Wisconsin Agronomy Technical Note 5

Prairie Establishment / Restoration Seeding Recommendations

INTRODUCTION

This technical note may be used to guide prairie restoration seedings for the purposes of Wisconsin Natural Resources Conservation Service (NRCS) Practice Standards 327, Conservation Cover; 645, Wildlife Upland Habitat Establishment; and occasionally 342, Critical Area Planting. Refer to these standards for specific practice purposes and requirements.

BACKGROUND

A prairie is a diverse plant community characterized by a large number of grass, legume, shrub, and forb species. In Wisconsin, a typical prairie averages six species per square foot. Exceptionally rich sites can average as many as eight species per square foot. High quality remnants of original prairie harbor 40 to 80 species per acre.

Prairie restoration is the art and science of reconstructing a portion of this diverse plant community. Constructing an exact copy of the tall grass prairie plant community is not very likely. However, the more common components of the prairie can be established and will grow into a prairie with many of the same visual and ecological components of a natural prairie.

SITE ASSESSMENT

Prairies are generally divided into five soil moisture regimes: Wet, Wet-Mesic, Mesic, Dry-Mesic, and Dry. There is often no sharp division between the groups and one group may blend into another. Soil fertility and drainage characteristics contribute greatly to which of these categories a planting site will fall into. As habitats differ between prairie groups, so do the plant species. However, while some plant species are restricted to certain soil moisture regime types, other plant species are present on many if not all of the prairie habitats. Wet organic soils are a challenge when establishing most native plant species due to site conditions as well as competition from cool season grasses and invasive plants.

PRAIRIE SOIL MOISTURE REGIMES SITE CONDITIONS

Wet Prairie

Wet prairies occur on mineral soils with poor drainage. They can also be found on some frequently flooded sites. Wet prairies can be found on soils such as Ashkum, Barronett, Barry, Brookston, Ettrick, Garwin, Ossian, Pella, and Sebewa.

Wet-Mesic Prairie

Wet-Mesic Prairies are transitional between Wet Prairie and Mesic Prairie. Most Wet-Mesic Prairies occur on somewhat poorly drained mineral soils. Wet-Mesic Prairies would occur on soils such as Aftad, Beecher, Curran, Elburn, Elliott, Kane, Lamartine, Locke, Matherton, Muscatine, and Rawley.

Mesic Prairie

Mesic Prairies will be found on most moderately well and well drained mineral soils which have moderate to very high Available Water Capacity. Mesic Prairies may occur on some somewhat poorly drained soils with low or very low Available Water Capacity or perched water tables. Mesic prairies would be expected on soils such as Downs, Dresden, Markham, Parr, Plano, Rosholt, Tama, Varna, and Warsaw.

Dry-Mesic Prairie

Dry-Mesic Prairies are transitional prairies between Dry Prairie and Mesic Prairie. They occur on some somewhat excessively drained and some well drained soils. Examples of Dry-Mesic soils would include Billett, Chetek, Dickinson, and Rassett.

Dry Prairie

Dry Prairies occur mostly on well to excessively drained soils. This would include soils such as Brodale, Impact, Menagha, Plainfield, and Sparta.

SPECIES SELECTION

Evaluate the winter hardiness of species being selected for planting. Native cool season plantings are recommended in the North Plant Zone as identified in Figure 1. See NRCS Wisconsin Agronomy Technical Note 6, Conservation Cover Seeding Recommendations, for more information.

Plant all the desired species at one time, as it is very difficult for species seeded into an existing planting to survive.

Select species based on the site conditions looking closely at soil type and moisture regime.

Seed as many forbs from the appropriate tables in this technical note as the budget will allow.

Select species so that the prairie will be in flower throughout as much of the growing season as is possible.

The order of preference for seed source selection is:

1. Local genotypes.
2. Genotypes from the same latitude.
3. A named variety from the same latitude.
4. Other named varieties.

Use of local genotypes is the first preference because plants that come from on or near the restoration site will be best adapted to the conditions of the site. The Wisconsin Crop Production Association has established certification standards for Native Species produced in Wisconsin. These standards allow seed to be Source-Identified. In other words, the geographic location where the seed source originated is identified. This can be very useful when selecting seed that originated near the restoration site. It is especially important to use local genotypes when working with remnant prairies because introducing species from other areas may contaminate the local native plant gene pool.

In general, as grasses from northern sources are moved southeastward from their point of origin, they mature earlier, are shorter, produce less herbage, and are more susceptible to leaf and stem diseases. When grasses from southern sources are moved northward they generally mature later, are taller, and produce more herbage. Southern strains moved too far north may not be winter-hardy. Movement of plants east and west is impacted most by rainfall. Grasses that have a western point of origin may be susceptible to rust when brought to higher rainfall areas.

Table 1
Recommended Varieties of Warm Season Grass for Conservation Cover

Specie	Variety	Area of Adaptability
Big Bluestem	Bison	North
	Bonilla	Central
	Champ	South
	Pawnee	South
	Rountree	Central and South
Indiangrass	Holt	Central and South
	Rumsey	South
	Tomahawk	North
Switchgrass	Blackwell	South
	Cave-in-Rock	South
	Dacotah	North
	Forestburg	Central
	Nebraska 28	Central
	Pathfinder	South
	Sunburst	Central
	Trailblazer	South
Little Bluestem	Blaze	Statewide
	Aldous	South
	Camper	Central and South

SEED MIXTURES

This Technical Note provides guidance for the establishment of native grasses, forbs, and legumes. Seed mixtures developed from this Technical Note will be composed of a grass component and a forb/legume component. **It is important to reference program rules when determining seed mixes. Some programs have preapproved required mixes to meet program goals.**

PLS

Seeding rates in this Technical Note are shown in pounds or ounces of Pure Live Seed (PLS). Seed should always be purchased on a PLS basis. This allows the buyer to know the quality of the seed purchased and to properly make adjustments to the PLS seeding rates shown below. **Federal programs require all seed purchased to be tested for germination and purity** (or PLS based). It is desirable that seed be tested for germination and purity for all uses. However, in some instances, due to the presence of an existing native prairie near a planting site, it may be desirable to use locally

harvested genotype seed. If this seed is harvested locally it may be difficult to test it for germination or purity in order to determine PLS. The use of locally harvested untested seed for USDA program participants must be approved by the Wisconsin NRCS State Agronomist.

SEED MIXTURE REQUIREMENTS FOR PLANTING A BASIC PRAIRIE

Grasses

The grass component will be composed of a minimum of three warm season grasses. These three grasses will be selected from the appropriate soil moisture regime. The total mixture of grasses will be seeded at a minimum of 4 pounds (64 ounces) Pure Live Seed (PLS) per acre. Each grass in the grass component will be seeded at a minimum of 0.25 pounds (4 ounces) PLS/acre with the exception of June Grass which may be planted at 2 ounces PLS/acre. No more than 1 pound PLS/acre of switchgrass will count toward meeting the 4-pound minimum requirement.

If erosion is a concern for the site, see the Nurse Crop and Temporary Cover section.

Forbs and Legumes

The minimum amount of forb seed required is 40,000 Pure Live Seeds (PLS) per acre (0.92 seeds per square foot). There shall be a minimum of three forb and/or legume species in the seed mixture. Do not plant more than 1 oz/acre of aggressive pioneer plants such as Black-Eyed Susan, Yellow Coneflower, and Bergamot.

Legumes must be inoculated with the appropriate bacteria for the specific species being planted. Inoculant must not be exposed to sunlight or allowed to dry out prior to planting legumes.

SEED MIXTURE REQUIREMENTS FOR PLANTING A RESTORATION PRAIRIE

Seed this mixture at a minimum rate of 20 seeds/square foot. Species selected must be appropriate for the site conditions including soil type and moisture regime. Species with a soil moisture regime range restriction should only be planted within the indicated range (see Prairie Soil Moisture Regime Site Condition tables).

Grasses

The grass component will be composed of a minimum of five warm season grasses. The grasses will be from the appropriate Site Condition List. For Wet sites, sedges may be planted with or in place of grasses. The total mixture of grasses will be seeded at a minimum of 4 Pounds (64 ounces) Pure Live Seed (PLS) per acre. Each grass in the grass component will be seeded at a minimum of 0.25 Pounds (4 ounces) PLS/acre. No more than one pound PLS/acre of switchgrass will count toward meeting the 4 pound minimum requirement. On Dry or Dry Mesic sites short grasses such as June Grass may be planted at 2 oz PLS/acre as long as the total grass content is 4 pounds PLS per acre.

Forbs and Legumes

Seed a minimum of 10 species of forbs and legumes. Forbs/legumes must be seeded at a minimum of 4 seeds per square foot. A single specie may not be credited for more than 1 seed per square foot towards meeting the minimum requirement.

SEEDING REQUIREMENTS FOR UNTESTED LOCAL GENOTYPE SEED

The use of local genotype seed for USDA program seedings must be approved by the NRCS State Agronomist. Approval will only be considered for sites where the use of local genotype seed is necessary to address an ecological value identified in a NRCS-recognized conservation plan.

In order to obtain the highest quality seed possible:

1) The harvesting of seeds will be supervised by someone experienced in the harvest of native seeds.
2) All seed will be cleaned.
3) Seed will be separated and properly stored by specie so that it can be mixed later at the planned rates.
4) Collected seed will be tested for germination and viability unless a variance is granted by the NRCS State Agronomist.
5) Use the following guidance in situations where it is not possible to obtain a germination test for the collected prairie seed and the NRCS State Agronomist has approved a variance.

a) Seed will be planted at a minimum seeding rate of 50 seeds per square foot. Limit seeding rates so that one specie does not comprise more than 20% of the seeds/square foot. However, if a specie is seeded at a seeding rate so that its number of seeds planted per square foot makes up more than 20% of the total planted seeds per square foot, then only the seeds per square foot that fall within the 20% requirement will be counted toward the total required number of seeds per square foot.

   The seeding rate of plant species known to germinate aggressively in new seedings (Switchgrass, Prairie Cone Flower, Black Eyed Susan, Bergamot) shall be limited to 10% or less of the total seed per square foot planted.

b) At least 25 seeds per square foot must be native grasses or sedges.

c) At least five species of grasses and 15 species of forbs and legumes must be seeded.

d) A final list of the species planted and the ounces of each specie actually planted must be provided to the NRCS office for review and approval.

SEEDING DATES

Table 2
Seeding Dates for Native Grasses and Forbs

Planting Zone	Spring	Fall
North	Thaw – 7/15	10/8 – Freeze up
Central	Thaw – 6/30	10/15 – Freeze up
South	Thaw – 6/30	10/20 – Freeze up

Seeding outside of the established dates may be approved by the NRCS State Agronomist or designee. All variance requests shall provide documentation of the current soil moisture conditions and proposed timeframes for seeding to be completed.

Spring seedings can be quite successful. Spring is the traditional time to seed plants. Seedings at this time of year will tend to favor warm season grasses over forbs unless forb seed has already been stratified (stratification requires placement of seeds in moist sand at temperatures between 32^{o} and 41^{o} for one to four months). It is essential to mow for weed control during the first summer, especially on silt loam or heavier soils.

Seeding shall be carried out within the dates specified for the appropriate planting zone. See Figure 1 to determine the appropriate planting zone for the seeding you are planning.

Fall seedings offer an excellent opportunity for diversity. Fall seedings favor forbs and there is less competition with other planting activities. Smaller seeds readily frost seed into the soil and stratification is assured. Fall seedings does expose the seed to predation by wildlife. Be careful to seed late enough that the seed will not germinate in the fall. It is important to mow for weed control during the first summer, especially on silt loam or heavier soils. Seed may need to be ordered during the previous winter or spring and properly stored to assure availability. Proper storage of seed purchased in advance will be critical to success of the seeding. Pay close attention to moisture and temperature of purchased seed. Also keep insects and rodents from damaging seed. Proper seed stratification as well as timely inoculation of seed is critical to the success of a prairie establishment.

For “grass only” seedings, correct soil pH to a minimum of 5.5.

NURSE CROPS AND TEMPORARY COVERS

Nurse crops can be used to reduce the amount of erosion on critical sites. Canada wild rye (*Elymus Canadensis)* for mesic sites or Virginia Wild Rye (*Elymus virginicus)* for wet sites can be seeded at a rate of 1.0 pound PLS/acre, Side-oats grama (*Bouteloua curtipendula)* can be seeded as a cover crop at a rate of 1.0 – 2.0 pounds PLS/acre on dry to dry mesic sites. These nurse crops will grow quickly in cooler weather and should be planted along with the seed mix. Note: the Side oats grama or wild rye species seeded as a cover crop shall not be counted toward the limit of 4 pounds per acre of grass in the seed mixture.

When seedbed preparation is conducted in the year previous to seeding, sudangrass or oats may be seeded in the fall as a temporary cover. Both crops will winter kill and the prairie seeds can be drilled directly into this crop residue the following spring. Do not let a temporary cover mature and go to seed.

Seed sudangrass at 25 pounds/acre or Oats at 1.5 bushels/acre.

SPECIAL EROSION CONTROL MEASURES

Since warm-season plants may be slow to establish, special erosion control measures will be needed on land capability classes Ive, Vie, and VIIe. Warm-season plantings will be permitted only if:

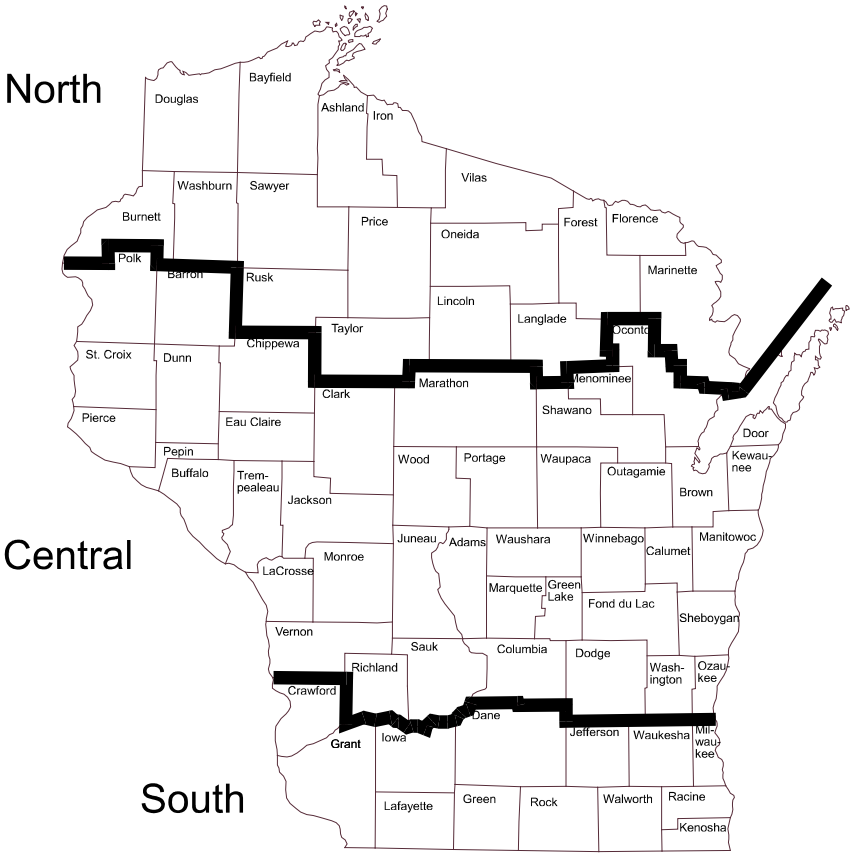
1) There is at least 70% existing ground cover and the seeds are planted with a specialized grass drill using the no-till seeding method.

   Temporary cover crops may be seeded to obtain the required cover.

   OR

2) The warm-season plants are planted in alternating strips with a temporary cover. These strips would not be more than two drill widths or 25 feet wide, whichever is greater. The strip planted to temporary cover will be seeded to warm-season plants during the next seeding period.

Figure 1
Planting Zone Map



SEEDING – GENERAL

Herbicide Carryover

Prior to planting check to ensure that any herbicides used on the previous crop will not "carry over" and negatively impact newly seeded prairie plants. Crop residue from the previous crop should be uniformly distributed over the soil surface prior to planting to minimize the smothering of new seedlings and to prevent the plugging of tillage or planting equipment.

If you are able to select the crop to be planted prior to establishing the prairie plants, consider soybeans. There are several options for soybean herbicide treatments that do not carry over. Soybeans produce a moderate amount of crop residue that can be effectively managed and tend to leave the soil in a mellow condition that is well suited to no-till planting of the prairie plants.

Temporary Cover Crops

Where planting is delayed due to unavailability of seed or the normal planting period has passed, seed one of the following if needed to control erosion and/or suppress weeds.

- Winter wheat – 1½ bu/ac.
- Winter rye – 1½ bu/ac.
- Oats – 1½ bu/ac.
- Annual ryegrass – 6 lbs/ac.

Temporary cover crops must be clipped or destroyed before they head out to prevent excessive competition to the permanent seeding. Winter wheat and rye must be killed by tillage or herbicides before planting the permanent seeding.

For fields with atrazine carryover, seed one of the following.

- Forage sorghum – 15 lbs/ac.
- Sorghum-Sudangrass hybrid – 25 lbs/ac.
- Sudangrass – 25 lbs/ac.

If more than 2 pounds of atrazine (active ingredient) per acre was applied pre-emerge or 1½ to 2 pounds atrazine (active ingredient) per acre was applied post-emerge to the previous crop, a chemical carryover is assumed. A bioassay test may be used to better determine chemical carryover. Switchgrass may grow in areas of atrazine carryover.

Selection and Planter Preparation

Grain Drill. A specialized drill should be selected that can handle the wide variety of seed types (fluffy, smooth, large, small) and be capable of achieving the low seeding rates typical when planting prairie plants.

Rotary or Cyclone Seeders. The planters deliver seed at a uniform rate onto a spinning plate or disk. The seed is distributed by centrifugal force over a wide area. The operator must overlap spreading patterns to avoid gaps. Use of a seed carrier visible on the soils surface after application can improve uniformity of seed placement.

Seed Carrier. An inert material is often mixed in the planter with prairie seed mixes. The carrier improves the flow and uniformity of metering where there are a range of seed sizes in the mix. A seed carrier material can also be used where the planter cannot be adjusted to the low seeding rates necessary for prairie establishment. Seed carrier materials may include cracked corn, saw dust, vermiculite, or potash. When potash is used as a seed carrier, the seed must be spread immediately after mixing to prevent "salt effect" damage to the seed.

Planter Calibration. Prior to planting, calibrate the drill or seeder according to the manufacturer's instructions. Use the carrier material (or a small amount of seed if the carrier is not used) to test and adjust the seeding rate, distribution pattern, and planting depth.

Conventional Seeding

For conventional seeding, prepare a fine firm seedbed to a minimum of 3 inches. The seedbed should contain enough fine soil particles for uniform shallow coverage of the seed as well as contact with moisture and nutrients. It is important to have a firm seedbed. As a minimum, cultipack or roll before and after seeding. When walking on a properly prepared seedbed, the depth of your footprints should not exceed ¼ inch. Do not use heavy drills to seed on conventionally prepared seedbeds. Heavy drills tend to sink into the soil and it is very hard to control seed depth placement. The use of a drag or similar equipment after seeding is not advised because of the likelihood of burying fine prairie seed. Do not plant seed deeper than ¼ inch. It is acceptable to see some seed on the surface of the ground after seeding.

Tillage makes prairie planting sites prone to erosion. Tillage should only be used on flatter slopes or in

conjunction with erosion protection measures such as cover crops or mulching.

No-Till Seeding

No-till drilling reduces the exposure of the newly seeded site to erosion. Fall seeding using a no-till drill is recommended on erosion-prone sites. Plant seed to a maximum depth of ¼ inch. Some seed may be seen on the surface after planting. When planting into existing vegetative cover, use of a herbicide prior to planting is essential. Always follow label directions when applying herbicides (see Weed Control).

Broadcast Seeding

CAUTION: Conservation program participants must evaluate the potential increased risk of seeding failure when using a frost seeding or a broadcast seeding to establish required conservation cover on an untilled seedbed. Seeding into an untilled seedbed can result in less consistent seed germination rates than conventional planting methods so it is recommended to increase forb and legume seeding rates by up to 10%.

A broadcast seeding is achieved by uniformly distributing seed across the soil surface using a rotary seeder or a fertilizer cart with a rotary spreader. Broadcast seeding is most successful if done early in the planting season to assure adequate soil moisture.

When broadcast seeding into a conventional seedbed, the field should be rolled or cultipacked after seeding to ensure adequate soil to seed contact. Broadcast seeding into untilled existing crop residue is a higher risk option. To improve the chances for success in an untilled seedbed ensure that that the existing crop residue is uniformly distributed over the soil surface. Roll or culti-mulch the field before and after broadcast seeding to improved the uniformity of the seedbed conditions. Extra care must be taken to ensure a slight overlap of the seed spreading pattern when crop residue is on the soil surface to prevent gaps in the cover.

Frost Seeding

Frost seedings are similar to broadcast seedings except that the seed is applied in very late winter or early spring. The freeze/thaw cycles that occur at this time of year work the seed into soil where it can germinate. Frost seedings are most successful in the Southern and Central (see Figure 1) regions of the state where the freeze thaw cycle occurs over an extended period. The fall before seeding occurs, evaluate the seedbed conditions to ensure that remaining crop residue is well distributed and, if the field has been tilled, that the surface is relatively level.

It is recommended to spread the seed directly onto the soil surface or crop residue when planning a frost seeding. Seed may be spread onto a snow cover of less than 2 inches. Seeding onto snow cover increases the risk for seeding failure and should not be done immediately before a predicted thaw event that could produce significant runoff.

Increase seeding rate by 25 percent for all species when either of the following apply. Note: The 25% seeding rate is NOT additive. It is not necessary to increase the seeding rate beyond a total of 25%.

- Seed is placed on snow cover 2 inches deep or less.
- Seed is sown prior to March 1.

SEEDBED PREPARATION AND SEEDING - WEED CONTROL

Pre-Plant Herbicide Applications – New Seedings

Prior to planting prairie plant seed, evaluate the seed bed for the presence of weed seedlings. If there is reason to suspect that significant weed pressure could occur, wait as long as possible within the recommended seeding dates to plant the prairie seed to allow weeds to emerge. Where a significant number of weeds or invasive plants emerge, utilize a herbicide treatment. Select a herbicide product and application method based on the site conditions, weed species present, and stage of weed growth.

Post Emergence Weed Control Mowing – New Seedings

Mesic and wet sites in particular are prone to weed competition. At the present time, there are limited herbicides available to control weeds in a prairie restoration planting without potentially impacting legumes and some forbs. To combat this problem, repeated mowing is essential throughout the establishment period.

The first year following seeding, mow the growing plants to a height of 6 inches whenever the canopy reaches a height of 12 inches. Depending on rainfall and growing conditions, several mowings may be

required. It may be necessary to remove the clippings if they are thick so they will not smother the seedlings. Chopping and spreading them evenly is often a better choice than mowing. Utilize a rotary mower or flail chopper to uniformly distribute mowed material over the field surface. In a normal growing season, clipping would occur around the middle of June the again early to mid July as well as the first part of August. It is essential to monitor the canopy height often to assure sunlight is getting to the soil surface and to prevent weeds from smothering the prairie below. Use of this mowing strategy will stress the weeds and will not harm the prairie plants in this first year.

Routinely evaluate the stand in the second year to determine if a mowing for weed control is necessary. When necessary to control weed canopy, mow the planting at a height of 6 inches as often as required. It is especially important to monitor weeds early in the season before hot weather.

DETERMINING SUCCESS OF THE STAND

It may be hard to determine if the prairie restoration is successful, particularly during the seeding year. It may take two to three years for a stand to be fully successful. It is often said prairie sleeps the first year (sets root structure), creeps the second year (starts to spread slowly) and leaps in the third year (takes off). Patience is a virtue.

To appropriately evaluate a prairie seeding, wait until late August or September because "warm season" plants flourish in the heat of summer.

ESTABLISHED COVER MAINTENANCE

Any planned maintenance (except for noxious weed control) after the establishment period, should be done before May 15 or after August 1 to protect nesting cover and reduce disruption of nesting activities.

Spot Treatment By Clipping

Spot clipping can be used to control annual weeds and to suppress other weeds. Spot clipping must be done before the target plant forms viable seed and must continue throughout the growing season. Spot clipping is not an effective control for biennial and perennial weeds but can be used to contain these plants until other control treatments can be implemented.

Spot Treatment With Herbicide

It is often necessary to spot treat invasive plants in a prairie. Cool season legumes and other aggressive weeds can severely impact a prairie if they are not removed. Early spring spot treatment with herbicides is often highly effective in addressing these aggressive plants. Spot treatment should be timed to treat the plant during active growth periods. Effective herbicide spot treatment can prevent the target plants from setting seed and spreading in the prairie.

Spot Treatment By Hand Pulling/Digging

Hand pulling or digging can be an effective control if the entire root is removed from the soil. Hand pulling/digging is most effective in spring when the soil is moist and loose from the winter freeze/thaw cycle.

Post Emergence Weed Control Herbicide Application - Established Cover

A post plant herbicide application over the entire field can be used to control weeds. An herbicide product may be used if it is labeled for use on the plant species established in the prairie, has been shown to effectively control identified weed species, and can be effectively applied based on the existing site cover conditions. The timing of the herbicide product application is an important factor to protect prairie plants. **Note: Improper herbicide selection or application timing can severely damage a prairie planting.**

Prescribed Burning – Established Cover

Burning may be used to manage weeds once the prairie has been established if there is enough material to carry a fire. Fall burns, and to a lesser extent early spring burns, will tend to promote forbs. Late spring burns provide maximum stimulus to warm season grasses and work well to control cool season grasses. Burn when the cool season grasses are growing and the warm season plants are just barely starting to grow to get maximum control of cool season species.

Burning is a good tool for long-term stand management. Time of burning and frequency will impact the species that are present on the site. For longevity of the site, burning should be conducted

periodically, every other year to every fifth year. Do not conduct sequential prescribed burns on a given site at the same time of year. For instance, do not always burn the same site immediately after snow melt. This tends to reduce stand diversity and can create a negative impact on desirable prairie plants.

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Table 3
Wisconsin NRCS Authorized Native Plant List
Dry Site Condition Native Species

Plant Type	Genus and Species	Common Name	Seeds/oz	Seeds/sq ft @ 1 oz/ac	Moisture Regime	Blooming Period
Forb	Anemone cylindrica	Thimbleweed	20,000	0.459	D, DM	Late spring - midsummer
Forb	Asclepias tuberosa	Butterfly milkweed	3,480	0.080	D, DM, M	Early- mid summer
Forb	Asclepias verticillata	Whorled milkweed	4,000	0.092	D, DM	Late spring - summer
Forb	Asclepias viridiflora	Green milkweed	3,600	0.083	D, DM	Late spring - midsummer
Forb	Aster oolentangiensis	Sky-blue aster	82,000	1.882	D, DM, M	Late Summer - Fall
Forb	Aster sericeus	Silky aster	26,940	0.618	D, DM	Late Summer - Fall
Forb	Brickellia eupatorioides	False boneset	24,000	0.551	D, DM	Midsummer - fall
Forb	Campanula rotundifolia	Harebell	700,000	16.070	D, DM	Late spring - early fall
Forb	Comandra umbellata	False toadflax	700	0.016	D, DM, M	Midspring - early summer
Forb	Coreopsis palmata	Prairie tickseed	11,970	0.275	D, DM	June - August
Forb	Geum triflorum	Prairie smoke	27,000	0.620	D, DM	Mid - late spring
Forb	Helianthus pauciflorus	Prairie sunflower	4,580	0.105	D, DM, M	July - August
Forb	Liatris aspera	Rough blazing star	13,470	0.309	D, DM,	August - September
Forb	Linum sulcatum	Grooved yellow flax	94,000	2.158	D, DM	Midspring - early fall
Forb	Monarda punctata	Spotted mint	93,700	2.151	D	Summer, fall
Forb	Potentilla arguta	Prairie cinquefoil	200,000	4.591	D, DM, M	Late spring - summer
Forb	Pulsatilla patens	Pasque flower	18,000	0.413	D, DM	Early - midspring
Forb	Ratibida pinnata	Yellow cone flower	26,940	0.618	D, DM, M, WM	July - September
Forb	Rudbeckia hirta	Black-eyed Susan	99,600	2.287	D, DM, M, WM	July - September
Forb	Sisyrinchium campestre	Blue-eyed grass	45,000	1.033	D, DM	Midspring - early summer
Forb	Solidago rigida	Stiff goldenrod	45,850	1.053	D, DM	August - October
Forb	Tradescantia ohiensis	Spiderwort	7,980	0.183	D, DM	May - June
Forb	Verbena stricta	Hoary vervain	534,117	12.262	D, DM	Late spring - early fall
Forb	Viola pedata	Bird's foot violet	26,000	0.597	D, DM	Spring; also in fall
Grass	Andropogon gerardii	Big bluestem	8,125	0.187	D, DM, M, WM	Summer
Grass	Bouteloua curtipendula	Side-oats grama	7,980	0.183	D, DM	Summer
Grass	Bouteloua hirsuta R	Hairy grama	70,000	1.607	D, DM	Midsummer - fall
Grass	Koeleria macrantha	June grass	144,292	3.312	D, DM, M	Midspring - midsummer
Grass	Panicum virgatum	Switchgrass	24,500	0.562	D, DM, M, WM	Summer - early fall
Grass	Schizachyrium scoparium	Little bluestem	15,000	0.344	D, DM, M	Midsummer - fall
Grass	Sorgastrum nutans	Indian grass	11,000	0.253	D, DM, M, WM	Midsummer - early fall
Grass	Sporobolus cryptandrus	Sand dropseed	332,145	7.625	D, DM	August - October
Grass	Sporobolus heterolepis	Prairie dropseed	13,600	0.312	D, DM, M	Midsummer - early fall
Grass	Stipa spartea	Porcupine grass	11,000	0.253	D, DM	Late spring - early summer
Legume	Amorpha canescens	Leadplant	16,950	0.389	D, DM, M	June - July
Legume	Dalea purpurea	Purple prairie clover	19,950	0.458	D, DM, M	July - August
Legume	Lupinus perennis	Wild lupine	990	0.023	D, DM, M	Late spring - summer

Table 4
Wisconsin NRCS Authorized Native Plant List
Dry-Mesic Site Condition Native Species

Plant Type	Genus and Species	Common name	Seeds/oz	Seeds/sq ft @ 1 oz/ac	Moisture Regime	Blooming Period
Forb	Anemone cylindrica	Thimbleweed	20,000	0.459	D, DM	Late spring - midsummer
Forb	Asclepias tuberosa	Butterfly milkweed	3,480	0.080	D, DM, M	June - August
Forb	Asclepias verticillata	Whorled milkweed	4,000	0.092	D, DM	Late spring - summer
Forb	Asclepias viridiflora	Green milkweed	3,600	0.083	D, DM	Late spring - midsummer
Forb	Aster ericoides	Heath aster	140,000	3.214	DM, M	August - October
Forb	Aster oolentangiensis	Sky-blue aster	82,000	1.882	D, DM, M	Late Summer - Fall
Forb	Aster sericeus	Silky aster	26,940	0.618	D, DM	Late Summer - Fall
Forb	Brickellia eupatorioides	False boneset	24,000	0.551	D, DM	Midsummer - fall
Forb	Campanula rotundifolia	Harebell	700,000	16.070	D, DM	Late spring - early fall
Forb	Comandra umbellata	False toadflax	700	0.016	D, DM, M	Midspring - early summer
Forb	Coreopsis palmata	Prairie tickseed	11,970	0.275	D, DM	June - August
Forb	Dodecatheon meadii R	Shootingstar	75,000	1.722	DM, M	Mid - late spring
Forb	Echinacea pallida	Pale Purple Coneflower	4,580	0.105	DM, M	Late spring - Midsummer
Forb	Eryngium yuccifolium R	Rattlesnake master	7,980	0.183	DM, M	June - August
Forb	Gentianella puberulenta	Downy gentian	435,000	9.986	DM, M	Late Summer - Fall
Forb	Geum triflorum	Prairie smoke	27,000	0.620	D, DM	Mid - late spring
Forb	Helianthus pauciflorus	Prairie sunflower	4,580	0.105	D, DM, M	July - August
Forb	Heuchera richardsonii	Prairie alum-root	800,000	18.365	DM, M	Midspring - summer
Forb	Liatris aspera	Rough blazing star	13,470	0.309	D, DM, M	August - September
Forb	Liatris pycnostachya	Prairie blazing star	11,970	0.275	DM, M, WM	Midsummer - early fall
Forb	Linum sulcatum	Grooved yellow flax	94,000	2.158	D, DM	Midspring - early fall
Forb	Lobelia spicata	Pale spiked lobelia	900,000	20.661	DM, M	Midspring - midsummer
Forb	Monarda fistulosa	Bergamot	77,800	1.786	DM, M, WM	July - September
Forb	Monarda punctata	Spotted mint	93,700	2.151	D, DM	Summer - fall
Forb	Oenothera biennis	Evening primrose	550,000	12.626	D, DM, M	August - September
Forb	Pedicularis canadensis	Wood betony	33,000	0.758	DM, M	Mid - late spring
Forb	Penstemon grandiflorus	Beard tongue	14,000	0.321	DM	Midspring - Midsummer
Forb	Phlox pilosa	Prairie phlox	19,000	0.436	DM, M	Midspring - midsummer
Forb	Potentilla arguta	Prairie cinquefoil	200,000	4.591	D, DM, M	Late spring - summer
Forb	Pulsatilla patens	Pasque flower	18,000	0.413	D, DM	Early - midspring
Forb	Ratibida pinnata	Yellow cone flower	26,940	0.618	DM, M, WM	July - September
Forb	Rudbeckia hirta	Black-eyed Susan	99,600	2.287	D, DM, M, WM	July - September
Forb	Silphium laciniatum	Compass plant	650	0.015	DM, M	June - September
Forb	Sisyrinchium campestre	Blue-eyed grass	45,000	1.033	D, DM	Midspring - early summer
Forb	Solidago rigida	Stiff goldenrod	45,850	1.053	D, DM	August - October

Plant Type	Genus and Species	Common name	Seeds/oz	Seeds/sq ft @ 1 oz/ac	Moisture Regime	Blooming Period
Forb	Tephrosia virginiana	Goat's rue	2,500	0.057	D, DM	Late spring - midsummer
Forb	Tradescantia ohiensis	Spiderwort	7,980	0.183	D, DM	May - June
Forb	Viola pedata	Bird's foot violet	26,000	0.597	D, DM	Spring; also in fall
Forb	Viola pedatifida	Prairie violet	28,000	0.643	DM, M	Spring; also in fall
Grass	Andropogon gerardii	Big bluestem	8,125	0.187	D, DM, M, WM	Summer
Grass	Bouteloua curtipendula	Side-oats grama	7,980	0.183	D, DM	Summer
Grass	Elymus canadensis	Canada wild rye	6,875	0.158	DM, M, WM	Late spring - early fall
Grass	Koeleria macrantha	June grass	144,292	3.312	D, DM	Midspring - midsummer
Grass	Panicum virgatum	Switchgrass	24,500	0.562	DM, M, WM	Summer - early fall
Grass	Schizachyrium scoparium	Little bluestem	15,000	0.344	D, DM, M	Midsummer - fall
Grass	Sorgastrum nutans	Indian grass	11,000	0.253	D, DM, M	Midsummer - early fall
Grass	Sporobolus heterolepis	Prairie dropseed	13,600	0.312	D, DM, M	Midsummer - early fall
Grass	Stipa spartea	Porcupine grass	11,000	0.253	D, DM	Late spring - early summer
Legume	Amorpha canescens	Leadplant	16,950	0.389	D, DM, M	June - July
Legume	Baptisia lactea	White wild indigo	1,585	0.036	DM, M, WM	May - June
Legume	Dalea candida	White prairie clover	15,850	0.364	D, DM, M	Late spring - summer
Legume	Dalea purpurea	Purple prairie clover	19,950	0.458	D, DM, M	July - August
Legume	Desmodium illinoense	Illinois tick trefoil	4,500	0.103	DM, M	Late spring - summer
Legume	Lespedeza capitata	Round headed bush clover	9,960	0.229	D, DM	August - September
Legume	Lupinus perennis	Wild lupine	990	0.023	D, DM, M	Midspring - midsummer
Shrub	Ceanothus americanus	New Jersey tea	7,000	0.161	DM, M	Late spring - fall

Table 5
Wisconsin NRCS Authorized Native Plant List
Mesic Site Condition Native Species

Plant Type	Genus and Species	Common name	Seeds/oz	Seeds/sq ft @ 1 oz/ac	Moisture Regime	Blooming Period
Forb	Allium canadense	Wild Garlic	560	0.013	M	May - July
Forb	Allium cernuum R	Nodding wild onion	7,680	0.176	DM, M	Summer
Forb	Asclepias sullivantii * R	Prairie milkweed	4,500	0.103	M	Early - midsummer
Forb	Asclepias tuberosa	Butterfly milkweed	3,480	0.080	D, DM, M	June - August
Forb	Aster ericoides	Heath aster	140,000	3.214	D, DM, M	August - October
Forb	Aster laevis	Smooth blue aster	47,830	1.098	DM, M	August - October
Forb	Aster novae-angliae	New England aster	69,900	1.605	M, WM	August - October
Forb	Aster oolentangiensis	Sky-blue aster	82,000	1.882	DM, M	Late Summer - Fall
Forb	Comandra umbellata	False toadflax	700	0.016	D, DM, M	Midspring - early summer
Forb	Dodecatheon meadii R	Shootingstar	75,000	1.722	DM, M	Mid - late spring
Forb	Echinacea pallida * R	Pale Purple coneflower	4,580	0.105	DM, M	June - July
Forb	Eryngium yuccifolium R	Rattlesnake master	7,980	0.183	DM, M	June - August
Forb	Eupatorium altissimum	Tall boneset	50,000	1.148	M	Late Summer - Fall
Forb	Gaura biennis	Biennial gaura	2,700	0.062	M	Late spring - fall
Forb	Gentiana andrewsii	Bottle gentian	280,000	6.428	M	Late Summer - Fall
Forb	Helianthus occidentalis	Western sunflower	12,960	0.298	DM, M	Midsummer - fall
Forb	Helianthus pauciflorus	Prairie sunflower	4,580	0.105	D, DM, M	July - August
Forb	Heliopsis helianthoides	False Sunflower	6,480	0.149	M	June - September
Forb	Heuchera richardsonii	Prairie alum-root	800,000	18.365	DM, M	Midspring - summer
Forb	Hypoxis hirsuta	Yellow star grass	80,000	1.837	M	Midspring - early fall
Forb	Liatris pycnostachya	Prairie blazing star	11,970	0.275	DM, M, WM	Midsummer - early fall
Forb	Lobelia spicata	Pale spiked lobelia	900,000	20.661	DM, M	Midspring - midsummer
Forb	Monarda fistulosa	Bergamot	77,800	1.786	DM, M, WM	July - September
Forb	Oenothera biennis	Evening primrose	550,000	12.626	DM, M	August - September
Forb	Parthenium integrifolium * R	Wild quinine	6,790	0.156	M	June - September
Forb	Penstemon digitalis	Foxglove beard tongue	100,000	2.296	M, WM	Late spring - midsummer
Forb	Phlox pilosa	Prairie phlox	19,000	0.436	DM, M	Midspring - midsummer
Forb	Potentilla arguta	Prairie cinquefoil	200,000	4.591	DM, M	Late spring - summer
Forb	Pycnanthemum virginianum	Mountain mint	100,000	2.296	M, WM	Midsummer - early fall
Forb	Ratibida pinnata	Yellow cone flower	26,940	0.618	DM, M, WM	July - September
Forb	Rudbeckia hirta	Black-eyed Susan	99,600	2.287	D, DM, M, WM	July - September
Forb	Rudbeckia subtomentosa R	Sweet black-eyed Susan	45,850	1.053	M	Summer
Forb	Silphium integrifolium R	Rosinweed	3,990	0.092	DM, M	July - September
Forb	Silphium laciniatum	Compass plant	650	0.015	DM, M	June - September
Forb	Silphium perfoliatum	Cupplant	1,400	0.032	M, WM, W	July - September
Forb	Silphium terebinthinaceum R	Prairie dock	1,110	0.025	M, WM	Summer - fall

Plant Type	Genus and Species	Common name	Seeds/oz	Seeds/sq ft @ 1 oz/ac	Moisture Regime	Blooming Period
Forb	Solidago rigida	Stiff goldenrod	45,850	1.053	D, DM, M	August - October
Forb	Veronicastrum virginicum	Culver's root	750,000	17.218	M, WM, W	Summer
Forb	Viola pedatifida	Prairie Violet	28,000	0.643	DM, M	Spring; also in fall
Forb	Zizia aurea	Golden Alexander	12,000	0.275	M, WM	Midspring - early summer
Grass	Andropogon gerardii	Big bluestem	8,125	0.187	D, DM, M, WM	Summer
Grass	Elymus canadensis	Canada wild rye	6,875	0.158	DM, M, WM	Late spring - early fall
Grass	Koeleria macrantha	June grass	144,292	3.312	D, DM	Midspring - midsummer
Grass	Panicum virgatum	Switchgrass	24,500	0.562	DM, M, WM	Summer - early fall
Grass	Schizachyrium scoparium	Little bluestem	15000	0.344	D, DM, M	Midsummer - fall
Grass	Sorgastrum nutans	Indian grass	11,000	0.253	D, DM, M	Midsummer - early fall
Grass	Spartina pectinata	Prairie cordgrass	6,600	0.152	M, WM, W	Midsummer - early fall
Grass	Sporobolus heterolepis	Prairie dropseed	13,600	0.312	D, DM, M	Midsummer - early fall
Legume	Amorpha canescens	Leadplant	16,950	0.389	D, DM, M	June - July
Legume	Astragalus canadensis	Canada milk vetch	15,960	0.366	M, WM	Summer
Legume	Baptisia bracteata	Cream wild indigo	1,700	0.039	M	Mid to Late Spring
Legume	Baptisia alba	White wild indigo	1,585	0.036	DM, M, WM	May - June
Legume	Dalea candida	White prairie clover	15,850	0.364	D, DM, M	Late spring - summer
Legume	Dalea purpurea	Purple prairie clover	19,950	0.458	D, DM, M	July - August
Legume	Desmodium canadense	Showy tick-trefoil	4,500	0.103	M	July - August
Legume	Desmodium illinoense	Illinois tick trefoil	4,500	0.103	DM, M	Late spring - summer
Legume	Lespedeza capitata	Round-headed bush-clover	9,960	0.229	D, DM	August - September
Legume	Lupinus perennis	Wild lupine	990	0.023	D, DM, M	Midspring - midsummer
Shrub	Ceanothus americanus	New Jersey tea	7,000	0.161	DM, M	Late spring - fall

Table 6
Wisconsin NRCS Authorized Native Plant List
Wet-Mesic Site Condition Native Species

Plant Type	Genus and Species	Common name	Seeding Rate oz/acre PLS	Seeds/sq. ft @ 1 oz/ac	Moisture Regime	Blooming Period
Forb	Aster novae-angliae	New England aster	1	1.605	M, WM	August - October
Forb	Helenium autumnale	Sneezeweed	2	2.98	WM, W	Midsummer - fall
Forb	Hypericum pyramidatum	Great St. Johnswort	1	4.36	WM	June - August
Forb	Liatris pycnostachya	Prairie blazing star	2	0.252	DM, M, WM	Midsummer - early fall
Forb	Monarda fistulosa	Bergamot	1	1.786	DM, M, WM	July - September
Forb	Pycnanthemum virginianum	Mountain mint	1	5.05	DM, M, WM	Midsummer - early fall
Forb	Ratibida pinnata	Yellow cone flower	2	0.618	DM, M, WM	July - September
Forb	Rudbeckia hirta	Black-eyed Susan	1	2.287	D, DM, M, WM	July - September
Forb	Silphium perfoliatum	Cupplant	3	0.032	M, WM, W	July - September
Forb	Silphium terebinthinaceum R	Prairie dock	3	0.022	M, WM	Summer - fall
Forb	Thalictrum dasycarpum	Purple Meadow-rue	2	0.252	M, WM	Late Spring
Forb	Veronicastrum virginicum	Culvers Root	0.5	18.365	M, WM, W	Summer
Forb	Vernonia fasciculate	Common Ironweed	0.50	0.459	WM, W	Late summer - fall
Forb	Zizia aurea	Golden Alexander	2	0.252	M, WM	Midspring - early summer
Grass	Andropogon gerardii	Big bluestem	32	0.187	D, DM, M, WM	Summer
Grass	Calamagrostis canadensis	Bluejoint grass	2	6.428	WM, W	May - August
Grass	Elymus canadensis	Canada wild rye	16	0.158	DM, M, WM	Late spring - early fall
Grass	Sorgastrum nutans	Indian grass	16	0.253	D, DM, WM, W	Midsummer – early fall
Grass	Panicum virgatum	Switchgrass	16	0.562	DM, M, WM	Summer - early fall
Grass	Spartina pectinata	Prairie cordgrass	6	0.152	M, WM, W	Midsummer - early fall
Legume	Desmodium canadense	Showy tick-trefoil	2	0.103	M, WM	July - August
Legume	Baptisia latea	White wild indigo	0.5	0.036	M, WM	Late spring, summer
Rush	Scirpus cyperinus	Woolgrass	2	39.027	WM, W	
Sedge	Carex comosa	Bottlebrush sedge	4	0.689	WM, W	May - July
Sedge	Carex vulpinoidea	Fox sedge	6	2.295	WM, W	May - July

Table 7
Wisconsin NRCS Authorized Native Plant List
Wet Site Condition Native Species

Plant Type	Genus and Species	Common name	Seeding Rate oz/acre PLS	Seeds/sq. ft @ 1 oz/ac	Moisture Regime	Blooming Period
Forb	Angelica atropurpurea	Angelica	2.0	0.124	W	July - October
Forb	Asclepias incarnata	Marsh milkweed	2.0	0.110	W	Summer
Forb	Bidens cernua	Nodding beggartick	1.0	0.482	W	August - October
Forb	Eupatorium maculatum	Joe-pye weed	2.0	2.18	W	Late spring - early fall
Forb	Eupatorium perfoliatum	Boneset	2.0	3.67	W	Midsummer - fall
Forb	Helenium autumnale	Sneezeweed	2.0	2.98	WM, W	Midsummer - fall
Forb	Impatiens biflora	Spotted jewelweed	1.0	0.037	W	June - September
Forb	Iris versicolor	Wild Iris	6.0	0.029	W	May - July
Forb	Lobelia siphilitica	Great blue lobelia	0.5	11.478	W	Midsummer - fall
Forb	Silphium perfoliatum	Cupplant	3.0	0.032	M, WM, W	July - September
Forb	Thalictrum dasycarpum	Purple meadow-rue	2.0	0.252	M, WM, W	Late spring - early summer
Forb	Verbena hastata	Blue vervain	2.0	2.134	W	Summer - fall
Forb	Veronicastrum virginicum	Culver's root	0.5	17.218	M, WM, W	Summer
Forb	Vernonia fasciculate	Common Ironweed	0.50	0.459	WM, W	Late summer – fall
Forb	Zizia aurea	Golden Alexander	1.0	0.08	WM, W	Mid spring – early summer
Grass	Panicum virgatum	Switchgrass	16	0.562	DM, M, WM, W	Summer – early fall
Grass	Andropogon gerardii	Big blue stem	8	0.189	D, DM, M, WM, W	Summer
Grass	Elymus canadensis	Canada wild rye	8	0.158	DM, M, WM, W	Late spring – early fall
Grass	Sorgastrum nutans	Indian grass	16	0.253	D, DM, WM, W	Midsummer – early fall
Grass	Calamagrostis canadensis	Bluejoint grass	2.0	6.428	WM, W	May - August
Grass	Elymus virginicus*	Virginia wild rye*	16.0	0.0964	WM, W	June - October
Grass	Glyceria grandis	Giant mannagrass	4.0	1.836	W	
Grass	Glyceria striata	Fowl mannagrass	3.0	3.673	WM, W	May - August
Grass	Spartina pectinata	Prairie cordgrass	6.0	0.152	M, WM, W	Midsummer - early fall
Rush	Juncus effusus	Common rush	1.0	22.957	WM, W	
Rush	Scirpus atrovirens	Green bullrush	2.0	10.560	WM, W	
Rush	Scirpus cyperinus	Woolgrass	2.0	39.027	WM, W	
Rush	Scirpus fluviatilis	River bulrush	2.0	0.0987	W	May - September
Rush	Scirpus validus	Soft-stem bulrush	2.0	0.712	W	
Sedge	Carex comosa	Bottlebrush sedge	4.0	0.689	WM, W	May - July
Sedge	Carex hystricina	Porcupine sedge	4.0	0.689	W	
Sedge	Carex vulpinoidea	Fox sedge	6.0	2.295	WM, W	May - July

*Virginia wild rye (Elymus virginicus) is better adapted than Canada wild rye (Elmus Canadensis) for wet site condition seedings in the south planting zone (Figure 1).

Table 8
Sample Seed Mix for Basic Dry Mesic Prairie

Genus Species	Common Name	PLS Oz/Ac	Seeds/Sq. Foot
Dalea purpurea	Purple prairie clover	2.00	0.9
Monarda fistulosa	Bergamot	1.00	1.6
Ratibida pinnata	Yellow cone flower	1.00	0.6
Andropogon gerardii	Big bluestem	8.00	1.5
Schizachyrium scoparium	Little bluestem	24.00	8.2
Sorgastrum nutans	Indian grass	8.00	2.0
Panicum virgatum	Switchgrass	8.00	3.4
Bouteloua curtipendula	Side oats grama	16.00	2.9

Table 9
Sample Seed Mix for Basic DRY Prairie

Genus Species	Common Name	PLS Oz/Ac	Seeds/Sq. Foot
Solidago rigida	Stiff Goldenrod	1.00	1.0
Ratibida pinnata	Yellow cone flower	1.00	0.6
Dalea purpurea	Purple prairie clover	2.00	0.9
Andropogon gerardii	Big bluestem	8.00	1.5
Schizachyrium scoparium	Little bluestem	24.00	8.2
Sorgastrum nutans	Indian grass	8.00	2.0
Bouteloua curtipendula	Side oats grama	24.00	4.4

Table 10
Sample Seed Mix for Basic MESIC Prairie

Genus Species	Common Name	PLS Oz/Ac	Seeds/Sq. Foot
Ratibida pinnata	Yellow cone flower	1.00	0.6
Rudbeckia hirta	Black-eyed Susan	1.00	2.2
Monarda fistulosa	Bergamot	1.00	1.8
Andropogon gerardii	Big bluestem	8.00	1.5
Panicum virgatum	Switchgrass	8.00	4.5
Schizachyrium scoparium	Little bluestem	20.00	6.9
Sorgastrum nutans	Indian grass	16.00	6.1
Elymus canadensis	Canada wild rye	16.00	2.5

Table 11
Sample Seed Mix for Basic Wet Prairie

Genus Species	Common Name	PLS Oz/Ac	Seeds/Sq. Foot
Vernonia fasciculata	Common ironweed	1.00	0.4
Silphium perfoliatum	Cupplant	2.00	0.1
Verbena hastata	Blue vervain	1.00	2.4
Panicum virgatum	Switchgrass	16.00	6.6
Spartina pectinata	Prairie cordgrass	8.00	1.0
Andropogon gerardii	Big bluestem	16.00	3.0
Sorgastrum nutans	Indian grass	16.00	4.0
Elymus virginicus	Virginia wild rye	16.00	2.5

Table 12
Sample Seed Mix for Basic Wet Mesic Prairie

Genus Species	Common Name	PLS Oz/Ac	Seeds/Sq. Foot
Monarda fistulosa	Bergamot	1.00	1.6
Ratibida pinnata	Yellow cone flower	1.00	0.6
Aster novae-angliae	New England aster	1.00	1.6
Panicum virgatum	Switchgrass	16.00	18.0
Spartina pectinata	Prairie cordgrass	8.00	0.6
Andropogon gerardii	Big bluestem	16.00	3.0
Elymus virginicus	Virginia wild rye	16.00	2.4
Sorgastrum nutans	Indian grass	8.00	4.0

Table 13
Sample Seed Mix for Dry Mesic Prairie Restoration

Genus Species	Common Name	PLS Oz/Ac	Seeds/Sq. Foot
Potentilla arguta	Prairie cinquefoil	0.25	1.1
Amorpha canescens	Leadplant	0.50	0.2
Aster sericeus	Sky blue Astor	0.50	0.4
Dalea purpurea	Purple prairie clover	2.00	0.9
Liatris aspera	Rough blazing star	0.50	0.2
Lespedeza capitata	Roundheaded bushclover	2.00	0.5
Monarda fistulosa	Bergamot	1.00	1.6
Ratibida pinnata	Yellow cone flower	1.00	0.6
Solidago rigida	Stiff Goldenrod	0.50	0.5
Tradescantia ohiensis	Spiderwort	1.00	0.2
Schizachyrium scoparium	Little bluestem	24.00	8.2
Sorgastrum nutans	Indian grass	8.00	2.0
Koeleria cristata	June Grass	2.00	6.6
Sporobolus heterolepis	Prairie dropseed	2.00	0.6
Panicum virgatum	Switchgrass	4.00	2.2
Bouteloua curtipendula	Side oats grama	24.00	4.4

Table 14
Seed Mix for Dry Mesic Karner Blue Prairie Restoration

Genus Species	Common Name	PLS Oz/Ac	Seeds/Sq. Foot
Potentilla arguta	Prairie cinquefoil	0.25	1.1
Amorpha canescens	Leadplant	0.50	0.2
Aster sericeus	Sky blue Astor	0.25	0.2
Dalea purpurea	Purple prairie clover	2.00	0.9
Liatris aspera	Rough blazing star	0.50	0.2
Lupinus perennis	Wild lupine	3.00	0.1
Monarda fistulosa	Bergamot	0.25	0.4
Ratibida pinnata	Yellow cone flower	0.50	0.3
Solidago rigida	Stiff Goldenrod	0.50	0.5
Echinacea pallida	Pale Purple Coneflower	1.00	0.1
Bouteloua curtipendula	Side-oats grama	24.00	4.4
Schizachyrium scoparium	Little bluestem	24.00	8.3
Sorgastrum nutans	Indian grass	8.00	2.0
Koeleria cristata	June Grass	1.00	6.6
Sporobolus heterolepis	Prairie dropseed	2.00	0.6
Panicum virgatum	Switchgrass	8.00	3.4

Table 15
Sample Seed Mix for DRY Prairie Restoration

Genus Species	Common Name	PLS Oz/Ac	Seeds/Sq. Foot
Potentilla arguta	Prairie cinquefoil	0.25	1.1
Aster sericeus	Silky Astor	0.50	0.3
Amorpha canescens	Leadplant	0.50	0.2
Monarda punctata	Spotted mint	0.25	0.5
Coreopsis palmata	Prairie tickseed	0.50	0.1
Solidago rigida	Stiff Goldenrod	0.50	0.5
Verbena stricta	Hoary vervain	0.50	0.3
Ratibida pinnata	Yellow cone flower	0.50	0.3
Tradescantia ohiensis	Spiderwort	1.00	0.2
Dalea purpurea	Purple prairie clover	2.00	0.9
Andropogon gerardii	Big bluestem	4.00	0.7
Bouteloua curtipendula	Side-oats grama	24.00	4.4
Schizachyrium scoparium	Little bluestem	24.00	8.2
Sorgastrum nutans	Indian grass	8.00	2.0
Koeleria cristata	June Grass	1.00	6.6
Sporobolus cryptandrus	Sand dropseed	2.00	15.2

Table 16
Sample Seed Mix for MESIC Native Prairie Restoration

Genus Species	Common Name	PLS Oz/Ac	Seeds/Sq. Foot
Ratibida pinnata	Yellow cone flower	0.50	0.3
Rudbeckia hirta	Black-eyed Susan	0.50	1.1
Aster oolentangiensis	Sky blue aster	0.50	0.9
Helianthus helianthoides	False sunflower	1.00	0.1
Monarda fistulosa	Bergamot	0.50	0.9
Vernonia virginicum	Culvers root	0.25	4.3
Dalea purpurea	Purple prairie clover	1.00	0.5
Silphium integrifolium	Rosinweed	1.00	0.1
Liatris pycnostachya	Prairie blazing star	1.00	0.3
Aster novae-angliae	New england aster	0.50	0.8
Andropogon gerardii	Big bluestem	8.00	1.5
Panicum virgatum	Switchgrass	8.00	4.5
Schizachyrium scoparium	Little bluestem	24.00	2.8
Elymus canadensis	Canada wild rye	8.00	2.5
Sorgastrum nutans	Indian grass	16.00	6.1

Table 17
Sample Seed Mix for Wet Mesic Prairie Restoration

Genus Species	Common Name	PLS Oz/Ac	Seeds/Sq. Foot
Rudbeckia hirta	Black-eyed Susan	0.50	1.1
Monarda fistulosa	Bergamot	0.25	0.4
Ratibida pinnata	Yellow cone flower	0.50	0.3
Liatris pycnostachya	Prairie blazing star	0.50	0.2
Vernonia fasciculata	Common Ironweed	0.50	0.2
Silphium perfoliatum	Cupplant	2.00	0.1
Zizia aurea	Golden Alexander	0.50	0.1
Hypericum Pyramidatum	Great St John's Wort	0.25	1.1
Baptisia latea	White wild indigo	1.50	0.1
Aster novae-angliae	New England aster	0.50	0.8
Panicum virgatum	Switchgrass	16.00	0.562
Spartina pectinata	Prairie cordgrass	4.00	0.6
Andropogon gerardii	Big bluestem	20.00	3.7
Elymus canadensis	Canada wild rye	16.00	2.4
Sorgastrum nutans	Indian grass	12.00	3.0

Table 18
Sample Seed Mix for Wet Prairie Restoration

Genus Species	Common Name	PLS Oz/Ac	Seeds/Sq. Foot
Veronicastrum virginicum	Culver's root	0.25	4.3
Vernonia fasciculata	Common ironweed	0.50	0.2
Silphium perfoliatum	Cupplant	2.00	0.1
Asclepias incarnata	Marsh milkweed	1.00	0.1
Eupatorium maculatum	Joe pye weed	0.50	1.0
Verbena hastata	Blue vervain	1.00	2.4
Desmodium canadense	Showy tick trefoil	2.00	0.2
Eupatorium perfoliatum	Boneset	0.50	2.3
Zizia aurea	Golden alexander	1.00	0.2
Panicum virgatum	Switchgrass	16.00	9.0
Spartina pectinata	Prairie cordgrass	8.00	1.0
Andropogon gerardii	Big bluestem	8.00	1.5
Elymus canadensis	Canada wild rye	16.00	2.4
Sorgastrum nutans	Indian grass	12.00	3.0
Glyceria striata	Fowl managrass	4.00	14.3
Carex vulpinoidea	Fox sedge	4.00	8.1