Wildflower Gardening in Oklahoma

EXTENSION

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Introduction

Wildflower gardens can be pleasing to the eye for many gardeners. These landscapes bring the natural world into the human context of gardens and landscapes. Recreating this beauty in a public garden or in a backyard can improve personal and public well being.

In many ways, wildflower gardens are more environmentally friendly than traditional gardens. Although most plants will survive for a time in any given environment without human interference, they will need the right conditions to perform in the desired way (many flowers, growth habit, height, etc.) When the environmental conditions are not ideal, such as poor soil fertility, fertilizers or other amendments are needed. Once established, wildflowers will meet the desired aesthetic more easily because the plants are accustomed to the soils and growing conditions of the local climate. They will survive with little additional water during the growing season, few soil amendments and little to no fertilizer depending on the chosen site.

A wildflower garden can be a pleasing addition to any garden in Oklahoma provided the right steps are taken in its establishment.

Photo by Gathering Place Horticulture Team/Shane Bevel Photography

Oklahoma Cooperative Extension Fact Sheets are also available on our website at: **extension.okstate.edu**

Site Selection and Preparation

Selecting a site is one of the most important decisions to make when creating a new wildflower garden. Almost any site, no matter how large or small, can become a wildflower garden, but consideration of certain factors will determine the long-term success of a new garden. When selecting a site, pay close attention to things like sun and wind exposure, drainage (where water pools, drains quickly or runs off, etc.), site topography (hilly, flat, depressed, etc.), site access for maintenance, available irrigation (if needed), existing vegetation (native or not) and the new garden's place within the overall garden or site. These conditions will dictate which species to plant because a successful wildflower garden resembles the natural habitats of native plants as close as possible.

If there are multiple options for sites, the desired plant species or aesthetic can dictate where a wildflower garden should be located. Oklahoma is a diverse state with many different types of ecological regions. There are multitudes of worthy wildflowers that do well in shady spots, full sun, dry, arid regions, wetlands and anywhere in between. Choose a site that will best support the desired plant community without the need for a total overhaul of the site's natural composition.

Almost any garden site will have existing vegetation and, more often than not, this vegetation will consist of aggressive, weedy species that thrive in neglected areas. Eliminating or at least greatly reducing these weeds before planting will save a lot of time and hassle in the long run. There are many ways to accomplish this, but all of them require some preplanning. It can take anywhere from a few weeks to several growing seasons to eliminate weeds in an area. Even once the established weeds, grasses and other plants are removed, there will still be a rich and diverse seed bank within the soil. This collection of seeds can remain dormant for years, only to germinate once the weedy competition is eliminated or the soil disturbed.

Non-selective post-emergent herbicides (i.e. glyphosate) are an effective way to kill perennial weedy plants growing in a chosen area (Figure 1). Multiple treatments may be needed and they should be spaced out every few weeks as new weeds germinate. If time permits, repeated sprayings during an entire growing season also will reduce those cool-season weeds that germinate in the cooler temperatures of spring and fall.

Solarizing or smothering is another way to get rid of the existing vegetation on a site as long as the existing vegeta-

Figure 1. Non-selective post-emergent herbicides are an effective way to kill perennial grasses covering a garden site. Multiple treatments may be needed.

tion is of manageable size. Solarizing is accomplished using clear plastic sheeting and the sun's heat to effectively cook the plants and seeds. The heat of solarizing soil also can reduce the amount of viable weed seeds, but will not totally eliminate them. Smothering by utilizing black plastic or another opaque material blocks sunlight and stops photosynthesis, thereby killing plants.

In addition to these methods, tilling also is an option, although it is not always the most reliable method. Tilling will kill and aid in the removal of some perennial weeds that have stubborn root systems (Figure 2), but it can effectively multiply others by dividing rhizomes and other plant parts that serve as propagules for new plants. Tilling also will kick up dormant seeds below the soil surface. For this reason, a shallow tilling depth will help keep deeper seeds dormant, but this is not guaranteed (Figure 3).

After tilling, the area should be left relatively undisturbed for enough time to see new weed growth and then retreated with herbicide to kill any weeds that have sprouted. Repeating this process multiple times should exhaust the weed seed bank of the site. If time permits (as in preparing a site during

Figure 2. Tilling can aid in the removal of some perennial grasses and weeds.

Figure 3. A shallow tilling depth will help keep deeper seeds dormant.

a growing season or longer), till the site multiple times. This will bring up more weed seeds that will germinate and then can be killed.

Soil amendments are typically not needed for wildflower gardens because the species planted are largely adapted to poor soil conditions. Luxury conditions tend to favor lush growth in wildflowers, often resulting in plants that flop over. If a large portion of the top soil has been removed or other soil problems are suspected, please consult a local Extension office for soil testing and amendment recommendations.

Species Selection

The conditions of your garden's site will dictate which species will thrive in your wildflower garden. Thankfully, many seed companies list recommended conditions for each species in their catalogues. See page five for a list of popular Oklahoma wildflower species.

Another strategy for selecting suitable species is to simply observe and study a natural area with similar conditions to your specific garden site. What species grow in this natural area? Is there a mixture of grasses and forbs? Are there woody shrubs and trees with low-growing underbrush? Nature can be the best inspiration when designing a beautiful wildflower garden.

Whether the goal is a prairie restoration, uniform color, a mosaic of colors and textures, a windbreak or an attractive privacy screen, always go back to the desired aesthetic. These are things to think about when choosing species for a native garden. When all else fails, choose a seed mix that has already been tried and tested for your region. Most nurseries specializing in native plants and wildflowers have multiple mixes for all types of aesthetic and cultural conditions. Seed mixes can be a great choice for a small space in a yard or for someone that wants to try out this type of gardening without a large investment.

When to Plant

When planting a wildflower garden with seed, seed dormancy must be understood. Many native species have evolved only to germinate when conditions are most advanta-

geous, such as after a fire or a heavy rain event. Most commonly, seeds need a cold and wet period to break dormancy (stratification). This dormancy can be artificially broken by placing seeds in a moist growing medium in a refrigerator for a specific period depending on the species, usually four weeks to eight weeks. Some seed companies will sell seeds that have already been put through this process but many companies do not because untreated seeds have a longer shelf life. In Oklahoma, it is highly recommended planting be done in the late fall to ensure the seeds go through a natural stratification or other dormancy breaking process. In areas that receive more snowfall, a post-frost/snowfall planting can be done. Fall planting also is beneficial because it will not hinder more pressing garden tasks in the spring.

If planting in the fall on a sloped but barren area, a cover crop of a non-weedy, cold-season species is recommended. This will mitigate erosion of the site while seeds remain dormant and will keep seeds from washing away. With time, this cover crop will die out or be outcompeted by the planted species. Common cover crops are oats (*Avena sativa*) and winter wheat (*Triticum*).

Additionally, if planting pre-established plants, such as plugs or container-grown specimens, planting should be done in early spring after the danger of frost. Many perennial species perform best after a full growing season to establish and survive the following winter.

Sowing Seed

Successful seed sowing will lead to a full garden with a balance of the species selected represented through the garden. A few simple steps can ensure an even distribution of seeds over a large area:

1. Separate the area to be planted into a few equal parts. Each can be sown by one or two people without much overlap so certain areas aren't easily missed (Figure 4).
2. Combine all of the seeds in an appropriate container and mix them.
3. Divide the mix into equal parts—the same number of parts as the garden is divided.
4. Add moistened filler material to each section of seed. Good filler materials are sawdust, compost, peat moss, sand or rice hulls. Whichever filler material is chosen, it should be lightweight enough to be easily spread and carried around the garden without much effort.
5. Add three parts filler material for each part or section of seed mix to create a broadcast mix.
6. Broadcast this mix evenly over each area (Figure 5).
7. Lightly tamp the seed with your feet or other tools to ensure good seed-soil contact without burying the seed too deeply.

Maintenance

Wildflower gardens are not set it and forget it efforts. Once seeds are planted, it's mostly a waiting game until spring, but keep an eye out for cool-season weeds and remove them as necessary. Once the garden starts growing, it will need no less maintenance than a normal garden while it establishes during the first three growing seasons.

The first growing season will be the most labor-intensive. If the steps listed above are followed, you will greatly reduce the amount of work required in subsequent years. Weeds will

Figure 4. Separate the area to be planted into a few equal parts. Each can be sown by one or two people without much overlap so certain areas aren't easily missed.

Figure 5. Broadcast seed mix by hand over the garden area.

come up, as they do, in any garden. Hand-pulling weeds is not recommended as fragile young root systems of adjacent seedlings can be damaged. If an infestation of a serious noxious weed establishes, pulling may be the only option but gentle care must be taken. For many weeds, mowing will keep them under control. When the seedlings reach a height of 8 inches to 10 inches, mow the garden down to a height of 4 inches to 5 inches or the tallest setting on most push mowers. Although this may sacrifice some blooms, it won't hurt the plants and will actually contribute to a richer garden in the long run. Mowing at this height prevents weeds from shading out new seedlings and helps remove flowers and seed heads of weed species. Leave the clippings and debris in place, as they will add organic matter to the soil and act as a mulch. Be careful not to leave any mature weed seed heads after mowing. Spot-spraying of herbicides when wind conditions are calm should only be used as a last resort on especially tough weed species.

In the second growing season, the garden plot should be more mature and abundant with desired species. If there are large amounts of weeds still present at the beginning of the season, mow the plot to a height of 6-12 inches. If certain species did not sprout in the first season, their seeds may not have broken dormancy and may sprout this year. If there are desirable species that simply never emerge, reseed the area with these missing species. Annual species that may not have set enough seed in the first year to become properly established need to be reseeded. Unless there are major problems in the previously outlined process, the second season will be the first productive year for the garden with many plants being mature and healthy, creating the beautiful wildflower garden you are seeking.

After the second growing season, your garden will continue to mature and establish and it should reach an equilibrium. Continue to watch for troublesome weeds and remove them as necessary. The established wildflowers should be healthy enough to withstand soil disturbance around their roots. Reseed any annual species if they are not properly abundant by year three. You can create a management practice within the garden to encourage these annuals to reproduce on their own. One of the most highly recommended management principles for a wildflower garden, especially for Oklahoma prairie species, is to employ prescribed burning after three years to four years of establishment. Burning removes the thatch layer that builds up. This thatch layer can smother young plants. Burning every year yields more flowers and healthier plants, but after five years to seven years of prescribed burns, it is recommended either to burn only every three years or to burn sections of the garden on a three-year rotation.

Burning is not always an option, especially in urban and residential areas. Many public gardens, parks and most nature reserves or forests recognize the importance of fire as a tool used in maintaining healthy ecosystems but local laws often preclude its use. Instead, annual mowing in the early spring and raking and removal of dead debris can reduce the thatch layer. Always refer to local authorities for specific burning restrictions.

The maintenance regime will depend on the overall aesthetic and purpose of the garden. Wildflower gardens can look unkempt in the winter (Figure 6) and therefore, may need to be maintained in a way to improve their aesthetics, despite the recommended cultural guidelines. Also, some municipalities have ordinances regarding vegetation height and maintenance.

Figure 6. Wildflower gardens can look unkempt in the winter.

Figure 7. Some municipalities have ordinances regarding vegetation height and maintenance. Be aware of these restrictions before creating a garden.

Be aware of these restrictions before creating your garden (Figure 7).

Conclusion

Although not a new concept, wildflower gardens are gaining in popularity among gardeners seeking ways to enhance native ecosystems in urban areas while also seeking to reduce the resources needed to keep their gardens beautiful. Wildflowers present opportunities to bring a part of Oklahoma's natural heritage into the backyard and, through each gardener's individual interests, demonstrate the diversity of the Oklahoma flora.

Oklahoma Native Wildflowers*

Amsonia illustris—shining bluestar
Amsonia hubrichtii—Arkansas bluestar
Aquilegia canadensis—eastern columbine
Arnoglossum plantagineum—Indian plantain
Asclepias spp.—There are more than 20 native milkweed species. See *Native Milkweeds of Oklahoma* in the references section for more information.
Astragalus crassicarpus—ground plum
Baptisia alba—white wild indigo
Baptisia australis—blue false indigo
Baptisia sphaerocarpa—yellow wild indigo
Callirhoe bushii—Bush's poppy mallow
Callirhoe involucrate—purple poppy mallow
Camassia scilloides—wild hyacinth
Coreopsis palmata—prairie coreopsis
Dalea candida—white prairie clover
Dalea purpurea—purple priaire clover
Echinacea pallida—pale coneflower
Echinacea paradoxa—yellow coneflower
Echinacea purpurea—purple coneflower
Eryngium leavenworthii—Leavenworth's eryngo
Eryngium yuccifolium—rattlesnake master
Euphorbia corollata—flowering spurge
Euphorbia cyathophora—fire-on-the-mountain
Euphorbia marginata—snow-on-the-mountain
Eutrochium purpureum (syn. *Eupatorium purpureum*)—sweet Joe Pye weed
Gaillardia pulchella—Indian blanket
Helianthus maximiliani—Maximilian's sunflower
Heliopsis helianthoides—oxeye sunflower
Liatris pycnostachya—prairie blazing star
Lilium michiganense—Michigan lily
Oenothera gaura (syn. *Gaura biennis*)—biennial beeblossom
Pediomelum tenuiflorum (syn. *Psoralidium tenuiflorum*) —slenderleaf scurfpea
Rudbeckia gigantean—large coneflower
Rudbeckia maxima—giant coneflower
Rudbeckia subtomentosa—sweet black-eyed Susan
Rudbeckia triloba—brown-eyed Susan
Salvia azurea—blue sage
Silphium laciniatum—compass plant
Spigelia marilandica—Indian pink
Symphyotrichum novae-angliae—New England aster
Tradescantia bracteata—prairie spiderwort

*This list is not a full representation of the native flora in Oklahoma, but a collection of popular, successful plants used in gardens across the state. The environmental conditions of a specific site will determine whether certain species are appropriate. See the "Species Selection" section of this publication for further information.

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Unless otherwise stated, photography by Louis Anella, PhD or Andy Fusco

Plant and Seed Sources

Native American Seed—Junction, TX, 1-800-728-4043, info@seedsource.com, http://www.seedsource.com
Pine Ridge Gardens, London, AR, (479) 293-4359, office@pineridgegardens.com, http://www.pineridgegardens.com
Prairie Moon Nursery, Winona, MN, (866) 417-8156, info@prairiemoon.com, http://www.prairiemoon.com
Prairie Wind Nursery, Norman, OK, (405) 579-8846, http://www.prairiewindnursery.com
Wild Things Nursery, Shawnee, OK, (405) 255-1707, marilyn@wildthingsnursery.com, http://www.wildthingsnursery.com

Societies & Organizations

The Kerr Center for Sustainable Agriculture, Poteau, OK, (918) 647-9123, mailbox@kerrcenter.com, http://www.kerrcenter.com
The Nature Conservancy, Tulsa, OK, (918) 585-1117, http://www.nature.org
Oklahoma Native Plant Society, Tulsa, OK, onpsinfo@gmail.com, http://www.oknativeplants.org

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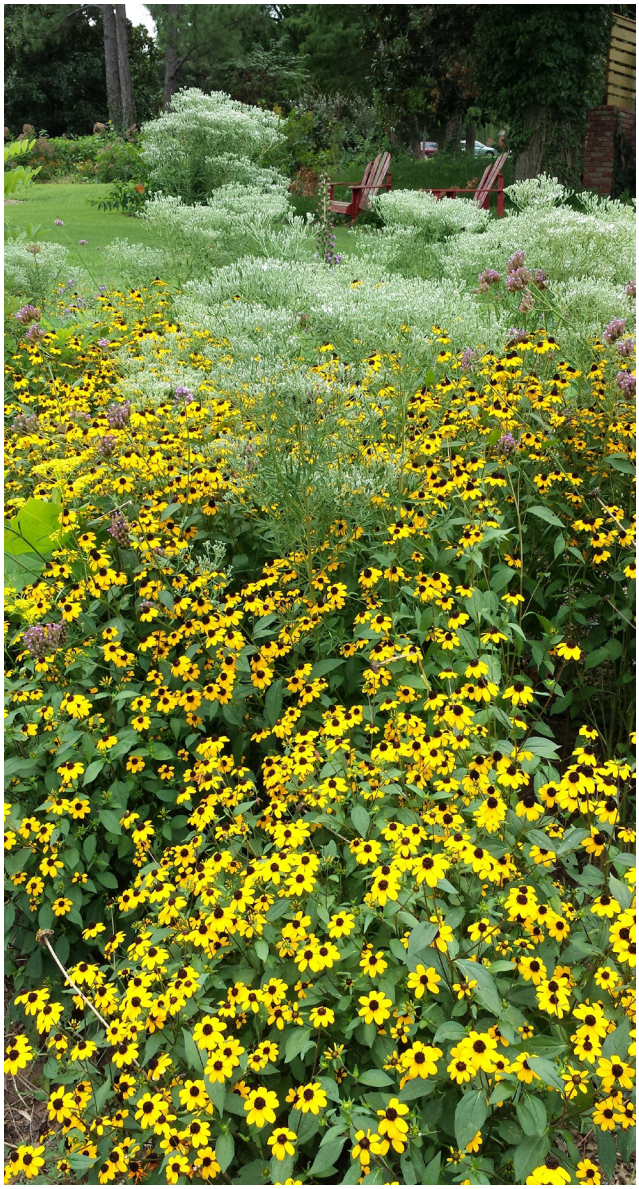


Gathering Place

The Oklahoma Cooperative Extension Service

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The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

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- Extension programs are nonpolitical, objective, and research-based information.
- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
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