimental impact on the natural populations years from now?

I am also concerned about the potential consequences on native flora of introduced wildflowers. If, for example, we introduce species of goldenrods or asters that are not native to an area, is there a chance they will out-compete the native species? I suspect that even if the seeds of regional species are included in the mixes sowed in the region, the seeds are likely to be different variety forms, and I'm curious about whether the introduction of geographic strains from another region will have an adverse effect on local varieties of native plants. Is there a potential for disturbing the natural balance of our wild flora once the interactions of pests, diseases, and other environmental pressures come into play?

I don't want to discourage determined gardeners from trying a wildflower meadow if they are prepared for the work it entails. Following one of the three approaches I have discussed in detail should ensure success. Keep in mind that commercial seed mixtures should be used only in a plot small enough to be cultivated, and that on a large scale, only species sure to naturalize should be used. Your final option is to till up the ground every year and sow annuals.

Resource: Levy, Donna. "Meadow Gardening." *Cornell Plantation* 42:2 (Summer 1986).

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