

Jamie L. Whitten Plant Materials Center

Coffeeville, MS

Vol. 11, No. 3

Technical Note

October 1995

**PLANTING AND MAINTENANCE OF WILDFLOWERS AND
NATIVE GRASSES IN THE MIDSOUTH**

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INTRODUCTION

During the last five to ten years, there has been increased interest in replacing high maintenance requiring turf with plantings of native species representative of natural meadows. Although many publications provide recommendations on planting and maintaining many of these species in the garden, such information is less available for large scale plantings, such as along roadsides and in parks. This publication outlines general planting concepts formulated during five years of production experience at the Jamie L. Whitten Plant Materials Center. The large number of potential species and their varying requirements preclude presentation of more detailed recommendations.

SPECIES SELECTION

Locally adapted species planted on appropriate sites can result in a low maintenance, attractive landscape. For proper growth, these plants generally must be allowed to complete their life cycles, thereby restricting the scheduling of certain maintenance activities. In some cases, growth of other less desirable species may also be favored. As a result, some people may not be as accepting of the more natural, unkempt look of these plantings as opposed to the uniform look of traditional sod.

Native wildflowers and grasses add beauty to the landscape throughout the year. These plants may produce showy flowers or fruit structures, or they may be attractive for the textures of their foliage or the coloration of their leaves or stems. The variety of native plants that have potential for use in various types of plantings is quite large and includes annuals, biennials, and perennials. Perennial plants may require several years to develop a stand and reach their full potential.

Plantings can be planned to provide a show during only a certain period of the year or to provide a progression of flowers and colors throughout the growing season. Wildflowers will have greater visual impact when large masses of one species are flowering together, rather than a few individuals scattered among many other plants. However, mixes consisting of several species will more likely ensure the presence of some native species throughout the site and protect against planting failure. Another possible planting scheme is to divide the site into several smaller sites for planting masses of one or two species with similar flowering intervals. The combination of these patches can extend the flowering period over the entire site.

When using mixes of native plants, it is inevitable that some plant succession will occur on the site. Certain species will be better adapted to the site or to conditions of a portion of the site and will replace other species

that are less suited. Each plant species has specific tolerances to environmental conditions, such as soil types, moisture, light levels, etc. Because most of these species have not been studied thoroughly, many of their tolerances have not been determined. The best approach to siting native species is to observe natural stands of the species in question and attempt to recreate these conditions on the planting site. This may help delay the onset of succession.

Another factor to consider when developing a mix of native wildflowers and grasses is the characteristics of the plants themselves. Taller species will tend to shade and crowd out smaller species in the mix. Flowering and fruiting times will affect maintenance activities. Although a mix of species that provides color or interest from early spring to late fall would be desirable, in practice it is often a problem to provide needed mowing and other maintenance tasks without adversely affecting one or more species in the mix.

PLANTING

Seed can be collected from native stands or ordered from commercial suppliers. Seed collected from the vicinity of the planting site will generally have better survival than seed purchased from distant suppliers. However, personally collecting seed is time consuming and may not be practical for many plantings. If rare or endangered species are to be included in the planting, seed must be obtained commercially because collection of seed or plants from the wild is illegal. When purchasing seed from commercial sources, use vendors from within the same geographic region; when assessing suitability, latitudinal differences are more critical than longitudinal ones. Pre-mixed wildflower mixes are available from some commercial suppliers. Some of these mixes contain non-native species that may not be adapted to your area or, more seriously, invasive species that will dominate the site. Check with the supplier to determine what species are contained in the mix and if it would be suitable for your planting site.

Sites can be seeded almost year round in the Midsouth, but most native grasses and wildflowers are best sown in late summer to fall. Winter is generally too cold for successful germination and seedling growth. Spring and early summer plantings may not succeed if moisture is lacking. Moisture is probably the most critical factor affecting germination and early seedling growth. Many native species have dormancy mechanisms that help ensure eventual establishment. When conditions are not appropriate for germination immediately after sowing, dormancy allows seed to lay in the soil for months or even years without deterioration until germination can take place.

Soil preparation before planting is different than that required for most agronomic or garden species. Many native species, especially those with small-sized seed, do not prefer a loosely tilled seed bed. Loose soil causes the seed to become buried too deeply for successful germination. We have had better results when sowing in a chemically killed sod, or in an area where the plant material has been burned. There should not be a thick layer of debris on the soil surface or the seed will not emerge. We often mix the seed with sand or another carrier to allow more uniform application, and broadcast it with a fertilizer spreader. Cultipacking before planting creates a firm seedbed and again after planting lightly incorporates the seed and ensures good soil contact. Larger-sized seed can be sown in a more conventional manner. We have successfully drilled this type of seed into a firm seedbed.

Soil tests should be taken prior to planting to determine the need for fertilizer, lime, or other amendments. Most native species are well adapted to existing conditions and do not require high fertility or soil

amendments for adequate growth, although they may be necessary on extremely infertile or disturbed sites. When existing plant residue on the soil surface is limited, mulching after planting can prevent erosion, increase soil moisture, prevent soil crusting, and aid establishment; however, care should be taken that the mulch layer is not thick enough to prevent emergence.

MAINTENANCE

We have found that one of the best ways to maintain fields of native species is through the judicious use of mowing. Mowing will prevent encroachment of woody species, and can also help control growth of some weedy herbaceous plants. Perennial wildflower species that overwinter as a rosette of basal leaves close to the ground and later flowering native grasses can be mowed in the early spring, before elongation. During the growing season, most species can be mowed after a large percentage of the plants have set seed; this is especially critical for annual species, because mowing before seed set will limit their occurrence the next season. Mowing can continue throughout the growing season at intervals frequent enough to reduce unwanted plant growth. The survival of many low-growing species will be reduced without frequent mowing during the growing season to decrease competition from other plant species. An additional benefit derived from mowing after flowering is that some wildflowers will produce a second flush of flowers. Usually flowering will be limited and will not be as showy as during the normal flowering period, but it can add interest later in the season.

Other forms of weed control are limited. The response to herbicides is not known for most of these species. We have used some general purpose herbicides such as Poast (sethoxydim) to control grasses in stands of broadleaf species and 2,4-D to control broadleaves in native grass species with little plant damage, however, in most cases the results have been less than satisfactory due to the limited spectrum of weeds controlled. Planting mixes that contain both native grasses and wildflowers would prevent the use of these herbicides. Roundup (glyphosate) can be used as a spot treatment for some weeds, however, it should never be applied to the foliage of desirable species. Hand control, especially of perennial weedy species, may be required. Burning may also be a weed control option in certain situations.

Even with proper maintenance, replanting at some future date may be unavoidable. Plant succession, competition, possible insect or disease damage, and other stresses will likely lead to an eventual decline of the native plant stand. This should not be a reason to avoid these types of plantings. The savings in mowing costs compared to a conventional turf will generally pay for the cost of replanting. In addition the beauty that native plantings provide is priceless.

The following tables list attributes of several common wildflowers and grasses. It is not intended to be a comprehensive list, but was designed to include some of the most commonly available and widely used species. Selected introduced wildflowers are included due to their common occurrence in wildflower mixes. Nomenclature follows PLANTS, USDA, NRCS Plant Data Collection Center, Baton Rouge, LA. Planting rates given are general guidelines and may need to be adjusted depending on the number of species in the planting mix and site conditions.

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Table 1. Native Wildflowers.

Species, Life Cycle	Site Char	Ht (ft)	Flower Color	Fl Seas	Pl Rate	Seed/Lb
<i>Asclepias tuberosa</i> (P) Butterfly milkweed	Dry-Moist	1-3	Orange	S	10	87,000
<i>Aster novae-angliae</i> (P) New England aster	Dry	4-5	Purple Yellow	F	2	1.3 million
<i>Bidens aristosa</i> (A) Bur marigold	Moist	5-6	Yellow	F	6-8	125,000
<i>Chamaecrista fasciculata</i> (A) Partridge pea	Dry	2-3	Yellow	S-F	10	50,000
<i>Coreopsis lanceolata</i> (P) Lance-leaf coreopsis	Dry	2-3	Yellow	Sp-S	5-8	220,000
<i>Coreopsis tinctoria</i> (A) Plains coreopsis	Moist	2-4	Yellow Maroon	S	1-2	1.4 million
<i>Dracopis amplexicaulis</i> (P) Clasping coneflower	Dry-Moist	2-4	Yellow Black	S	2-3	796,000
<i>Echinaceae purpurea</i> (P) Purple coneflower	Dry-Moist	2-3	Purple Brown	S	6-8	117,000
<i>Eupatorium coelestinum</i> (P) Mistflower	Moist	3	Blue	S-F	1	2-3 million
<i>Gaillardia pulchella</i> (A,P) Indian blanket	Dry	2	Yellow Red	Sp-F	5-7	223,300
<i>Helianthus angustifolius</i> (P) Swamp sunflower	Dry-Moist	4-6	Yellow Purple	F	3-4	500,000
<i>Liatris spicata</i> (P) Spiked gayfeather	Dry	2-3	Rose- purple	S-F	6-8	135,000
<i>Lobelia cardinalis</i> (P) Cardinal flower	Moist	2-5	Scarlet	S-F	0.5	13 million
<i>Rudbeckia hirta</i> (P) Black-eyed susans	Dry	1-4	Yellow Black	S-F	1-2	1.7 million
<i>Salvia lyrata</i> Lyre-leaf sage	Dry-Moist	1-2	Blue	Sp	5-6	330,000

Abbreviations used for life cycle are A = annual, B = biennial, and P = perennial. Abbreviations used for flower season (Fl Seas) are Sp = spring, S = summer, and F = fall. Planting rate (Pl Rate) is in pounds per acre.

Table 2. Introduced Wildflowers.

Site Ht Flower Fl Pl Seed/

<u>Species, Life Cycle</u>	<u>Char</u>	<u>Ht</u> <u>(ft)</u>	<u>Color</u>	<u>Seas</u>	<u>Rate</u>	<u>Lb</u>
<i>Centaurea cyanus</i> (A) Cornflower	Dry	1-2	Blue/ Pink/ White	Sp	8-10	89,000
<i>Cosmos sulphureus</i> (A) Yellow cosmos	Dry- Moist	3-4	Yellow/ Orange	S-F	10-12	61,000
<i>Daucus carota</i> (A,B) Queen Anne's lace	Dry- Moist	2-3	White	S	4-6	450,000
<i>Eschscholzia californica</i> (A,P) California poppy	Dry- Moist	1-2	Yellow/ Orange	Sp-S	6-8	250,000
<i>Hesperis matronalis</i> (B) Dame's rocket	Moist	2-4	Violet/ White	Sp-S	6-8	246,000
<i>Leucanthemum vulgare</i> (P) Ox-eye daisy	Moist	2-3	White Yellow	S	2-3	859,000
<i>Linum grandiflorum rubrum</i> (A) Scarlet flax	Dry- Moist	1-3	Scarlet	S	8-10	132,000
<i>Mirabilis jalapa</i> (P) Four-O'Clock	Dry- Moist	1-3	Yellow/ Red/Pink/ White	S-F	15-20	6,300
<i>Monarda citriodora</i> (A) Lemon mint	Moist	1-2	Pink- white	Sp-S	1-2	1 million
<i>Phlox drummondii</i> (A) Annual phlox	Dry- Moist	1	White/ Pink/Red/ Purple	S-F	6-8	242,000
<i>Ratibida columnifera</i> (B,P) Mexican hat	Dry	1-3	Red Yellow	S	2-3	832,000
<i>Trifolium incarnatum</i> (A) Crimson clover	Dry- Moist	1-3	Crimson	Sp	15-20	150,000
<i>Verbena tenuisecta</i> (P) Moss verbena	Dry	1	Blue- violet	Sp-S	4-6	474,000

Abbreviations used for life cycle are A = annual, B = biennial, and P = perennial. Abbreviations used for flower season (Fl Seas) are Sp = spring, S = summer, and F = fall. Planting rate (Pl Rate) is in pounds per acre.

Table 3. Perennial Native Grass and Grass-like Plants.

<u>Species, Life Cycle</u>	<u>Site</u> <u>Char</u>	<u>Ht</u> <u>(ft)</u>	<u>Fl</u> <u>Seas</u>	<u>Pl</u> <u>Rate</u>	<u>Seed/</u> <u>Lb</u>
<i>Andropogon gerardii</i> Big bluestem	Dry- Moist	3-6	S-F	10-15	150,000

<i>Axonypus fissifolius</i> Carpetgrass	Dry- Moist	1	S-F	5-12	1.2 million
<i>Chasmanthium latifolium</i> Broadleaf uniola	Moist	1-2	S-F	60-150	15,000
<i>Elymus virginicus</i> Virginia wildrye	Moist	3-4	S-F	10-15	75,000
<i>Juncus effusus</i> Soft rush	Moist- Wet	2-5	S-F	Vegetative	
<i>Panicum virgatum</i> Switchgrass	Dry- Moist	3-5	S-F	5-8	389,000
<i>Saccharum giganteum</i> Sugarcane plumegrass	Moist	3-10	F	Vegetative	
<i>Schizachyrium scoparium</i> Little bluestem	Dry	2-4	S-F	10-15	300,000
<i>Scirpus cyperinus</i> Wool-grass	Moist- Wet	3-6	S-F	Vegetative	
<i>Sorghastrum nutans</i> Indiangrass	Dry	5-7	F	10-15	187,000
<i>Tridens flavus</i> Purpletop	Dry	2-4	S-F	4-8	501,000
<i>Tripsacum dactyloides</i> Eastern gamagrass	Moist	3-9	Sp-F	10-15	3,300
<i>Typha latifolia</i> Common cat-tail	Moist- Wet	3-7	S-F	Vegetative	

Abbreviations used for flower season (Fl Seas) are Sp = spring, S = summer, and F = fall. Planting rate (Pl Rate) is in pounds per acre. A designation of Vegetative means that planting of vegetative propagules is recommended for that species.

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