

FIVE STEPS TO SUCCESSFUL PRAIRIE MEADOW ESTABLISHMENT

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Prairie meadows are becoming an increasingly popular alternative to traditional high maintenance landscapes. Our native prairie flowers and grasses are stunning both as individuals, and as a complete prairie plant community. Perhaps best of all, the prairie helps us to re-connect with the earth, and creates a haven for the native plants and animals with which we share this beautiful planet.

Prairie meadows require no fertilizers or fungicides, and few if any herbicides. The prairie grasses and flowers create high quality habitat for birds, butterflies, and other beneficial wildlife. The deep-rooted prairie plants encourage infiltration of rainwater into the soil, helping to reduce stormwater runoff and flooding. Prairies can also serve as excellent buffer strips between maintained turf and wetland areas, such as ponds, waterways, and marshes. The cover provided by the prairie grasses also complements adjacent wetlands, improving the environmental quality of existing water features.

The initial costs of a prairie seeding are often a little higher compared to turf seedings, but significant long term savings result due to greatly reduced maintenance requirements. Any additional initial costs are usually recovered by the second year. Maintenance savings continue to accrue in following years, yielding very low “life cycle” costs for prairie meadows. Because native prairie flowers and grasses are almost exclusively perennials, they return to bloom year after year. A properly installed and maintained prairie meadow is a self-sustaining plant community that will provide landscape beauty for decades to come.

Installation of prairie meadows is not quite as simple as tilling up the soil and sprinkling some seed in the ground. There are five critical steps that must be followed to ensure success with this new landscaping style. By following each step carefully and completely, outstanding results can be achieved, even by those who have little or no experience in establishing native prairies.

The Five Steps to Successful Prairie Meadow Establishment

- | | |
|--------------------------------------|---|
| 1) Site Selection | Sunny, well-ventilated, with low weed densities |
| 2) Plant Selection | Match plants to the soil and growing conditions |
| 3) Site Preparation | Kill <u>ALL</u> the weeds before planting! |
| 4) Planting Time & Method | Spring vs. fall, no-till vs. broadcast, nurse crops |
| 5) Post-Planting Management | Mowing and burning |

1) Site Selection

The area to be planted to prairie must be sunny, open, and well-ventilated. Prairie plants require at least a half a day of full sun. Full sun is best, especially for wet soils or heavy clay soils. Good air movement is also critical, as prairie plants are adapted to open sites that are not subject to stagnant air. Poor air circulation in closed in areas can lead to fungal diseases, which are seldom a problem on sunny, open sites.

Areas with a history of heavy weed growth should be avoided, if possible. This is especially true if a site has well-established perennial noxious weeds. A full year or longer will be required to properly prepare such a site for planting. Good candidates of seeding to prairie meadows include areas presently in turf, cornfields, soybean fields, and alfalfa fields. Beware of residual herbicides that may have been applied to agricultural fields. Always check the herbicide history of the past two to three years, and test the soil for residual herbicide activity if in doubt. Areas of open soil that result from new construction can also work well, provided that soil conditions are not inhospitable (raw subsoil) and that all weeds in the soil have been eliminated prior to planting.

Beware of planting meadows in locations with adjacent weedy vegetation that cannot be eliminated or controlled. Although an established prairie meadow is resistant to invasion by most weeds, three to four years of growth is required for full development. During these first few years, weed seeds can blow into the meadow and become established. Also, rhizomatous weeds such as quackgrass, Canada goldenrod, and Canada thistle can creep into the meadow from immediately adjacent areas. If a weedy area is located nearby the potential meadow site, it should be mowed once or twice a year before the weeds produce seed, or it can be replaced with non-invasive plants.

2) Plant Selection

Every plant is adapted to a certain set of growing conditions. Some will grow only on well-drained sandy or gravelly soils, while others prefer heavy clay. Some require moist soils, while others demand dry growing conditions. A few species can grow in almost any soil, be it dry sand, rich loam, or damp clay.

A prairie meadow is very different from a garden; in a meadow the plants are essentially on their own. A prairie is a low maintenance landscape that requires minimal (but specific) care. The plants of the meadow will have to fight it out with the weeds in the first few years as they become established. Therefore it is essential to select plants that are adapted to the specific site conditions.

To save people time, we have designed prairie seed mixes to match a variety of soil conditions. These mixes are carefully balanced between showy flowers and ornamental grasses. Some people prefer to select specific plants for a given mix. However, it is very important to include a wide variety of different flowers and grasses to ensure year-round interest in the prairie meadow. If a custom-designed seed mix is desired, please feel free to call us. We specialize in designing prairie mixes to match specific site conditions, and in providing solutions for difficult problem sites.

3) Site Preparation

This is a critical step that if overlooked, can lead to disaster in short order. This is especially true of areas with a history of weedy growth. All the weeds or existing vegetation must be killed prior to seeding. It takes only a few rhizomes of quackgrass, bromegrass, Canada thistle, or Canada goldenrod to quickly re-colonize the planted area. The mantra for soil preparation when preparing a site for a prairie planting is simple:

“TAKE NO PRISONERS!”

There are many different methods of preparing a site for seeding to a prairie meadow:

- 1) Smothering with black or clear plastic for a full growing season
- 2) Smothering with layers of newspapers covered with leaves or grass clippings for a full growing season
- 3) Planting a summer buckwheat smother crop, followed by fall planting of winter wheat
- 4) Repeated deep soil tillage every three weeks for a full growing season
- 5) Sod removal on lawns with no weeds, using a sod-cutter
- 6) Herbicide treatment using Roundup or similar glyphosate herbicide

Pernicious perennial weeds must be killed, requiring year-long smothering, repeated sprayings with herbicides, or repeated tillage with equipment that can uproot and kill perennial weeds. Then weed seeds that are harbored in the soil must also be allowed to germinate, so that they can be killed, either by tillage or by spraying. If a weedy “old-field” is selected for planting to prairie flowers and grasses, one full year of site preparation is a minimum. Sometimes one and a half to two years of site preparation may be required to get weeds under control before planting.

A) Old fields with heavy weed growth can be prepared using “Roundup” as follows:

- 1) Mow field in late July and allow vegetation to re-grow
- 2) Spray with Roundup at 3% solution in early September when re-growth is one foot tall. If noxious broadleaf weeds such as Canada thistle, Canada goldenrod, or similar are present, mix an appropriate broadleaf herbicide with the Roundup tank mix.
- 3) Allow area to sit undisturbed over winter. Do not till.
- 4) When weeds reach one foot tall in following spring, spray with Roundup, and broadleaf herbicide if necessary.
- 5) If site is uneven, re-grade to prepare final seedbed after spraying. Burn or mow off dead vegetation prior to grading. This will be the final grading before planting. We will then let the weed seeds germinate, and kill them for the rest of the summer.
- 6) Allow weeds to re-grow. Spray when 6 to 12 inches tall. This will likely be around mid-July.
- 7) Allow weeds to re-grow one more time, and spray with Roundup ONLY in late August or early September. The site is now ready to seed.
- 8) Planting can occur any time after Sept 1st. No-till seeding is best, as it minimizes soil disturbance and brings up fewer weeds than tilling and broadcast seeding. This is a dormant seeding, so a nurse crop should be used to hold the soil. Annual rye makes an excellent nurse crop. It should be seeded at a rate of 5 lbs/acre in spring or 15 lbs/acre in fall, at the same time as the prairie seed. Do not use winter rye, as it produces toxins in the soil that inhibit germination of other plants. Oats can also be used as a nurse crop, seeded at 64 lbs/acre in spring or 128 lbs/acre in fall.

Agricultural fields (corn, soybeans, and small grains) with low weed densities can usually be seeded after only one or two sprayings with Roundup. If perennial weeds are present on such sites, a full year of site preparation prior to seeding is recommended.

Areas established to turf are easily sprayed out using Roundup. Follow the instructions below for best results.

B) Site Preparation for Turf using Roundup:

- 1) Spray with Roundup in September. If broadleaf weeds are present, mix broadleaf herbicide into Roundup tank mix.
- 2) For fall seedings, the dead thatch can be burned off, or thoroughly de-thatched to remove dead grass material. Seed can be distributed directly onto the resulting mineral soil, and winter frost action will position the seed in the lower soil for spring germination. A no-till turf over-seeder can also be used, as described in (5) below.
- 3) For spring seedings, till dead turf thoroughly after it turns brown after the fall spraying. This will encourage decomposition of thatch over winter in preparation for spring seeding.
- 4) Allow weeds to germinate in spring. Spray with Roundup ONLY in late May to kill germinated weed seeds.
- 5) When weeds are dead, seed ASAP with a minimum of soil disturbance. A turf over-seeder can be used for applying the seed. However, calibration of these machines can be difficult when using prairie seeds. To overcome this problem, mix the seed with pelletized lime. This will dilute the seed to ensure more even application, and will also improve the flow of the seed through the machine.

When preparing dead turf for a fall seeding, beware of poor “seed to soil contact” due to thatch buildup in the turf. The thatch can prevent the seed from contact with mineral soil, and must be removed prior to seeding. Thatch can also wick moisture out from the seedbed and cause seedling mortality. Burning the thatch off prior to planting is the best method, as it typically will burn away the thatch and sod below. De-thatching is a good second choice. Irrigating the planting in the spring and summer of the first year during germination can greatly improve seedling development and survival, and is strongly recommended.

4) Planting Time and Method

Prairie seeds can be successfully planted during the following times:

- Spring thaw through June 30
- September 1 through soil freeze-up (“Dormant Seeding”)

Planting in July and August is generally not recommended. Drought is common during this time, and late-planted seeds often do not have sufficient time to develop strong root systems before the onset of winter. If irrigation is available, planting can be extended until July 15.

Spring and early summer plantings tend to favor the “warm season” prairie grasses. Many prairie flowers will germinate with spring plantings, while others will remain dormant in the soil and come up the following spring. If possible, irrigate the planting in the first two months after planting to encourage high seed germination and survival.

Fall plantings are referred to as “Dormant Seedings,” as the seeds will not come up in fall when planted, but will overwinter in the soil and germinate the following spring. Dormant seedings typically result in higher germination of prairie flowers, and lower germination of most prairie grasses. The inclusion of a fast growing “nurse crop” that germinates in fall, such as annual rye, is generally recommended with fall plantings, so as to help protect the soil from erosion over winter. Annual rye typically kills out over winter in USDA Hardiness Zones 1-5, and usually does not present a competitive problem in the following spring. In the event that the annual rye does survive the winter, simply keep it mowed to a height of 4-6 inches during the first year as part of the standard weed control program in the initial year of establishment.

Planting prairie seeds can be accomplished by a variety of methods:

- 1) No-till seeder for multi-acre plantings. Best model: “Truax” Native Seed Drill
- 2) Broadcast seeder (such as “Brillion” double box agricultural model)
- 3) Hand broadcast for small areas of one acre or less

No-till plantings minimize soil disturbance and typically have less weeds. Brillion seeders require soil tillage prior to planting, but provide excellent seed to soil contact. Put fluffy prairie grass seeds in the larger forward seedbox. Non-fluffy, small flower seeds are placed in the rear “legume” box. Annual rye nurse crop can be pre-mixed and loaded with the grass seed.

Erosion-prone sites should be planted with a nurse crop and covered with weed-free straw mulch (winter wheat is best) to prevent seed and soil loss. Steep slopes and areas subject to water flow should be protected with erosion blankets, selected to match the expected water volumes and velocities. Fall planting on erodible sites should be completed by Sept 15 in order to encourage sufficient growth of nurse crops to stabilize the soil.

Hydro-seeding is not recommended. Native wildflowers and prairie grasses require firm contact with the soil for good germination. Attempts to establish prairie meadows using hydro-seeding have typically resulted in poor results.

Seed Quality: A Critical Factor

There are no seed quality standards enforced by state or federal agencies for prairie flower wildflower seeds at this time. There is tremendous variation in seed quality among seed suppliers. Many prairie seeds are sold mixed with leaves, stems, fluff, and other non-seed plant parts. Often the actual percentage of germinable seed can be 50% or less.

The only guarantee you have is to know your seed suppliers and the quality of the products they offer. If you receive seed that contains foreign material and non-seed plant parts (including the pappus, or seed “flyers”), there is a high probability that the seed is of

low purity and quality. The success of your planting is a direct function of the quality of the seed you plant. Do not accept cheap, low quality seed if you want your prairie planting to be successful!

5) Post-Planting Management

Prairies are low maintenance, but not “No Maintenance.” A few simple maintenance procedures are all that is usually required for success. In the first two years, annual and biennial weeds will grow much faster than the slow-growing perennial native plants. By the third year, the wildflowers and grasses should begin to win out over the weeds. Many flowers and grasses will mature in the third growing season.

First Year

In the first year the slow-growing prairie seedlings will grow only a few inches tall. Keep weeds mowed back to 4 to 6 inches tall. When weeds grow to 12 inches, mow back to 4-6 inches. Do not wait until weeds are taller than one foot tall, as the mowed material will smother the small prairie seedlings. Never mow when soils or plants are wet. Use a flail type mower if possible, as it shreds the vegetation and prevents clumping, as often occurs with rotary mowers. On small plantings, string trimmers are excellent for keeping weeds mowed back. Expect to mow three times in the first year.

Beware of pulling weeds in the first year. The small prairie seedlings are easily disturbed, and are often pulled up along with the weeds. There goes your prairie! If you can tell the prairie seedlings from the weed seedlings, you can pull weeds when they are young. However, be careful not to disturb the young prairie plants during the critical first growing season. Annual weeds seldom present a problem to the long-term health of the prairie when kept under control using mowing in the first year. However, it can be worthwhile to pull perennial weeds as they germinate, provided you can tell them apart from the native plant seedlings. On larger areas, this is not an efficient management technique!

Second Year

Annuals will continue to be abundant, and biennial weeds will likely appear as well. These may include such common biennials as Sweet Clover, Burdock, Wild Parsnip, and Queen Anne’s lace. The young prairie plants will grow taller in the second year than the first year, so the weeds can be mowed at a height of about one foot in the second growing season. Biennial weeds should be mowed when in full bloom, but before setting seed, usually in mid to late June. This will “break the cycle” of biennial weeds, by preventing seed formation. Because biennials must produce seed to continue the next generation, preventing them from seeding helps prevent re-infestation of the area. Two mowings may be required at a height of 12 inches in the second year when biennials are in full flower, but not yet setting seed.

Sometimes it is not uncommon for more biennial weeds to appear in the third and fourth year from dormant seeds in the soil. These plants will have to be pulled or cut back before setting seed, on a case by case basis.

If problem perennial weeds appear, they must be controlled immediately, before they have an opportunity to become established. Young perennial weeds can often be carefully pulled in the second growing season, now that the native plants are better established. Be careful not to disturb any adjacent prairie plants. Rhizomatous weeds such as Canada thistle and Canada goldenrod can be hand-treated with herbicide using a cotton glove placed on the outside of a protective rubber glove. Soak the cotton glove in herbicide (such as "Roundup") and apply to the leaves and stems of the weed without touching adjacent desirable plants. This is best done on a calm, cool day, so that the herbicide does not volatilize and drift onto nearby flowers.

Never spray weeds in a prairie. The drift from the spray will kill large patches of desirable plants. Once the prairie plants are dead, weeds can move into these new open areas. This sets everything right back to the beginning.

The secret to success with prairie meadows is to establish the native plants across the entire area, so that they colonize the soil completely. Once the prairie sod is established, usually by the fourth or fifth year, weeds have no openings into which they can invade. Let the plants do the work for you!

Third Year

In the beginning of the third season, the young prairie meadow should be burned off in mid-spring. If burning is not possible, due to local restrictions or lack of dead grass to carry a fire, the planting can be mowed very closely to the ground instead. The mowed material should be removed from the site to expose the soil directly to the warming rays of the sun.

Exposing the soil surface by burning, or mowing and raking, helps encourage rapid soil warming in the spring. This favors the native "warm season" prairie plants over "cool season" weeds such as quackgrass. Rapid soil warming encourages the prairie plants over the weeds. The best time to burn or mow is when the buds of the sugar maple (*Acer saccharum*) tree are just breaking open in spring. Most prairie plants are still dormant or just beginning growth, and are unharmed by burning or mowing. Cool season weeds will be actively growing at this time, and will be significantly damaged. The advantage goes to the prairie plants.

Conclusion

Establishing a native prairie meadow is not a simple process. However, a prairie lives on year after year, and serves as a living legacy of the person who plants it. The intrinsic natural beauty, ecological value, and significant maintenance savings make prairie meadows a very attractive landscape option. By carefully following the five steps outlined in this article, anybody can attain excellent results.

Successful Roadside Prairie Establishment

The Dos and Don'ts of Seeding Prairies on Highways and Byways

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A. Site Selection

- 1) Select large, open, sunny, and well-ventilated areas with good soil conditions and free of weed infestations. Choose elevated sites with good driver visibility for maximum effect.
- 2) Select sites with wide shoulders for parking. People will invariably pull over to look at or walk in the flowers, even on limited access freeways. Avoid sites with narrow shoulders and poor visibility for oncoming drivers.
- 3) Avoid sites with a history of perennial weed growth. Weed control on such sites requires one to two full years. Dormant weed seeds in the soil can cause future weed problems.
- 4) Avoid sites with compacted soil, especially heavy clay soil with little or no topsoil. Seed germination and seedling survival is typically low in these problem soils.
- 5) Avoid sites with extreme soil acidity or alkalinity. Most prairie flowers and grasses grow well in soils with a pH between 5.5 and 7.5.
- 6) Avoid steep slopes and areas with poor access. Prairies require annual mowing or biennial burning for maintenance. Steep areas present equipment hazards and can complicate the controlled burn process. Steep sites can also be subject to erosion during site preparation and in the first two growing seasons while the prairie is becoming established.
- 7) Avoid long narrow sites (less than 15 to 20 feet wide), since weeds tend to invade prairies from the edges. Select large sites with maximum internal area per outer perimeter to minimize weed incursions. Large, level or gently sloping areas at exit ramps and interchanges are good choices for prairies.
- 8) Avoid planting in medians and along roadsides that are subject to vehicle drive-off damage and high levels of road salt runoff and aerosol road spray.
- 9) Wet sites are often difficult to prepare, plant, and maintain. Moist soils often support vigorous weed growth during the critical first three years of prairie establishment, and weeds cannot be easily mowed when soils are wet. Annual spring mowing of mature prairies is also hampered on wet soils. Well-drained upland sites are generally preferable.

B. Plant Selection

- 1) Choose tough plants that have a wide range of adaptability to different growing conditions. Rare plants tend to grow only in specific conditions, and are often expensive and unreliable.
- 2) Always select plants to match the site's soil texture (clay, loam, sand), drainage conditions, and soil pH. Avoid "shotgun" seed mixes that contain plants for dry, medium and moist soils, as only a percentage of the species in these mixes will thrive on any given soil type.
- 3) Plant a high percentage of showy native perennial flowers and grasses. Annuals provide only one or two years of color, and should compose a small percentage of the mix, if any at all. Grasses are important because their fibrous root systems help to squeeze out weeds.
- 4) For a good flower show, avoid tall sod-forming prairie grasses such as Big Bluestem and Switchgrass, as these are aggressive and tend to squeeze out the flowers over the long term. Indiangrass, Little Bluestem, Prairie Dropseed, Canada Wild Rye, and Side Oats Grama are clump forming grasses that are adapted to most well-drained soils and allow for good development of the prairie flowers. For lowest maintenance, however, tall grasses are best.
- 5) Avoid planting species that are known to attract deer and other large fauna that could present a traffic hazard for motorists. Some deer favorites include legumes, asters, and spiderworts.

C. Site Preparation

- 1) Make absolutely certain that all perennial weeds are completely eliminated prior to seeding. When in doubt, wait to see if any weeds re-appear, and kill them completely prior to planting. Do Not Rush! The leading cause of failure in prairie seedings is insufficient weed control during the site preparation process. Take your time and do it right.
- 2) Minimize or avoid soil tillage during site preparation. Tilling the soil brings up new weed seeds, and is self-defeating. Tillage also increases the likelihood of soil erosion.
- 3) The most efficient and cost effective method of site preparation on sites with established vegetation is the repeated application of a low-persistence glyphosate herbicide such as Roundup. Apply the herbicide once every two months during the growing season. Once all the vegetation is dead, the prairie seed can be planted into the dead sod or open soil.

D. Seeding Procedures

- 1) Seeding can be accomplished using a no-till seed drill such as a “Truax” drill, or with broadcast seeders such as a “Brillion” seeder. On small areas, seed can be hand broadcasted after being mixed into a large volume of inert carrier (such as slightly damp sawdust from a sawmill). Use a roller to firm the seed into the soil after hand broadcasting.
- 2) Hydro-seeding often results in poor establishment. Most prairie seeds require firm seed to soil contact to germinate successfully. Hydro-seeding suspends the seeds in the mulch above the soil. However, hydro-seeding in fall can be effective, as the seeds will have an opportunity to enter the soil during the freeze-thaw cycle in late winter and early spring.
- 3) Fall seedings typically favor germination of the prairie flowers, many of which require a period of cold, damp conditions to break seed dormancy. Spring seedings typically favor the warm season prairie grasses, and many prairie flowers also germinate well with spring seedings. When planting warm season grasses only, fall seeding is not recommended.
- 4) Erosion-prone sites should always be protected with chopped, clean, weed-free straw mulch. Never use hay, as it almost always is loaded with weed seeds. On windy sites, the straw should be covered with a mesh netting with openings no smaller than ¾ inch square. Steep slopes and areas subject to water flow should be covered with the appropriate grade of erosion blanket immediately after seeding to help hold the seed and soil in place.

E. Post Planting Maintenance

- 1) Prairies require regular mowing in the first two years to control annual and biennial weeds. Mow at a height of six inches during the first growing season when weeds reach 12 inches tall. Expect to mow three times the first year. Annual weeds typically disappear by the third growing season.
- 2) In the second year, mow at twelve inches in early June when biennial weeds are in full bloom, to prevent weed seed formation. DO NOT allow invasive biennial weeds to go to seed and re-infest an area. Invasive biennials include Yellow and White Sweet Clover (*Melilotus spp.*), Queen Anne’s Lace (*Daucus carota*), Wild Parsnip (*Pastinaca sativa*), Burdock (*Arctium minus*), Teasel (*Dipsacus sylvestris*), and Curly Dock (*Rumex crispus*).
- 3) In the third growing season and beyond, prairies require annual spring mowing or biennial spring burning. Timing of mowing or burning is critical. Mow or burn in mid-spring after green-up, usually around the time you would mow a lawn for the second time. Mowing or burning at this time helps to control cool season weeds and grasses, as well as woody invaders that have broken bud and begun spring growth. Mowing or burning too early in spring reduces or nullifies the effectiveness of these management techniques.
- 4) When using spring mowing management, mow as close to the ground level as possible for maximum advantage. A flail type mower allows close mowing and is far superior to rotary mowers that can only get within two to three inches of the soil.

- 5) Controlled burning is not commonly used for managing roadside prairies in high traffic situations due to safety concerns. Although more effective than mowing for controlling unwanted weeds and woody plants, spring burning is dependent upon favorable weather conditions, crew availability, and wind directions that do not interfere with driver visibility.
- 6) Mow only when soils are not moist, and subject to rutting or compaction. It is better to wait a few days for the soil to dry out than to damage the prairie by driving on it when wet. The open soil created by rutting is subject to weed invasion, and the ruts make future mowings more difficult.

F. Showy and Reliable Prairie Plants for Well Drained Clay, Loam, and Sandy Loam Soils

| <u>Latin Name</u> | <u>Common Name</u> | <u>Color</u> | <u>Height</u> | <u>Bloom Time</u> |
|--------------------------------|------------------------|--------------|---------------|-------------------|
| <i>Aster novae angliae</i> | New England Aster | Blue | 3-6' | Aug - Oct |
| <i>Baptisia lactea</i> | White False Indigo | White | 3-5' | June - July |
| <i>Echinacea pallida</i> | Pale Purple Coneflower | Purple | 3-5' | June - July |
| <i>Echinacea purpurea</i> | Purple Coneflower | Purple | 3-4' | July - Sept |
| <i>Heliopsis helianthoides</i> | Ox Eye Sunflower | Yellow | 3-6' | June - Sept |
| <i>Liatris pycnostachya</i> | Prairie Blazingstar | Pink | 3-5' | July - Aug |
| <i>Monarda fistulosa</i> | Bergamot | Lavender | 2-5' | July - Sept |
| <i>Penstemon digitalis</i> | Smooth Penstemon | White | 2-3' | June - July |
| <i>Ratibida pinnata</i> | Yellow Coneflower | Yellow | 3-6' | July - Sept |
| <i>Rudbeckia hirta</i> | Black Eyed Susan | Yellow | 1-3' | June - Sept |
| <i>Rudbeckia subtomentosa</i> | Sweet Black Eyed Susan | Yellow | 4-6' | Aug - Oct |
| <i>Rudbeckia triloba</i> | Brown Eyed Susan | Yellow | 2-5' | July - Oct |
| <i>Silphium laciniatum</i> | Compassplant | Yellow | 3-10' | June - Sept |
| <i>Solidago rigida</i> | Stiff Goldenrod | Yellow | 3-5' | Aug - Sept |
| <i>Andropogon gerardi</i> | Big Bluestem Grass | Bronze | 5-8' | Aug - Oct |
| <i>Elymus canadensis</i> | Canada Wild Rye Grass | Straw | 4-5' | July - Aug |
| <i>Panicum virgatum</i> | Switchgrass | Gold | 3-6' | Aug - Sept |
| <i>Sorghastrum nutans</i> | Indiangrass | Gold | 5-7' | Aug - Sept |

G. Showy and Reliable Prairie Plants for Dry Sandy and Rocky Soils

| <u>Latin Name</u> | <u>Common Name</u> | <u>Color</u> | <u>Height</u> | <u>Bloom Time</u> |
|--------------------------------|------------------------|--------------|---------------|-------------------|
| <i>Aster laevis</i> | Smooth Aster | Blue | 2-4' | Aug - Oct |
| <i>Asclepias tuberosa</i> | Butterflyweed | Orange | 2-3' | June - Aug |
| <i>Coreopsis lanceolata</i> | Lanceleaf Coreopsis | Yellow | 1-2' | June - July |
| <i>Echinacea pallida</i> | Pale Purple Coneflower | Purple | 3-5' | June - July |
| <i>Lupinus perennis</i> | Lupine | Blue | 1-2' | May - June |
| <i>Penstemon grandiflorus</i> | Beardtongue | Lavender | 2-4' | May - June |
| <i>Ratibida pinnata</i> | Yellow Coneflower | Yellow | 3-6' | July - Sept |
| <i>Rudbeckia hirta</i> | Black Eyed Susan | Yellow | 1-3' | June - Sept |
| <i>Rudbeckia triloba</i> | Brown Eyed Susan | Yellow | 2-5' | July - Oct |
| <i>Silphium laciniatum</i> | Compassplant | Yellow | 3-10' | June - Sept |
| <i>Solidago rigida</i> | Stiff Goldenrod | Yellow | 3-5' | Aug - Sept |
| <i>Bouteloua curtipendula</i> | Side Oats Grama Grass | Straw | 2-3' | Aug - Sept |
| <i>Elymus canadensis</i> | Canada Wild Rye Grass | Straw | 4-5' | July - Aug |
| <i>Schizachyrium scoparium</i> | Little Bluestem Grass | Red | 2-3' | Aug - Sept |
| <i>Sorghastrum nutans</i> | Indiangrass | Gold | 5-7' | Aug - Sept |
| <i>Sporobolus heterolepis</i> | Prairie Dropseed Grass | Gold | 2-4' | Aug - Sept |

COMPARATIVE LIFE CYCLE COSTS OF PRAIRIE VERSUS LAWN OVER A 20 YEAR PERIOD

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| <u>Landscape Type</u> | <u>Ave. Install Cost/Acre</u> | <u>Amortized Annual Cost Per Acre (20 yr)</u> | <u>Annual Maint. Cost per Acre</u> | <u>Total Annual Cost/Acre (20 Yrs.)</u> |
|---|-------------------------------|---|------------------------------------|---|
| Prairie | \$2500 | \$175 | | |
| A) With Annual Mowing Maintenance | | | \$100 | \$275 |
| B) With Annual Burning Maintenance | | | \$200 | \$375 |
| Seeded Lawn @ \$0.75/sq. yd w/o irrigation | \$3630 | \$181 | \$500 | \$681 |
| Sodded Lawn @ \$2.00/sq. yd. w/o irrigation | \$9680 | \$484 | \$500 | \$984 |

The above figures are average costs for planting two to five acres. Actual costs may be higher or lower depending upon factors such as:

- 1) The complexity and diversity of prairie seed mix will influence the cost. Seed cost per acre can vary from \$500 to \$1500 per acre. The cost above is based upon a seed cost of \$1000 per acre, installation cost of \$1000 per acre, and site preparation costs of \$500 per acre.
- 2) The size of area to be planted will influence the per acre cost. The cost per acre will be reduced significantly for larger projects of 10 acres or more.
- 3) Site preparation costs for the prairie will vary depending upon how much pre-planting weed control is required. Site preparation costs can vary from \$50 per acre to \$500 per acre.
- 4) Annual maintenance costs for lawn will vary depending upon the level of care provided. These above figures are based upon a typical lawn care regime of spring fertilization, broadleaf and pre-emergent herbicide treatment, and bi-weekly mowing. Costs such as annual depreciation of equipment, labor and benefits, as well as fuel, herbicides, fertilizers, fungicides, and other lawn care products are included in these figures.
- 5) If irrigation systems are to be included in the lawn maintenance program, the initial cost per acre must be increased to reflect this added expense. Permanent irrigation systems are not required for prairie plantings.
- 6) The maintenance costs for prairie are based upon one annual spring mowing or burning.
- 7) If specific perennial weeds appear in the prairie, selective removal will be required. This will increase annual maintenance costs.