

Native Connections



**RESOURCE
& CULTURAL
GUIDE**

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**NATIVE
SEED FOR
RESTORATION
CONSERVATION
LANDSCAPING**

**PRODUCER OF
MI GENOTYPE
NATIVE SEED**

(269) 459-6900
nativeconnections.net
Kalamazoo, Michigan



Native Connections

was established in 1987 and is committed to improving our environment by providing native wildflower and grass seed for creating and restoring natural landscapes.

We have extensive experience in designing and implementing native seed and plant installations for the purpose of land restoration, wildlife habitat, wetland mitigation, stormwater management and erosion control. Our staff is passionately committed to conservation and ecological restoration. We are a state-wide leader in providing quality consulting and materials for native plant and restoration projects big and small. We have worked with government and tribal agencies, land trusts, corporate and residential clients.

Mission Statement

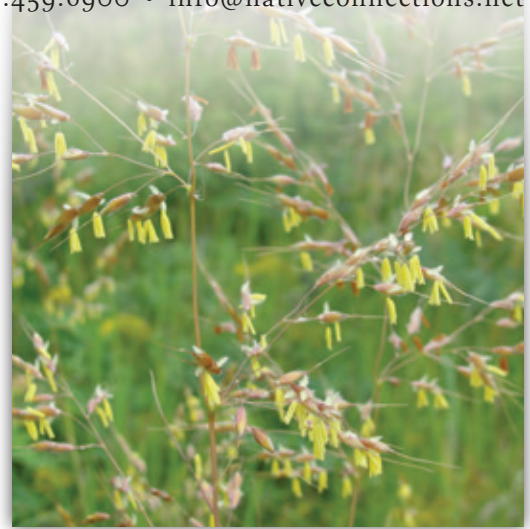
It is our intent to foster an atmosphere of cooperation between employees, clients and colleagues while providing quality native seeds for diverse native landscapes.



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Switchgrass flowers in bloom



Little Bluestem on ice

Contact Information

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WE'VE MOVED!
Make a note of our new location and phone number.



Butterfly Milkweed blooms



New Jersey Tea

Photo: Dean Pennala

OUR SERVICES

Native Seed Mix Design

Native Connections specializes in designing and providing native seed mixes to everyone from engineers to landowners. With diverse backgrounds in the natural sciences, our staff creates mixes that can mimic natural plant communities or provide specific environmental services. We have a set of standard pre-designed seed mixes or we can custom design one based on site-specific conditions, client objectives, and budget. We are committed to conserving and enhancing the diversity and health of our unique natural heritage.

Site Assessments & Management Plans

Based on your needs and objectives, our experienced staff can perform or recommend varying levels of site review. A simple assessment analyzing basic factors such as soils, hydrology, and also budget and objective, will provide you with a summary of your site condition, a suggested plant list, and appropriate prep and installation methods. On the other end of the spectrum, we can refer to a qualified contractor such as KNC Ecological Services to provide a full botanical inventory with species level management recommendations and a long-term management plan.

Project Specifications

Whether a native planting is part of a mitigation, a new corporate landscape, or a restoration project in its own rite, we can work alongside project engineers and landscape architects to help ensure the site prep, installation, and management specifications of the native plantings are designed to ensure a successful project.



Consultation

While we have shifted our focus more towards seed production, we are still happy to be a resource to help get your project done correctly. For those projects where the site prep, installation, and/or maintenance might seem overwhelming to an owner or contractor, Native Connections works directly with KNC Ecological Services to provide most installations and on-site consultation services.

OUR MICHIGAN GENOTYPE SEED

We produce and harvest our Michigan genotype native seed on just under 100 acres around the Kalamazoo area. The seed from our production fields originates from collections from multiple remnant populations in southern Michigan. Our “Southlow” grass seed is from USDA Plant Materials Division.

After harvest, the seed is put into large dryer bins that continually circulate unheated air through the seed until it is adequately dried. After each species is cleaned through a specific, multi-step process, samples from each lot are sent to an independent seed testing lab to test purity and germination rates. Our clean seed is then stored in a temperature and humidity controlled warehouse cooler to maintain optimum germination.

Seed that we do not produce ourselves in southwest Michigan is acquired from other growers in Michigan and the Great Lakes region. We strive to preserve local genotype and provide seed that is adapted to local climate and soils. The origin of the seed is taken into consideration for each seed order and decisions are based upon location, customer preferences, environmental objectives and budget.



OUR PHILOSOPHY

Native Connections strives to maintain ecological integrity in all aspects of our work. We realize we cannot replicate nature exactly, however, we do consider nature's examples during the design phase of our restoration and native landscaping projects. We incorporate the following ethical standards into our work:

- **Local site conditions** (e.g. soil, hydrology, adjacent habitats) and pre-European settlement vegetation are considered when designing seed mixes.
- Seed mixes are designed with **appropriate species diversity and densities** that are based on native plant communities, yet are tailored to meet client preferences.
- Only **native species** are used in our seed mixes; cultivars and exotics are avoided. We caution against the widespread use of rare, threatened or endangered species. We try to avoid using these species when seed from local sources is not available or affordable. Due to the importance of many of these species and their popularity in prairie systems, we have included them in our Cultural Guide (page 15). Information on which species are rare or non-native in Michigan can be found in the Cultural Guide.
- Seed is obtained from sources as close to a project site as seed availability and a client's budget allows. **Seed from local or regional sources** have adaptations that have evolved with local or regional soils and climate. Planting seed from different regions can decrease the genetic identity of local populations, affecting the overall genetic diversity of a native plant species.
- **Proper Management** of restoration and native planting projects is essential for ensuring successful results. Invasive species control and protection of rare species and natural communities are integrated into our management plans and recommendations to our clients.



OUR ROOTS

Native Connections has seen some changes over the years.

In 1987, Jerry Stewart, an agronomist by training, started his own landscape design and installation company, Lawnscape Plus, Inc. During that time, Jerry developed a keen interest in prairie restoration and native plants, also gaining crucial experience working for the Ed Lowe Foundation and JF New & Associates.

In 2001, Jerry morphed Lawnscape Plus from primarily a lawn service company into one focused on broader native project design, installation, and management as well as native seed production. With the new focus came a new name: Native Connections. The first native fields amounted to 20 acres of native grasses, but by 2006 he had 75 acres of native grasses with SW Michigan genotypes between southern Michigan and northern Indiana. Each species was hand collected from remnant populations around SW Michigan and through a contract with the USDA, Native Connections collected warm and cool season grass seeds from designated remnant stands for a “Southlow” ecotype in order to increase the USDA’s Rose Lake Plant Materials Center selections.

With these native grass plots and other Great Lakes genotype seed, the Native Connections team systematically designed custom seed mixes for various restoration projects around MI, IN, OH, IL and WI. With seeds always a focus of the company, they also provided a full-spectrum of restoration services from botanical inventories and management plans to installation and long-term maintenance.

Joining the team in 2012, Jared Foster brought experience in ecological restoration from his work in western states and west Michigan, as well as a formal education and life-long interest in natural resources conservation and the natural world. Over the next 6 years

they fine-tuned their production and sales models to meet the ever-growing demands of the native restoration and landscaping industries.

After 30 years, Jerry was ready to turn the company over to new hands. In order to meet the growing demand for more Michigan genotype species, Jared bought the seed portion of the business, focusing on production and sales, and the Kalamazoo Nature Center took on installations, maintenance, and consultations as part of their Ecological Services division. With this change in ownership and focus, we began to move our production fields from Three Rivers to the Kalamazoo area, finding a couple sites that could grow a variety of species. Since 2018, we’ve added more than two dozen species to our selection of MI genotype species and expanded our production fields to just under 100 acres. We will continue to add more species as the years go on.

With each species added to our production, we always ensure the source seed is collected from remnant native populations in southern Michigan, preserving the Michigan genotypes that provide the best seed adapted for projects in our region.

WE’RE MOVING!!!

With our fields now mostly in the greater Kalamazoo area, we began looking for a more central location to call home. In February 2020, we purchased property on N. Westnedge to be our new company headquarters. As the need for native seeds continues to grow throughout our region, we will continue to provide quality and diverse seed mixes with an ever-increasing selection of local and regional genotype species. As we adapt our new location to our needs, we are looking forward to letting some hardy native plants dig in their roots, work their magic, and loosen the compacted soils of this once industrial site.



NATIVE CONNECTIONS SEED MIXES

We assure our clients that they will receive high quality native seed from regional sources. All of our Michigan Genotype grass seed and most of our other species are sold on a Pure Live Seed (PLS) basis and have been tested by independent seed labs for purity and germination.

Native Connections offers fifteen standard seed mixes. We've divided them into three general categories based on their intent: **Natural Community Mixes, Pollinator Mixes and Working Mixes.** Though we offer these standard mixes, we can create a custom mix based on project-specific conditions such as soils, hydrology, sun exposure, historical data, client objectives and budget.

NATURAL COMMUNITY MIXES

Native Connections has always strived to mimic our region's many natural plant communities in our seed mix designs. Our most extensive set, these mixes were developed by staff familiar with and passionate for our native plant communities. Listed in categories of soil moisture, height, and shade tolerance, you'll likely find a mix that will meet your objectives. If you don't see a specific plant that you need or want, contact us for a custom mix design at no charge.

POLLINATOR MIXES

Working in Michigan, a state with such diverse agriculture and wildlife habitat, we've developed a special connection to the beauty and necessity of pollinator insects. With help from researchers at Michigan State University and The Xerces Society, we've designed these mixes with those beneficial insects in mind. Whether as part of a farm practice or as a concerned citizen creating habitat, consider using one of these or a custom mix in your next Pollinator planting.

WORKING MIXES

These mixes are meant for workin'. And that's just what they'll do! We've designed them for the critical places engineers and contractors build and work with. Whether it's erosion control, stormwater retention, or mitigated wetland establishment, these mixes will cover the workload using a thoughtful and economical selection of native plants and temporary grasses.

NATURAL COMMUNITY MIXES

Basic Shortgrass Prairie Mix

This is the economy version of our Dry Shortgrass Prairie Mix. Though the diversity and seed density are greatly reduced, this is a great starter prairie where a low stature on dry soils is needed or desired.

Total Seeding Rate: 31 lbs per acre
3.75 lbs grasses • 2.25 lbs forbs • 25 lbs cover crop
40 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses		PLS oz/acre
<i>Bouteloua curtipendula</i>	Side-oats Grama	20.00
<i>Bromus kalmii</i>	Prairie Brome	4.00
<i>Elymus canadensis</i>	Canada Wild Rye	7.00
<i>Koeleria cristata</i>	June Grass	0.10
<i>Panicum virgatum</i>	Switchgrass	0.80
<i>Schizachyrium scoparium</i>	Little Bluestem	28.00
<i>Sporobolus heterolepis</i>	Prairie Dropseed	0.10
		60.00

Forbs		PLS oz/acre
<i>Asclepias tuberosa</i>	Butterfly Milkweed	0.50
<i>Aster sagittifolius</i>	Arrow-leaved Aster	0.50
<i>Cassia fasciculata</i>	Partridge Pea	8.00
<i>Coreopsis lanceolata</i>	Lance-leaf Coreopsis	7.00
<i>Echinacea purpurea</i>	Purple Coneflower	7.00
<i>Kuhnia eupatorioides</i>	False Boneset	0.60
<i>Monarda fistulosa</i>	Wild Bergamot	0.50
<i>Penstemon digitalis</i>	Foxglove Beardtongue	0.50
<i>Petalostemum purpureum</i>	Purple Prairie Clover	4.00
<i>Potentilla arguta</i>	Prairie Cinquefoil	0.50
<i>Ratibida pinnata</i>	Yellow Coneflower	0.70
<i>Rudbeckia hirta</i>	Black-eyed Susan	4.90
<i>Solidago rigida</i>	Stiff Goldenrod	0.70
<i>Verbena stricta</i>	Hoary Vervain	0.60
		36.00

Substitutions may be necessary due to availability.
Nurse crop is annual ryegrass and seed oats.



Substitutions may be necessary due to availability. Nurse crop is annual ryegrass and seed oats.

NATURAL COMMUNITY MIXES

Dry Shortgrass Prairie Mix

A mix based on a variety of "poor-soil" communities including dry sand prairies, oak barrens and pine barrens. While big bluestem and Indian grass would typically be an important component of such prairies, and can certainly be added, this mix is designed to be low-profile so most plants won't exceed four feet in height. This mix is appropriate for drier soils.

Total Seeding Rate: 32.5 lbs per acre
4.5 lbs grasses • 3 lbs forbs • 25 lbs cover crop
65 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses		PLS oz/acre
<i>Bouteloua curtipendula</i>	Side-oats Grama	17.00
<i>Bromus kalmii</i>	Prairie Brome	6.00
<i>Elymus canadensis</i>	Canada Wild Rye	12.50
<i>Koeleria cristata</i>	June Grass	0.35
<i>Panicum virgatum</i>	Switchgrass	0.80
<i>Schizachyrium scoparium</i>	Little Bluestem	35.00
<i>Sporobolus heterolepis</i>	Prairie Dropseed	0.35
		72.00
Forbs		PLS oz/acre
<i>Anemone virginiana</i>	Tall Thimbleweed	0.10
<i>Asclepias tuberosa</i>	Butterfly Milkweed	1.40
<i>Aster laevis</i>	Smooth Blue Aster	0.80
<i>Aster sagittifolius</i>	Arrow-leaved Aster	2.25
<i>Baptisia lactea</i>	White Wild Indigo	1.75
<i>Cassia fasciculata</i>	Partridge Pea	4.00
<i>Coreopsis lanceolata</i>	Lance-leaf Coreopsis	4.25
<i>Desmodium illinoense</i>	Prairie Tick Trefoil	0.20
<i>Echinacea purpurea</i>	Purple Coneflower	4.25
<i>Eryngium yuccifolium</i>	Rattlesnake Master	1.50
<i>Kuhnia eupatorioides</i>	False Boneset	1.20
<i>Liatris aspera</i>	Rough Blazingstar	0.20
<i>Lupinus perennis</i>	Lupine	2.50
<i>Monarda fistulosa</i>	Wild Bergamot	2.50
<i>Penstemon digitalis</i>	Foxglove Beardtongue	2.50
<i>Petalostemum purpureum</i>	Purple Prairie Clover	4.25
<i>Potentilla arguta</i>	Prairie Cinquefoil	1.25
<i>Ratibida pinnata</i>	Yellow Coneflower	2.40
<i>Rudbeckia hirta</i>	Black-eyed Susan	4.00
<i>Solidago rigida</i>	Stiff Goldenrod	1.70
<i>Tradescantia ohiensis</i>	Common Spiderwort	1.00
<i>Verbena stricta</i>	Hoary Vervain	3.50
<i>Zizia aptera</i>	Prairie Golden Alexander	0.50
		48.00



Basic Tallgrass Prairie Mix

This is the economy version of our Mesic Tallgrass Prairie Mix. The lower diversity and seed density still provide adequate coverage to establish a simple tallgrass prairie in dry to mesic soils.

Total Seeding Rate: 31.5 lbs per acre
4.5 lbs grasses • 2 lbs forbs • 25 lbs cover crop
40 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses and Sedges		PLS oz/acre
<i>Andropogon gerardii</i>	Big Bluestem	7.00
<i>Bouteloua curtipendula</i>	Side-oats Grama	10.00
<i>Elymus canadensis</i>	Canada Wild Rye	20.00
<i>Koeleria cristata</i>	June Grass	0.40
<i>Panicum virgatum</i>	Switchgrass	13.60
<i>Schizachyrium scoparium</i>	Little Bluestem	14.00
<i>Sorghastrum nutans</i>	Indian Grass	7.00
		72.00
Forbs		PLS oz/acre
<i>Asclepias syriaca</i>	Common Milkweed	0.50
<i>Aster sagittifolius</i>	Arrow-leaved Aster	0.50
<i>Astragalus canadensis</i>	Canadian Milk Vetch	1.00
<i>Cassia fasciculata</i>	Partridge Pea	6.00
<i>Coreopsis lanceolata</i>	Lance-leaf Coreopsis	4.00
<i>Echinacea purpurea</i>	Purple Coneflower	4.00
<i>Helianthus maximiliani</i>	Maximilian's Sunflower	3.00
<i>Heliopsis helianthoides</i>	False sunflower	4.00
<i>Monarda fistulosa</i>	Wild Bergamot	0.50
<i>Oenothera biennis</i>	Common Evening Primrose	0.70
<i>Penstemon digitalis</i>	Foxglove Beardtongue	0.50
<i>Petalostemum purpureum</i>	Purple Prairie Clover	1.00
<i>Ratibida pinnata</i>	Yellow Coneflower	1.00
<i>Rudbeckia hirta</i>	Black-eyed Susan	4.80
<i>Verbena stricta</i>	Hoary Vervain	0.50
		32.00



Substitutions may be necessary due to availability. Nurse crop is annual ryegrass and seed oats.

NATURAL COMMUNITY MIXES

Mesic Tallgrass Prairie Mix

A mix that is based on our familiarity with the flora of Michigan's few remnants of mesic and dry-mesic prairies as well as blacksoil prairies of Indiana, Illinois and Wisconsin. This mix is appropriate for medium to dry, loamy soils.

Total Seeding Rate: 33 lbs per acre

5 lbs grasses • 3 lbs forbs • 25 lbs cover crop

62 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses and Sedges		PLS oz/acre
<i>Andropogon gerardii</i>	Big Bluestem	20.00
<i>Carex bicknellii</i>	Bicknell's Sedge	0.30
<i>Carex molesta</i>	Field Oval Sedge	0.30
<i>Elymus canadensis</i>	Canada Wild Rye	24.00
<i>Juncus tenuis</i>	Path Rush	0.10
<i>Panicum virgatum</i>	Switchgrass	8.30
<i>Schizachyrium scoparium</i>	Little Bluestem	13.00
<i>Sorghastrum nutans</i>	Indian Grass	24.00
		80.00

Forbs		PLS oz/acre
<i>Allium cernuum</i>	Nodding Wild Onion	1.00
<i>Asclepias syriaca</i>	Common Milkweed	1.50
<i>Asclepias tuberosa</i>	Butterfly Milkweed	0.90
<i>Aster laevis</i>	Smooth Blue Aster	0.90
<i>Aster novae-angliae</i>	New England Aster	0.30
<i>Aster sagittifolius</i>	Arrow-leaved Aster	2.20
<i>Baptisia lactea</i>	White Wild Indigo	2.00
<i>Coreopsis tripteris</i>	Tall Coreopsis	0.50
<i>Desmodium canadense</i>	Showy Tick Trefoil	0.40
<i>Desmodium illinoense</i>	Prairie Tick Trefoil	0.30
<i>Echinacea purpurea</i>	Purple Coneflower	4.40
<i>Eryngium yuccifolium</i>	Rattlesnake Master	2.30
<i>Gentiana flavida</i>	Bottle Gentian	0.30
<i>Heliopsis helianthoides</i>	False sunflower	4.30
<i>Liatris spicata</i>	Marsh Blazingstar	1.00
<i>Monarda fistulosa</i>	Wild Bergamot	2.40
<i>Oenothera biennis</i>	Common Evening Primrose	1.70
<i>Penstemon digitalis</i>	Foxglove Beardtongue	1.20
<i>Ratibida pinnata</i>	Yellow Coneflower	3.50
<i>Rudbeckia hirta</i>	Black-eyed Susan	4.00
<i>Rudbeckia triloba</i>	Brown-eyed Susan	3.50
<i>Silphium integrifolium</i>	Rosinweed	2.00
<i>Silphium terebinthinaceum</i>	Prairie Dock	0.30
<i>Solidago rigida</i>	Stiff Goldenrod	1.50
<i>Verbena stricta</i>	Hoary Vervain	3.40
<i>Vernonia missurica</i>	Missouri Ironweed	0.20
<i>Zizia aurea</i>	Golden Alexander	2.00
		48.00

Wet-Mesic Prairie Mix

This mix is patterned after natural prairie communities with mesic to wet soils and full sun. Species in this mix can tolerate a wide range of conditions including seasonal saturation as well as dry periods during the summer months. Not intended for long-term flooding or fully saturated areas, this mix will also do well in some stormwater detention basins or can be planted just upslope from wetland areas.

Total Seeding Rate: 32.5 lbs per acre

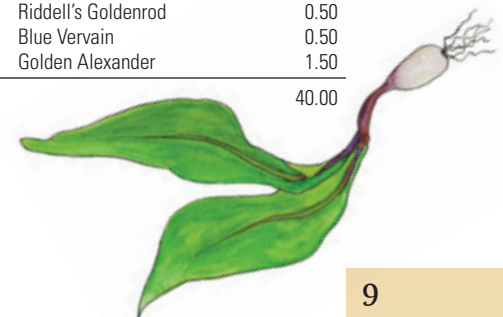
5 lbs grasses • 2.5 lbs forbs • 25 lbs cover crop

67 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses and Sedges		PLS oz/acre
<i>Andropogon gerardii</i>	Big Bluestem	20.00
<i>Carex bebbii</i>	Bebb's oval sedge	0.10
<i>Carex vulpinoidea</i>	Fox Sedge	0.10
<i>Elymus canadensis</i>	Canada Wild Rye	8.50
<i>Elymus virginicus</i>	Virginia Wild Rye	22.00
<i>Panicum virgatum</i>	Switchgrass	8.00
<i>Scirpus cyperinus</i>	Wool Grass	0.15
<i>Sorghastrum nutans</i>	Indian Grass	20.00
<i>Spartina pectinata</i>	Prairie Cordgrass	1.00
		80.00

Forbs		PLS oz/acre
<i>Actinomeris alternifolia</i>	Wingstem	0.60
<i>Allium cernuum</i>	Nodding Wild Onion	1.00
<i>Angelica atropurpurea</i>	Angelica	1.00
<i>Asclepias incarnata</i>	Swamp Milkweed	0.50
<i>Aster novae-angliae</i>	New England Aster	0.50
<i>Cassia hebecarpa</i>	Wild Senna	5.50
<i>Coreopsis tripteris</i>	Tall Coreopsis	1.00
<i>Desmodium canadense</i>	Showy Tick Trefoil	0.50
<i>Eryngium yuccifolium</i>	Rattlesnake Master	0.50
<i>Eupatorium purpureum</i>	Sweet Joe Pye Weed	0.50
<i>Geum aleppicum</i>	Yellow Avens	0.20
<i>Helenium autumnale</i>	Sneezeweed	0.50
<i>Heliopsis helianthoides</i>	False sunflower	7.00
<i>Heracleum maximum</i>	Cow Parsnip	1.00
<i>Hypericum pyramidatum</i>	Great St John's Wort	0.70
<i>Liatris spicata</i>	Marsh Blazingstar	0.70
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0.80
<i>Monarda fistulosa</i>	Wild Bergamot	1.00
<i>Penstemon digitalis</i>	Foxglove Beardtongue	2.70
<i>Physostegia angustifolia</i>	Narrow-leaved Obedient Plant	0.20
<i>Pycnanthemum virginianum</i>	Mountain mint	0.20
<i>Ratibida pinnata</i>	Yellow Coneflower	3.00
<i>Rudbeckia hirta</i>	Black-eyed Susan	3.50
<i>Rudbeckia triloba</i>	Brown-eyed Susan	2.50
<i>Scrophularia lanceolata</i>	Early Figwort	0.50
<i>Silphium perfoliatum</i>	Cupplant	0.90
<i>Solidago riddellii</i>	Riddell's Goldenrod	0.50
<i>Verbena hastata</i>	Blue Vervain	0.50
<i>Zizia aurea</i>	Golden Alexander	1.50
		40.00



Substitutions may be necessary due to availability. Nurse crop is annual ryegrass and seed oats.

NATURAL COMMUNITY MIXES

Wet Meadow Mix

A diverse mix styled after a classic sedge meadow community, this mix is suitable for a variety of wet sites on muck or mineral soils, including periodically inundated and persistently moist conditions. It is also useful for many practical applications, including wetland mitigations and streambank stabilization projects.

Total Seeding Rate: 31 lbs per acre
3.4 lbs grasses • 2.6 lbs forbs • 25 lbs cover crop
93 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses, Sedges & Rushes		PLS oz/acre
<i>Beckmannia syzigachne</i>	American Slough Grass	3.00
<i>Bromus ciliatus</i>	Fringed Brome	6.00
<i>Calamagrostis canadensis</i>	Bluejoint Grass	0.20
<i>Carex bebbii</i>	Bebb's oval sedge	0.50
<i>Carex comosa</i>	Bristly Sedge	2.00
<i>Carex hystericina</i>	Porcupine Sedge	2.00
<i>Carex vulpinoidea</i>	Fox Sedge	1.20
<i>Elymus virginicus</i>	Virginia Wild Rye	32.00
<i>Juncus effusus</i>	Soft Rush	0.30
<i>Leersia oryzoides</i>	Rice Cut Grass	0.10
<i>Panicum virgatum</i>	Switchgrass	3.00
<i>Poa palustris</i>	Fowl Bluegrass	0.50
<i>Scirpus atrovirens</i>	Dark Green Bulrush	0.80
<i>Scirpus cyperinus</i>	Wool Grass	0.20
<i>Spartina pectinata</i>	Prairie Cordgrass	2.50
		54.30

Forbs		PLS oz/acre
<i>Actinomeris alternifolia</i>	Wingstem	0.20
<i>Angelica atropurpurea</i>	Angelica	4.00
<i>Asclepias incarnata</i>	Swamp Milkweed	1.50
<i>Aster novae-angliae</i>	New England Aster	0.30
<i>Aster puniceus</i>	Swamp Aster	0.50
<i>Bidens cernua</i>	Nodding Bur Marigold	0.20
<i>Boltonia latisquama recognita</i>	False Aster	0.20
<i>Cassia hebecarpa</i>	Wild Senna	6.00
<i>Eupatorium maculatum</i>	Joe Pye Weed	0.40
<i>Eupatorium perfoliatum</i>	Boneset	0.20
<i>Gentiana andrewsii</i>	Bottle Gentian	0.10
<i>Helenium autumnale</i>	Sneezeweed	1.00
<i>Helianthus grosseserratus</i>	Saw-toothed Sunflower	0.20
<i>Hypericum pyramidatum</i>	Great St John's Wort	1.60
<i>Iris virginica</i>	Southern Blue Flag Iris	3.00
<i>Liatris spicata</i>	Marsh Blazingstar	2.00
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0.50
<i>Ludwigia alternifolia</i>	Seedbox	0.10
<i>Lycopus americanus</i>	Water Horehound	0.20
<i>Mimulus ringens</i>	Monkey Flower	0.10
<i>Monarda fistulosa</i>	Wild Bergamot	0.20
<i>Penstemon digitalis</i>	Foxglove Beardtongue	2.00
<i>Physostegia virginiana</i>	Obedient Plant	1.00
<i>Pycnanthemum virginianum</i>	Mountain mint	0.50
<i>Rudbeckia hirta</i>	Black-eyed Susan	2.00
<i>Rudbeckia laciniata</i>	Golden Glow	0.40
<i>Rumex verticillatus</i>	Swamp Dock	0.20
<i>Silphium perfoliatum</i>	Cupplant	4.00
<i>Solidago riddellii</i>	Riddell's Goldenrod	1.00
<i>Verbena hastata</i>	Blue Vervain	3.00
<i>Vernonia gigantea</i>	Tall Ironweed	0.10
<i>Zizia aurea</i>	Golden Alexander	5.00
		41.70

Emergent Mix

A mix that features species typical of the emergent zone associated with many of Michigan's wetland ecosystems, but also includes species that will thrive in simply saturated soils. Good for stabilizing shores and providing aquatic habitat, this mix will endure periodic to year-round inundation.

Total Seeding Rate: 30 lbs per acre
2.5 lbs grasses • 2.5 lbs forbs • 25 lbs cover crop
116 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses, Sedges & Rushes		PLS oz/acre
<i>Beckmannia syzigachne</i>	American Slough Grass	8.00
<i>Carex comosa</i>	Bristly Sedge	4.00
<i>Carex crinita</i>	Fringed Sedge	1.00
<i>Carex hystericina</i>	Porcupine Sedge	3.00
<i>Carex stipata</i>	Awl-fruited Sedge	2.00
<i>Carex vulpinoidea</i>	Fox Sedge	4.00
<i>Eleocharis palustris</i>	Great Spike Rush	0.30
<i>Glyceria canadensis</i>	Canada Manna Grass	2.00
<i>Glyceria grandis</i>	Reed Manna Grass	3.00
<i>Juncus effusus</i>	Soft Rush	0.40
<i>Juncus torreyi</i>	Torrey's Rush	0.20
<i>Leersia oryzoides</i>	Rice Cut Grass	1.00
<i>Scirpus acutus</i>	Hard-stem Bulrush	0.20
<i>Scirpus atrovirens</i>	Dark Green Bulrush	1.00
<i>Scirpus cyperinus</i>	Wool Grass	0.20
<i>Scirpus fluviatilis</i>	River Bulrush	8.00
<i>Scirpus validus</i>	Soft-stem Bulrush	1.70
		40.00

Forbs		PLS oz/acre
<i>Acorus americanus</i>	Sweet Flag	4.30
<i>Alisma subcordatum</i>	Common Water Plantain	3.50
<i>Asclepias incarnata</i>	Swamp Milkweed	2.50
<i>Aster puniceus</i>	Swamp Aster	0.50
<i>Bidens cernua</i>	Nodding Bur Marigold	1.50
<i>Cicuta maculata</i>	Water Hemlock	0.30
<i>Eupatorium maculatum</i>	Joe Pye Weed	0.30
<i>Eupatorium perfoliatum</i>	Boneset	0.40
<i>Iris virginica</i>	Southern Blue Flag Iris	4.20
<i>Lobelia cardinalis</i>	Cardinal Flower	0.10
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0.30
<i>Mimulus ringens</i>	Monkey Flower	0.10
<i>Peltandra virginica</i>	Arrow Arum	4.00
<i>Penthorum sedoides</i>	Ditch Stonecrop	0.50
<i>Polygonum pennsylvanicum</i>	Pennsylvania Smartweed	2.00
<i>Pontederia cordata</i>	Pickereel Weed	1.00
<i>Rumex verticillatus</i>	Swamp Dock	0.20
<i>Sagittaria latifolia</i>	Common Arrowhead/Duck Potato	0.30
<i>Sparganium eurycarpum</i>	Common Bur Reed	10.00
<i>Verbena hastata</i>	Blue Vervain	4.00
		40.00



Substitutions may be necessary due to availability. Nurse crop is annual ryegrass and seed oats.

NATURAL COMMUNITY MIXES

Mesic Woodland Mix

A mix that includes species from a variety of natural forest communities found throughout Michigan. It suits most sand, loam, and clay soils. This mix is meant for shade and will not do well in wet or saturated conditions, but it can be customized for drier or wetter soils.

Total Seeding Rate: 31.25 lbs per acre
3.75 lbs grasses • 2.5 lbs forbs • 25 lbs cover crop
56 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses, Sedges & Rushes		PLS oz/acre
<i>Bromus purgans</i>	Hairy Wood Chess	3.00
<i>Carex cristatella</i>	Crested Sedge	0.40
<i>Carex sprengelii</i>	Long-beaked Sedge	0.50
<i>Elymus villosus</i>	Silky Wild Rye	8.00
<i>Elymus virginicus</i>	Virginia Wild Rye	40.00
<i>Glyceria striata</i>	Fowl Manna Grass	2.50
<i>Hystrix patula</i>	Bottlebrush Grass	5.20
<i>Juncus tenuis</i>	Path Rush	0.40
		60.00

Forbs		PLS oz/acre
<i>Allium tricoccum</i>	Wild Leek	1.00
<i>Anemone canadensis</i>	Canada Thimbleweed	0.70
<i>Aquilegia canadensis</i>	Wild Columbine	0.50
<i>Arisaema triphyllum</i>	Jack-in-the-Pulpit	0.50
<i>Aster cordifolius</i>	Heart-leaved Aster	0.10
<i>Aster shortii</i>	Short's Aster	0.10
<i>Blephilia hirsuta</i>	Hairy wood mint	0.50
<i>Campanula americana</i>	Tall Bellflower	0.30
<i>Caulophyllum thalictroides</i>	Blue Cohosh	4.00
<i>Eupatorium purpureum</i>	Sweet Joe Pye Weed	2.00
<i>Eupatorium rugosum</i>	White Snakeroot	0.50
<i>Geranium maculatum</i>	Wild Geranium	0.10
<i>Helianthus grosseserratus</i>	Saw-toothed Sunflower	1.50
<i>Impatiens capensis</i>	Spotted Touch-me-not	0.40
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0.20
<i>Penstemon digitalis</i>	Foxglove Beardtongue	2.50
<i>Polygonatum canaliculatum</i>	Great Solomon's Seal	1.00
<i>Rudbeckia laciniata</i>	Golden Glow	6.40
<i>Rudbeckia triloba</i>	Brown-eyed Susan	6.70
<i>Smilacina racemosa</i>	False Solomon's Seal	2.40
<i>Solidago caesia</i>	Blue-stemmed Goldenrod	0.10
<i>Solidago flexicaulis</i>	Zigzag Goldenrod	0.10
<i>Solidago rugosa</i>	Rough Goldenrod	0.30
<i>Thalictrum dioicum</i>	Early Meadow Rue	0.10
<i>Zizia aurea</i>	Golden Alexander	8.00
		40.00



POLLINATOR MIXES

CRP Pollinator Mix

This bare-bones prairie mix is our most economical grass and wildflower mix and meets NRCS specifications for several pollinator and wildlife habitat conservation programs in Michigan. The selected wildflowers will bloom throughout the growing season and provide diverse food and habitat resources for pollinator insects and other wildlife. CRP programs do not specify nurse crop, but it can be added.

Total Seeding Rate: 4 lbs per acre
2 lbs grasses • 2 lbs forbs
38 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses		PLS oz/acre
<i>Andropogon gerardii</i>	Big Bluestem	2.00
<i>Elymus canadensis</i>	Canada Wild Rye	8.00
<i>Panicum virgatum</i>	Switchgrass	12.00
<i>Schizachyrium scoparium</i>	Little Bluestem	10.00
		32.00

Forbs		PLS oz/acre
<i>Achillea millefolium</i>	Yarrow	1.40
<i>Aster novae-angliae</i>	New England Aster	0.40
<i>Cassia fasciculata</i>	Partridge Pea	4.75
<i>Coreopsis lanceolata</i>	Lance-leaf Coreopsis	2.85
<i>Echinacea purpurea</i>	Purple Coneflower	4.50
<i>Heliopsis helianthoides</i>	False sunflower	4.75
<i>Monarda fistulosa</i>	Wild Bergamot	0.40
<i>Oenothera biennis</i>	Common Evening Primrose	2.50
<i>Petalostemum purpureum</i>	Purple Prairie Clover	3.55
<i>Potentilla arguta</i>	Prairie Cinquefoil	0.80
<i>Ratibida pinnata</i>	Yellow Coneflower	3.00
<i>Rudbeckia hirta</i>	Black-eyed Susan	2.80
<i>Solidago rigida</i>	Stiff Goldenrod	0.30
		32.00



Substitutions may be necessary due to availability. Nurse crop is annual ryegrass and seed oats.

POLLINATOR MIXES

Mesic to Dry Pollinator Mix

Endorsed by The Xerces Society for Invertebrate Conservation, this prairie mix provides attractive blooms of pollinator preferred forage and nectar sources throughout the entire growing season. The grasses and wildflowers also provide diverse habitat resources for a wide range of other beneficial insects. This mix is well-suited for dry to mesic soils and mixed light conditions, making it ideal for the addition of native trees and shrubs once established.

Total Seeding Rate: 31 lbs per acre
2.3 lbs grasses • 3.7 lbs forbs • 25 lbs cover crop
55 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses and Sedges		PLS oz/acre
<i>Bouteloua curtipendula</i>	Side-oats Grama	6.60
<i>Carex vulpinoidea</i>	Fox Sedge	1.10
<i>Koeleria cristata</i>	June Grass	1.50
<i>Schizachyrium scoparium</i>	Little Bluestem	22.00
<i>Sorghastrum nutans</i>	Indian Grass	5.30
		36.50
Forbs		PLS oz/acre
<i>Agastache scrophulariaefolia</i>	Purple Giant Hyssop	0.50
<i>Amorpha canescens</i>	Leadplant	1.50
<i>Asclepias syriaca</i>	Common Milkweed	1.00
<i>Asclepias tuberosa</i>	Butterfly Milkweed	1.00
<i>Aster laevis</i>	Smooth Blue Aster	0.50
<i>Aster novae-angliae</i>	New England Aster	0.80
<i>Cassia fasciculata</i>	Partridge Pea	10.00
<i>Coreopsis lanceolata</i>	Lance-leaf Coreopsis	8.00
<i>Echinacea purpurea</i>	Purple Coneflower	7.20
<i>Eryngium yuccifolium</i>	Rattlesnake Master	1.00
<i>Liatris cylindracea</i>	Cylindrical Blazingstar	0.50
<i>Liatris spicata</i>	Marsh Blazingstar	2.00
<i>Lupinus perennis</i>	Lupine	1.80
<i>Monarda fistulosa</i>	Wild Bergamot	1.00
<i>Penstemon digitalis</i>	Foxglove Beardtongue	1.80
<i>Petalostemum purpureum</i>	Purple Prairie Clover	6.30
<i>Pycnanthemum tenuifolium</i>	Slender Mountain Mint	0.50
<i>Ratibida pinnata</i>	Yellow Coneflower	4.30
<i>Rudbeckia fulgida</i>	Orange Coneflower	1.50
<i>Rudbeckia hirta</i>	Black-eyed Susan	3.20
<i>Silphium perfoliatum</i>	Cupplant	2.10
<i>Solidago rigida</i>	Stiff Goldenrod	0.50
<i>Vernonia fasciculata</i>	Ironweed	1.00
<i>Zizia aurea</i>	Golden Alexander	1.50
		59.50



WORKING MIXES

Slope Stabilization Mix

An inexpensive mix designed to quickly and aggressively establish on disturbed slopes prone to erosion. While the species diversity is limited, the heavy nurse crop and relatively high native seed count ensure vigorous establishment. This mix is designed for medium to dry soils and will establish thorough lighter erosion control blankets.

Total Seeding Rate: 42 lbs per acre
4 lbs grasses • 38 lbs cover crop
52 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses, Sedges and Rushes		PLS oz/acre
<i>Andropogon gerardii</i>	Big Bluestem	6.00
<i>Bouteloua curtipendula</i>	Side-oats Grama	9.50
<i>Carex molesta</i>	Field Oval Sedge	1.50
<i>Deschampsia cespitosa</i>	Tufted Hairgrass	4.50
<i>Elymus canadensis</i>	Canada Wild Rye	8.00
<i>Juncus tenuis</i>	Path Rush	0.50
<i>Panicum virgatum</i>	Switchgrass	15.00
<i>Schizachyrium scoparium</i>	Little Bluestem	9.00
<i>Sorghastrum nutans</i>	Indian Grass	6.00
<i>Sporobolus cryptandrus</i>	Sand Dropseed	4.00
		64.00



Substitutions may be necessary due to availability. Nurse crop is annual ryegrass and seed oats.

WORKING MIXES

BioSwale Seed Mix

This mix is similar to our Wet-Mesic Prairie, except more specifically designed for swales, detention basins and raingardens. It has less emphasis on the tallest grasses and more emphasis on the showier, more common wildflowers. For a shorter stature, we can easily customize it by eliminating the tall grasses and increasing the shorter sedges and rushes.

Total Seeding Rate: 32.25 lbs per acre
5 lbs grasses • 2.25 lbs forbs • 25 lbs cover crop
66 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses and Sedges		PLS oz/acre
<i>Andropogon gerardii</i>	Big Bluestem	12.00
<i>Carex bebbii</i>	Bebb's oval sedge	3.00
<i>Carex vulpinoidea</i>	Fox Sedge	4.00
<i>Elymus canadensis</i>	Canada Wild Rye	16.00
<i>Elymus virginicus</i>	Virginia Wild Rye	32.00
<i>Glyceria striata</i>	Fowl Manna Grass	0.50
<i>Juncus effusus</i>	Soft Rush	0.20
<i>Juncus tenuis</i>	Path Rush	0.10
<i>Panicum virgatum</i>	Switchgrass	4.20
<i>Sorghastrum nutans</i>	Indian Grass	6.00
<i>Spartina pectinata</i>	Prairie Cordgrass	2.00
		80.00

Forbs		PLS oz/acre
<i>Allium cernuum</i>	Nodding Wild Onion	2.00
<i>Asclepias incarnata</i>	Swamp Milkweed	0.30
<i>Aster novae-angliae</i>	New England Aster	0.30
<i>Cassia hebecarpa</i>	Wild Senna	7.00
<i>Desmodium canadense</i>	Showy Tick Trefoil	0.50
<i>Echinacea purpurea</i>	Purple Coneflower	5.90
<i>Eupatorium purpureum</i>	Sweet Joe Pye Weed	0.25
<i>Heliopsis helianthoides</i>	False sunflower	8.40
<i>Hypericum pyramidatum</i>	Great St John's Wort	0.50
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0.80
<i>Monarda fistulosa</i>	Wild Bergamot	0.65
<i>Pycnanthemum virginianum</i>	Mountain mint	0.30
<i>Ratibida pinnata</i>	Yellow Coneflower	1.00
<i>Rudbeckia hirta</i>	Black-eyed Susan	5.00
<i>Scrophularia lanceolata</i>	Early Figwort	0.50
<i>Solidago riddellii</i>	Riddell's Goldenrod	0.50
<i>Verbena hastata</i>	Blue Vervain	1.10
<i>Zizia aurea</i>	Golden Alexander	1.00
		36.00

Stormwater Mix

An economical mix specifically designed to withstand the low water quality and highly variable conditions associated with stormwater features. Approximately half of the species are salt tolerant and most species will do well in mesic to wet hydrology with others filling in the wettest and driest ends of the spectrum. The high native seed count and heavy annual nurse crop in this mix ensure full and aggressive establishment in a wide range of site conditions.

Total Seeding Rate: 40 lbs per acre
2.5 lbs grasses • 1.5 lbs forbs • 36 lbs cover crop
101 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses, Sedges & Rushes		PLS oz/acre
<i>Carex bebbii</i>	Bebb's oval sedge	1.75
<i>Carex vulpinoidea</i>	Fox Sedge	2.00
<i>Eleocharis palustris</i>	Great Spike Rush	1.00
<i>Elymus virginicus</i>	Virginia Wild Rye	17.00
<i>Juncus effusus</i>	Soft Rush	0.50
<i>Juncus tenuis</i>	Path Rush	0.50
<i>Juncus torreyi</i>	Torrey's Rush	0.25
<i>Panicum virgatum</i>	Switchgrass	10.00
<i>Scirpus pungens</i>	Three square Rush	1.00
<i>Scirpus validus</i>	Soft-stem Bulrush	1.00
<i>Sorghastrum nutans</i>	Indian Grass	5.00
		40.00

Forbs		PLS oz/acre
<i>Alisma subcordatum</i>	Common Water Plantain	1.25
<i>Asclepias incarnata</i>	Swamp Milkweed	1.25
<i>Aster novae-angliae</i>	New England Aster	0.50
<i>Aster umbellatus</i>	Flat-topped Aster	0.50
<i>Bidens cernua</i>	Nodding Bur Marigold	0.75
<i>Echinacea purpurea</i>	Purple Coneflower	2.75
<i>Helenium autumnale</i>	Sneezeweed	0.75
<i>Liatris spicata</i>	Marsh Blazingstar	1.25
<i>Lycopus americanus</i>	Water Horehound	0.50
<i>Mimulus ringens</i>	Monkey Flower	0.25
<i>Monarda fistulosa</i>	Wild Bergamot	0.60
<i>Oenothera biennis</i>	Common Evening Primrose	2.20
<i>Penthorum sedoides</i>	Ditch Stonecrop	0.40
<i>Physostegia virginiana</i>	Obedient Plant	0.50
<i>Polygonum pennsylvanicum</i>	Pennsylvania Smartweed	2.75
<i>Rudbeckia hirta</i>	Black-eyed Susan	2.50
<i>Verbena hastata</i>	Blue Vervain	2.80
<i>Zizia aurea</i>	Golden Alexander	2.50
		24.00



Substitutions may be necessary due to availability. Nurse crop is annual ryegrass and seed oats.

WORKING MIXES

Forested Wetland Establishment Mix

With species that will tolerate full sun as well as shade, this mix is ideal for establishing a diverse native ground layer while small trees and shrubs develop into a mature wooded wetland. This mix can be used for reforestation projects in floodplain or wet areas or wetland mitigation projects that include tree and shrub plantings.

Total Seeding Rate: 31 lbs per acre
4.5 lbs grasses • 1.5 lbs forbs • 25 lbs cover crop
74 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses, Sedges & Rushes		PLS oz/acre
<i>Beckmannia syzigachne</i>	American Slough Grass	5.00
<i>Bromus ciliatus</i>	Fringed Brome	1.30
<i>Calamagrostis canadensis</i>	Bluejoint Grass	0.50
<i>Carex bebbii</i>	Bebb's oval sedge	0.20
<i>Carex comosa</i>	Bristly Sedge	2.00
<i>Carex frankii</i>	Frank's Sedge	1.00
<i>Carex hystericina</i>	Porcupine Sedge	2.00
<i>Carex stipata</i>	Awl-fruited Sedge	2.00
<i>Carex vulpinoidea</i>	Fox Sedge	1.00
<i>Elymus riparius</i>	Riverbank Wild Rye	2.00
<i>Elymus virginicus</i>	Virginia Wild Rye	50.00
<i>Glyceria grandis</i>	Reed Manna Grass	2.00
<i>Glyceria striata</i>	Fowl Manna Grass	0.50
<i>Juncus effusus</i>	Soft Rush	0.30
<i>Scirpus cyperinus</i>	Wool Grass	0.20
<i>Spartina pectinata</i>	Prairie Cordgrass	2.00
		72.00
Forbs		PLS oz/acre
<i>Actinomeris alternifolia</i>	Wingstem	1.25
<i>Angelica atropurpurea</i>	Angelica	2.25
<i>Aster novae-angliae</i>	New England Aster	0.70
<i>Aster puniceus</i>	Swamp Aster	0.20
<i>Bidens frondosa</i>	Devil's Beggarticks	0.20
<i>Boltonia asteroides</i>	False Aster	0.50
<i>Cassia hebecarpa</i>	Wild Senna	3.60
<i>Cephalanthus occidentalis</i>	Buttonbush	1.00
<i>Eupatorium perfoliatum</i>	Boneset	0.50
<i>Helenium autumnale</i>	Sneezeweed	3.00
<i>Iris virginica</i>	Southern Blue Flag Iris	0.60
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0.20
<i>Ludwigia alternifolia</i>	Seedbox	0.30
<i>Mimulus ringens</i>	Monkey Flower	0.10
<i>Monarda fistulosa</i>	Wild Bergamot	1.20
<i>Penstemon digitalis</i>	Foxglove Beardtongue	1.20
<i>Physostegia virginiana</i>	Obedient Plant	0.30
<i>Rudbeckia laciniata</i>	Golden Glow	1.50
<i>Silphium perfoliatum</i>	Cupplant	2.50
<i>Solidago ohioensis</i>	Ohio Goldenrod	1.10
<i>Zizia aurea</i>	Golden Alexander	1.80
		24.00

Solar Shortgrass Mix

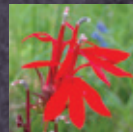
This mix while not purely native, has enough diversity to handle shade and sun in a dry-mesic environment surrounding a solar array. With Sheep Fescue as its base, it can provide a low maintenance, low profile habitat as the solar panels soak up the sun.

Total Seeding Rate: 32 lbs per acre
4.03 lbs grasses • 3 lbs forbs • 25 lbs cover crop
101 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses, Sedges & Rushes		PLS oz/acre
<i>Bouteloua curtipendula</i>	Side-oats Grama	32.00
<i>Festuca ovina</i>	Sheep Fescue	32.00
<i>Juncus tenuis</i>	Path Rush	0.50
		64.50
Forbs		PLS oz/acre
<i>Achillea millefolium</i>	Yarrow	4.00
<i>Allium cernuum</i>	Nodding Wild Onion	1.00
<i>Aquilegia canadensis</i>	Wild Columbine	1.50
<i>Asclepias tuberosa</i>	Butterfly Milkweed	1.50
<i>Aster ericoides</i>	Heath Aster	0.50
<i>Cassia fasciculata</i>	Partridge Pea	20.00
<i>Coreopsis lanceolata</i>	Lance-leaf Coreopsis	8.00
<i>Heuchera richardsonii</i>	Prairie Alum Root	0.25
<i>Lespedeza virginica</i>	Slender Bush Clover	1.00
<i>Penstemon hirsutus</i>	Hairy Beardtongue	0.50
<i>Pycnanthemum tenuifolium</i>	Slender Mountain Mint	0.50
<i>Rudbeckia hirta</i>	Black-eyed Susan	8.00
<i>Solidago nemoralis</i>	Old-field Goldenrod	0.25
<i>Verbena stricta</i>	Hoary Vervain	1.00
		48.00





This cultural guide is meant to be used as a resource while making decisions on native species selection. The species listed here are some of the more popular species we use in our seed mixes as well as some we find interesting. Many more are available; please contact us for more information. Note: Botanical names given are those most commonly used by native plant nurseries.

Legend

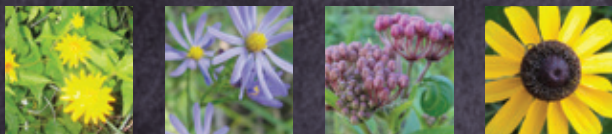
Sun	Soil	Status in Michigan
☀ = Full Sun	C = Clay	SC = Special Concern
☀☀ = Part Sun	L = Loam	T = Threatened
☀☀☀ = Shade	S = Sand	NN = Non Native in MI
	M = Muck	X = Extirpated

Forbs (Wildflowers)

Botanical Name	Common Name	Dry	Dry-mesic	Mesic	Wet-mesic	Wet	Emergent	Sun	Soil	Blooms	Height	Color	Approx. Seeds/Oz	Status
<i>Achillea millefolium</i>	Yarrow	X	X	X	-	-	-	☀	C,L,S,M	JUL-AUG	1-3'	White	175,000	
<i>Acorus calamus</i>	Sweet Flag	-	-	-	X	X		☀☀	C,L,S,M	MAY-JUL	1-4'	Green	6,600	
<i>Actaea rubra</i>	Red Baneberry	-	-	X	X	X	-	☀	C,L,S,M	APR-MAY	2'	White	4,450	
<i>Actinomeris alternifolia</i>	Wingstem	-	-	X	X	-		☀	C,L,S,M	JUL-OCT	3-8'	Yellow	9,000	
<i>Agastache nepetoides</i>	Yellow Giant Hyssop	X	X	X	-	-		☀☀	L,S	JUL-OCT	3-7'	Yellow	90,000	
<i>Alisma subcordatum</i>	Common Water Plantain	-	-	-	X	X		☀☀	C,L,S,M	JUL-SEP	2-4'	White	60,000	
<i>Allium cernuum</i>	Nodding Wild Onion	-	X	X	X	-		☀☀	C,L,S	JUL-AUG	1-2'	Lavender	7,600	
<i>Allium tricoccum</i>	Wild Leek	-	X	X	X	-		☀☀	C,L,S,M	JUN-AUG	6-12"	White	1,400	
<i>Anemone canadensis</i>	Canada Thimbleweed	-	X	X	X	-		☀☀☀	C,L,S,M	MAY-JUL	1-2'	White	8,000	
<i>Anemone cylindrica</i>	Thimbleweed	X	X	X	-	-		☀☀	L,S	JUN-AUG	1-2'	White	26,000	
<i>Anemone virginiana</i>	Tall Thimbleweed	X	X	X	-	-		☀☀☀	L,S	JUN-AUG	2-3'	White	28,000	
<i>Angelica atropurpurea</i>	Angelica	-	X	X	X	-		☀☀	C,L,S,M	MAY-JUN	4-9'	White	5,400	
<i>Aquilegia canadensis</i>	Wild Columbine	X	X	X	-	-		☀☀☀	L,S	APR-JUN	1-3'	Red	38,000	
<i>Arisaema triphyllum</i>	Jack-in-the-Pulpit	-	X	X	X	-		☀☀	C,L,S,M	APR-JUN	1-2'	Green	500	
<i>Artemisia caudata</i>	Beach Wormwood	X	-	-	-	-		☀	L,S	AUG-OCT	2-5'	Green	250,000	
<i>Asclepias incarnata</i>	Swamp Milkweed	-	X	X	X	X		☀	C,L,S,M	JUN-AUG	3-5'	Pink	4,800	
<i>Asclepias syriaca</i>	Common Milkweed	X	X	X	X	-		☀☀	C,L,S,M	JUN-AUG	2-5'	Pink	4,000	
<i>Asclepias tuberosa</i>	Butterfly Milkweed	X	X	X	-	-		☀☀	L,S	JUN-AUG	1-3'	Orange	4,300	
<i>Asclepias verticillata</i>	Whorled Milkweed	X	X	-	-	-		☀☀	S	JUL-SEP	1-2'	White	11,000	
<i>Aster azureus</i>	Sky Blue Aster	X	X	X	-	-		☀☀	L,S	AUG-OCT	1-4'	Blue	80,000	
<i>Aster cordifolius</i>	Heart-leaved Aster	-	X	X	-	-		☀☀☀	L,S	AUG-OCT	2-4'	Blue	140,000	
<i>Aster ericoides</i>	Heath Aster	X	X	X	X	-		☀☀	L,S	AUG-OCT	1-3'	White	200,000	
<i>Aster laevis</i>	Smooth Blue Aster	X	X	X	-	-		☀☀	L,S	AUG-OCT	2-5'	Blue	55,000	
<i>Aster macrophyllus</i>	Big-leaved Aster	X	X	X	X	-		☀☀	L,S	AUG-OCT	1-2'	White	27,000	
<i>Aster novae-angliae</i>	New England Aster	-	X	X	X	-		☀☀	C,L,S,M	AUG-OCT	3-6'	Purple	66,000	
<i>Aster pilosus</i>	Frost Aster	X	X	X	-	-		☀☀	L,S	AUG-OCT	2-4'	White	140,000	
<i>Aster puniceus</i>	Swamp Aster	-	-	X	X	X		☀☀	C,L,S,M	AUG-OCT	3-6'	Purple	80,000	
<i>Aster sagittifolius</i>	Arrow-leaved Aster	X	X	X	-	-		☀☀	L,S	AUG-OCT	2-5'	Blue	135,000	
<i>Aster shortii</i>	Short's Aster	-	X	X	-	-		☀☀	C,L,S	SEP-OCT	2-4'	Blue	60,000	
<i>Aster simplex</i>	Panicled Aster	-	-	X	X	-		☀	C,L,S,M	AUG-OCT	3-5'	White	156,800	
<i>Aster umbellatus</i>	Flat-topped Aster	-	X	X	X	X		☀☀	C,L,S,M	AUG-OCT	2-5'	White	67,000	
<i>Astragalus canadensis</i>	Canadian Milk Vetch	-	X	X	X	-		☀☀	L,S	JUN-AUG	1-4'	Cream	17,000	T
<i>Aureolaria flava</i>	Smooth False Foxglove	X	X	-	-	-		☀☀	L,S	JUL-OCT	2-4'	Yellow	7,000	T
<i>Baptisia lactea</i>	White Wild Indigo	X	X	X	-	-		☀☀	C,L,S	JUN-JUL	3-4'	White	1,700	SC
<i>Bidens cernua</i>	Nodding Bur Marigold	-	-	X	X	X		☀	C,L,S,M	JUL-OCT	1-3'	Yellow	21,000	
<i>Bidens frondosa</i>	Devil's Beggarticks	-	-	X	X	X		☀☀	C,L,S,M	AUG-OCT	1-4'	Yellow	5,000	
<i>Blephilia hirsuta</i>	Hairy Wood Mint	-	X	X	X	-		☀	C, L,S	JUL-AUG	1-3'	White	240,000	
<i>Boltonia asteroides</i>	False Aster	-	X	X	X	-		☀☀	C,L,S	AUG-OCT	3-5'	White	160,000	
<i>Cacalia atriplicifolia</i>	Pale Indian Plantain	X	X	X	-	-		☀☀	L,S	JUL-SEP	3-7'	White	6,000	
<i>Caltha palustris</i>	Marsh Marigold	-	-	-	X	X		☀☀☀	C,L,S,M	APR-MAY	1-2'	Yellow	26,000	
<i>Campanula americana</i>	Tall Bellflower	-	X	X	X	-		☀☀	C,L,S	JUL-OCT	2-6'	Blue	170,000	
<i>Campanula rotundifolia</i>	Harebell	X	X	-	-	-		☀☀	L,S	JUN-SEP	6-12"	Purple	900,000	
<i>Cassia fasciculata</i>	Partridge Pea	X	X	X	-	-		☀☀	L,S	JUL-SEP	1-3'	Yellow	2,700	
<i>Cassia hebecarpa</i>	Wild Senna	-	X	X	X	-		☀☀	C,L,S	JUL-AUG	3-5'	Yellow	1,400	
<i>Castilleja coccinea</i>	Indian Paintbrush	-	X	X	X	-		☀☀	L,S,M	MAY-SEP	1-2'	Orange	300,000	
<i>Chelone glabra</i>	Turtlehead	-	X	X	X	-		☀☀	C,L,S	JUL-SEP	2-4'	Cream	92,000	
<i>Coreopsis lanceolata</i>	Lance-leaf Coreopsis	X	X	-	-	-		☀	L,S	MAY-AUG	1-2'	Yellow	20,000	



Botanical Name	Common Name	Dry	Dry-mesic	Mesic	Wet-mesic	Wet	Emergent	Sun	Soil	Blooms	Height	Color	Approx. Seeds/Oz	Status
<i>Coreopsis palmata</i>	Prairie Coreopsis	X	X	X	-	-	-	☀☀	L,S	JUN-AUG	1-3'	Yellow	10,000	T
<i>Coreopsis tripteris</i>	Tall Coreopsis	-	X	X	X	-	-	☀☀	C,L,S,M	JUL-SEP	4-8'	Yellow	14,000	
<i>Desmanthes illinoensis</i>	Illinois Sensitive Plant	X	X	X	-	-	-	☀	L,S	JUL-AUG	3-5'	White	4,200	NN
<i>Desmodium canadense</i>	Showy Tick Trefoil	-	X	X	X	-	-	☀☀	C,L,S	JUL-AUG	2-5'	Pink	5,500	
<i>Desmodium illinoense</i>	Prairie Tick Trefoil	X	X	X	-	-	-	☀☀	C,L,S	JUL-AUG	3-6'	Pink	4,300	
<i>Echinacea pallida</i>	Pale Purple Coneflower	X	X	X	-	-	-	☀☀	C,L,S	JUN-JUL	2-4'	Pink	5,200	NN
<i>Echinacea purpurea</i>	Purple Coneflower	-	X	X	X	-	-	☀☀	C,L,S	JUN-JUL	3-5'	Purple	6,600	X
<i>Eryngium yuccifolium</i>	Rattlesnake Master	-	X	X	X	-	-	☀	C,L,S,M	JUL-SEP	3-5'	White	7,500	T
<i>Eupatorium maculatum</i>	Joe Pye Weed	-	-	-	X	X	X	☀☀	C,L,S,M	JUL-SEP	4-7'	Pink	95,000	
<i>Eupatorium perfoliatum</i>	Boneset	-	-	-	X	X	X	☀☀	C,L,S,M	JUL-SEP	3-5'	White	160,000	
<i>Eupatorium purpureum</i>	Sweet Joe Pye Weed	-	X	X	X	-	-	☀☀	C,L,S	JUL-SEP	4-6'	Pink	42,000	
<i>Eupatorium rugosum</i>	White Snakeroot	X	X	X	X	-	-	☀☀	C,L,S	JUL-OCT	2-4'	White	150,000	
<i>Euphorbia corollata</i>	Flowering Spurge	X	X	X	-	-	-	☀	L,S	JUN-AUG	2-4'	White	8,000	
<i>Frasera caroliniensis</i>	American Columbo	-	X	X	-	-	-	☀☀	L,S	MAY-JUN	6-9'	White	3,000	
<i>Gentiana andrewsii</i>	Bottle Gentian	-	-	X	X	X	-	☀☀	C,L,S,M	AUG-OCT	1-3'	Purple	280,000	
<i>Geranium maculatum</i>	Wild Geranium	-	X	X	-	-	-	☀☀☀	L,S	MAY-JUL	1-2'	Lavender	5,000	
<i>Geum triflorum</i>	Prairie Smoke	X	X	X	-	-	-	☀	L,S	APR-JUN	6-12"	Pink	27,000	T
<i>Helenium autumnale</i>	Sneezeweed	-	-	-	X	X	-	☀☀	C,L,S,M	AUG-OCT	3-5'	Yellow	130,000	
<i>Helianthus divaricatus</i>	Woodland Sunflower	X	X	X	-	-	-	☀☀☀	L,S	JUL-SEP	2-4'	Yellow	4,800	
<i>Helianthus giganteus</i>	Tall Sunflower	-	-	X	X	X	-	☀	C,L,S,M	JUL-SEP	4-10'	Yellow	10,000	
<i>Helianthus grosseserratus</i>	Saw-toothed Sunflower	-	-	X	X	X	-	☀☀	C,L,S,M	AUG-OCT	6-9'	Yellow	15,000	
<i>Helianthus mollis</i>	Downy Sunflower	X	X	X	-	-	-	☀	L,S	AUG-SEP	2-5'	Yellow	7,000	T
<i>Helianthus occidentalis</i>	Western Sunflower	X	X	X	-	-	-	☀☀	L,S	JUL-SEP	2-4'	Yellow	14,000	
<i>Helianthus strumosus</i>	Pale-leaved Sunflower	-	X	X	X	-	-	☀☀☀	L,S	JUL-OCT	3-5'	Yellow	4,200	
<i>Heliopsis helianthoides</i>	False Sunflower	-	X	X	X	-	-	☀☀	C,L,S,M	JUN-SEP	3-6'	Yellow	6,300	
<i>Heracleum maximum</i>	Cow Parsnip	-	-	X	X	X	-	☀☀☀	C,L,S,M	MAY-JUL	4-10'	White	2,600	
<i>Heuchera richardsonii</i>	Prairie Alum Root	X	X	X	-	-	-	☀☀	L,S	MAY-JUN	1-3'	White	700,000	
<i>Hibiscus palustris</i>	Swamp Rose Mallow	-	-	-	X	X	-	☀☀	L,S,M	JUL-SEP	4-7'	Pink	2,400	SC
<i>Hypericum pyramidatum</i>	Great St. John's Wort	-	-	X	X	X	-	☀☀	C,L,M	JUL-SEP	3-6'	Yellow	190,000	
<i>Iris versicolor</i>	Northern Blue Flag Iris	-	-	-	X	X	X	☀☀	C,L,S,M	MAY-JUL	2-3'	Purple	1,300	
<i>Iris virginica</i>	Southern Blue Flag Iris	-	-	-	X	X	X	☀☀	C,L,S,M	MAY-JUL	2-3'	Purple	1,000	
<i>Kuhnia eupatorioides</i>	False Boneset	X	X	-	-	-	-	☀☀	L,S	AUG-SEP	1-3'	White	32,000	SC
<i>Lespedeza capitata</i>	Round-headed Bush Clover	X	X	X	-	-	-	☀☀	L,S	AUG-SEP	2-5'	White	8,000	
<i>Liatis aspera</i>	Rough Blazingstar	X	X	X	-	-	-	☀	L,S	JUL-OCT	1-3'	Purple	16,000	
<i>Liatis cylindracea</i>	Cylindrical Blazingstar	X	X	-	-	-	-	☀☀	S	JUL-SEP	1-2'	Purple	14,000	
<i>Liatis scariosa</i>	Savannah Blazingstar	X	X	X	-	-	-	☀☀	L,S	AUG-SEP	2-4'	Purple	10,800	
<i>Liatis spicata</i>	Marsh Blazingstar	-	-	X	X	X	-	☀	C,L,S,M	JUL-SEP	3-5'	Purple	11,000	
<i>Lobelia cardinalis</i>	Cardinal Flower	-	-	-	X	X	X	☀☀	L,S,M	JUL-SEP	2-5'	Red	400,000	
<i>Lobelia siphilitica</i>	Great Blue Lobelia	-	-	X	X	X	X	☀☀☀	C,L,S,M	JUL-SEP	1-4'	Blue	500,000	
<i>Ludwigia alternifolia</i>	Seedbox	-	-	-	X	X	-	☀	L,S,M	JUL-SEP	2-3'	Yellow	281,250	SC
<i>Lupinus perennis</i>	Lupine	X	X	-	-	-	-	☀☀	S	MAY-JUN	1-2'	Blue	1,100	
<i>Lycopus americanus</i>	Water Horehound	-	-	-	X	X	-	☀	L,S,M	JUL-SEP	1-2'	White	130,000	
<i>Mentha arvensis</i>	Wild Mint	-	-	X	X	X	-	☀☀	L,S,M	JUL-SEP	1-3'	White	300,000	
<i>Mimulus ringens</i>	Monkey Flower	-	-	-	X	X	X	☀	C,L,S,M	JUN-SEP	2-3'	Purple	2,300,000	
<i>Monarda fistulosa</i>	Wild Bergamot	X	X	X	X	X	-	☀☀	C,L,S,M	JUL-SEP	2-4'	Lavender	70,000	
<i>Monarda punctata</i>	Horsemint	X	-	-	-	-	-	☀	S	JUL-SEP	1-2'	Pink	90,000	
<i>Napaea dioica</i>	Glade Mallow	-	-	X	X	-	-	☀☀	C,L,S,M	JUN-AUG	3-7'	White	5,300	NN
<i>Oenothera biennis</i>	Common Evening Primrose	X	X	X	X	-	-	☀☀	C,L,S,M	JUN-SEP	2-6'	Yellow	90,000	
<i>Parthenium integrifolium</i>	Wild Quinine	X	X	X	-	-	-	☀	C,L,S,M	JUN-SEP	2-4'	White	7,000	NN
<i>Peltandra virginica</i>	Arrow Arum	-	-	-	-	-	X	☀☀	L,S,M	JUN-JUL	1-2'	Green	42	
<i>Penstemon digitalis</i>	Foxglove Beardtongue	-	X	X	X	-	-	☀☀	C,L,S,M	JUN-JUL	2-4'	White	130,000	
<i>Penstemon hirsutus</i>	Hairy Beardtongue	X	X	-	-	-	-	☀	L,S	MAY-JUN	1-3'	Lavender	125,000	
<i>Penthorum sedoides</i>	Ditch Stonecrop	-	-	-	-	X	X	☀☀	C,L,S,M	JUN-SEP	1-3'	Green	1,300,000	
<i>Petalostemum candidum</i>	White Prairie Clover	X	X	X	-	-	-	☀☀	L,S	JUL-SEP	1-3'	White	19,000	NN
<i>Petalostemum purpureum</i>	Purple Prairie Clover	X	X	X	-	-	-	☀☀	C,L,S	JUL-SEP	1-3'	Purple	18,000	X
<i>Phlox pilosa</i>	Sand Prairie Phlox	X	X	X	-	-	-	☀	L,S	MAY-JUL	1-2'	Pink	19,000	
<i>Physostegia virginiana</i>	Obedient Plant	-	-	-	X	X	-	☀☀	C,L,S,M	AUG-SEP	2-4'	Pink	11,000	
<i>Polygonatum canaliculatum</i>	Great Solomon's Seal	X	X	X	-	-	-	☀☀	C,L,S	MAY-JUNE	1-4'	White	1,200	
<i>Polygonum amphibium</i>	Water Knotweed	-	-	-	X	X	X	☀☀	C,L,S,M	JUN-OCT	6"-1'	Pink	3,125	
<i>Polygonum pennsylvanicum</i>	Pennsylvania Smartweed	-	-	X	X	X	X	☀☀	C,L,S,M	JUN-OCT	1-3'	Pink	13,000	
<i>Polygonum virginianum</i>	Woodland Knotweed	-	X	X	X	-	-	☀☀	C,L,S	JUL-OCT	1-4'	White	3,500	
<i>Pontederia cordata</i>	Pickereel Weed	-	-	-	-	-	X	☀☀	L,S,M	JUN-OCT	1-3'	Purple	1,250	
<i>Potentilla arguta</i>	Prairie Cinquefoil	X	X	-	-	-	-	☀	L,S	JUN-AUG	1-3'	Yellow	230,000	



Botanical Name	Common Name	Dry	Dry-mesic	Mesic	Wet-mesic	Wet	Emergent	Sun	Soil	Blooms	Height	Color	Approx. Seeds/lb	Status
<i>Prenanthes alba</i>	Lion's Foot	-	X	X	X	-	-	☀	L,S	AUG-OCT	2-5'	White	18,000	
<i>Pycnanthemum virginianum</i>	Mountain Mint	-	-	X	X	X	-	☀☀	L,S,M	JUN-SEP	1-3'	White	220,000	
<i>Ratibida pinnata</i>	Yellow Coneflower	-	X	X	X	-	-	☀	C,L,S,M	JUL-OCT	3-5'	Yellow	30,000	
<i>Rudbeckia fulgida</i>	Orange Coneflower	-	-	X	X	-	-	☀☀	C,L,M	JUL-SEP	2-3'	Orange	31,000	
<i>Rudbeckia hirta</i>	Black-eyed Susan	X	X	X	X	-	-	☀☀	C,L,S,M	JUN-OCT	1-3'	Yellow	92,000	
<i>Rudbeckia laciniata</i>	Golden Glow	-	-	-	X	X	-	☀☀☀	C,L,S,M	JUL-OCT	3-10'	Yellow	14,000	
<i>Rudbeckia speciosa sullivantii</i>	Showy Black-eyed Susan	-	-	X	X	-	-	☀	C,L,M	AUG-SEP	2-3'	Yellow	27,100	
<i>Rudbeckia subtomentosa</i>	Sweet Black-eyed Susan	-	X	X	X	-	-	☀☀	C,L,S,M	AUG-OCT	3-5'	Yellow	43,000	NN
<i>Rudbeckia triloba</i>	Brown-eyed Susan	-	X	X	X	-	-	☀☀	L,S	AUG-OCT	2-5'	Yellow	34,000	
<i>Rumex verticillatus</i>	Swamp Dock	-	-	-	X	X	-	☀	C,L,S,M	JUN-AUG	2-5'	Green	9,688	
<i>Sagittaria latifolia</i>	Common Arrowhead	-	-	-	-	-	X	☀☀	C,L,S,M	JUL-SEP	2-4'	White	61,000	
<i>Scrophularia marilandica</i>	Late Figwort	-	X	X	X	-	-	☀☀	L,S	JUL-OCT	3-7'	Brown	170,000	
<i>Senecio aureus</i>	Golden Ragwort	-	-	X	X	X	-	☀☀	C, L, S, M	MAY-JUN	1-2'	Yellow	28,125	
<i>Silphium integrifolium</i>	Rosinweed	X	X	X	X	-	-	☀	C,L,S,M	JUL-SEP	2-6'	Yellow	1,200	
<i>Silphium laciniatum</i>	Compass Plant	X	X	X	-	-	-	☀	C,L,S	JUN-SEP	4-8'	Yellow	660	
<i>Silphium perfoliatum</i>	Cupplant	-	-	X	X	X	-	☀☀	C,L,S,M	JUL-SEP	4-8'	Yellow	1,400	
<i>Silphium terebinthinaceum</i>	Prairie Dock	-	X	X	X	-	-	☀	C,L,S,M	JUL-SEP	4-10'	Yellow	1,000	
<i>Smilacina racemosa</i>	False Solomon's Seal	X	X	X	-	-	-	☀☀	C,L,S	APR-JUN	1-3'	White	400	
<i>Solidago caesia</i>	Blue-stemmed Goldenrod	X	X	X	-	-	-	☀☀	C,L,S	SEP-OCT	1-3'	Yellow	546,875	
<i>Solidago graminifolia</i>	Grass-leaved Goldenrod	-	X	X	X	X	-	☀☀	L,S,M	JUL-SEP	1-4'	Yellow	350,000	
<i>Solidago nemoralis</i>	Old Field Goldenrod	X	X	-	-	-	-	☀	L,S	AUG-OCT	1-3'	Yellow	300,000	
<i>Solidago ohioensis</i>	Ohio Goldenrod	-	-	X	X	X	-	☀	C,L,S,M	JUL-SEP	2-3'	Yellow	110,000	
<i>Solidago patula</i>	Swamp Goldenrod	-	-	-	X	X	-	☀☀	L,S,M	AUG-OCT	3-6'	Yellow	71,875	
<i>Solidago riddellii</i>	Riddell's goldenrod	-	-	-	X	X	-	☀	C,L,S,M	AUG-OCT	2-5'	Yellow	93,000	
<i>Solidago rigida</i>	Stiff Goldenrod	X	X	X	-	-	-	☀☀	C,L,S	AUG-OCT	1-5'	Yellow	41,000	
<i>Solidago rugosa</i>	Rough Goldenrod	-	X	X	X	X	-	☀☀☀	C,L,S,M	AUG-OCT	2-5'	Yellow	92,500	
<i>Solidago speciosa</i>	Showy Goldenrod	X	X	X	-	-	-	☀☀	L,S	AUG-OCT	2-5'	Yellow	95,000	
<i>Sparganium eurycarpum</i>	Common Bur Reed	-	-	-	-	X	X	☀	C,L,S,M	JUN-AUG	2-5'	Green	500	
<i>Tephrosia virginiana</i>	Goat's Rue	X	-	-	X	X	-	☀☀	S	JUN-AUG	1-3'	Pink	2,500	
<i>Thalictrum dasycarpum</i>	Tall Meadow Rue	-	-	X	X	X	-	☀☀	C,L,S,M	JUN-JUL	3-6'	Cream	11,000	
<i>Tradescantia ohiensis</i>	Common Spiderwort	X	X	X	-	-	-	☀☀	L,S	MAY-JUL	2-4'	Purple	8,000	
<i>Verbena hastata</i>	Blue Vervain	-	-	X	X	X	X	☀	C,L,S,M	JUL-SEP	3-5'	Purple	93,000	
<i>Verbena stricta</i>	Hoary Vervain	X	X	X	-	-	-	☀	L,S	JUN-SEP	2-4'	Blue	28,000	
<i>Vernonia fasciculata</i>	Ironweed	-	-	X	X	-	-	☀	C,L,S,M	JUL-SEP	3-6'	Purple	24,000	NN
<i>Vernonia gigantea</i>	Tall Ironweed	-	-	X	X	X	-	☀	C,L,S	JUL-SEP	4-9'	Purple	24,000	
<i>Vernonia missurica</i>	Missouri Ironweed	-	X	X	X	-	-	☀	C,L,S,M	JUL-OCT	3-5'	Purple	22,000	
<i>Veronicastrum virginicum</i>	Culver's Root	-	X	X	X	-	-	☀☀	C,L,S	JUN-AUG	2-6'	White	800,000	
<i>Zizia aptera</i>	Prairie Golden Alexander	X	X	-	-	-	-	☀☀	L,S	JUN-JUL	1-2'	Yellow	12,000	T
<i>Zizia aurea</i>	Golden Alexander	X	X	X	X	X	-	☀☀☀	C,L,S,M	APR-JUN	2-4'	Yellow	11,000	

Shrubs & Vines

<i>Amorpha canescens</i>	Leadplant	X	X	X	-	-	-	☀☀	L,S	JUN-AUG	1-3'	Purple	17,000	SC
<i>Ceanothus americanus</i>	New Jersey Tea	X	X	X	-	-	-	☀☀	L,S	JUN-AUG	1-3'	White	7,000	
<i>Cephalanthus occidentalis</i>	Buttonbush	-	-	-	X	X	X	☀☀☀	C,L,S,M	JUN-AUG	6-15'	White	12,500	
<i>Clematis virginiana</i>	Virgin's Bower	-	-	X	X	-	-	☀☀☀	C,L,S,M	JUL-OCT	vine	White	13,600	
<i>Hypericum prolificum</i>	Shrubby St. John's Wort	X	X	X	-	-	-	☀☀	L,S	JUL-AUG	3-5'	Yellow	140,000	
<i>Rosa carolina</i>	Pasture Rose	X	X	X	-	-	-	☀☀	L,S	JUN-SEP	1-3'	Pink	2,900	
<i>Rosa palustris</i>	Swamp Rose	-	-	-	X	X	X	☀☀	C,L,S,M	JUN-AUG	2-7'	Pink	1,600	
<i>Spiraea alba</i>	Meadowsweet	-	-	-	X	X	-	☀☀	C,L,S,M	AUG-SEP	2-5'	White	390,625	
<i>Spiraea tomentosa</i>	Steeplebush	-	-	X	X	X	-	☀☀	L,S,M	AUG-SEP	2-3'	Pink	390,625	

Legend

Sun	Soil	Status in Michigan
☀ = Full Sun	C = Clay	SC = Special Concern
☀☀ = Part Sun	L = Loam	T = Threatened
☀☀☀ = Shade	S = Sand	NN = Non Native in MI
	M = Muck	X = Extirpated



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Graminoids (Grasses, Sedges and Rushes)

Botanical Name	Common Name	Dry	Dry-mesic	Mesic	Wet-mesic	Wet	Emergent	Sun	Soil	Season	Height	Approx. Seeds/Oz	Status
<i>Andropogon gerardii</i>	Big Bluestem	X	X	X	X	-	-	☼	C,L,S,M	JUL-OCT	4-8'	10,000	
<i>Bouteloua curtipendula</i>	Side-oats Grama	X	X	X	-	-	-	☼	L,S	AUG-OCT	1-4'	6,000	T
<i>Bromus ciliatus</i>	Fringed Brome	-	-	-	X	X	-	☼	L,S,M	JUN-AUG	2-4'	10,000	
<i>Bromus kalmii</i>	Prairie Brome	X	X	X	-	-	-	☼☼	L,S	JUN-AUG	1-3'	8,000	
<i>Bromus purgans</i>	Hairy Wood Chess	X	X	X	-	-	-	☼☼	C,L,S	JUN-AUG	2-5'	7,600	
<i>Calamagrostis canadensis</i>	Blue Joint Grass	-	-	-	X	X	-	☼	C,L,S,M	JUN-AUG	2-5'	280,000	
<i>Calamovilfa longifolia</i>	Sand Reed Grass	X	-	-	-	-	-	☼	S	JUL-SEP	5-6'	9,000	
<i>Carex bebbii</i>	Bebb's Oval Sedge	-	-	X	X	X	-	☼	C,L,S,M	MAY-SEP	1-3'	34,000	
<i>Carex bicknellii</i>	Bicknell's Sedge	X	X	X	-	-	-	☼☼	L,S	MAY-AUG	1-3'	17,000	
<i>Carex brevior</i>	Plains Oval Sedge	X	X	X	-	-	-	☼	L,S	MAY-JUN	1-2'	29,000	
<i>Carex comosa</i>	Bristly Sedge	-	-	-	X	X	X	☼☼	C,L,S,M	JUN-SEP	1-3'	30,000	
<i>Carex crinita</i>	Fringed Sedge	-	-	-	X	X	X	☼☼☼	C,L,S,M	MAY-JULY	2-4'	23,000	
<i>Carex cristatella</i>	Crested Sedge	-	-	X	X	-	-	☼☼☼	L,S,M	MAY-JULY	2-3'	59,000	
<i>Carex diandra</i>	Bog Panicked Sedge	-	-	-	X	X	-	☼	L,S,M	MAY-JUN	1-3'	43,000	
<i>Carex frankii</i>	Frank's Sedge	-	-	-	X	X	-	☼☼☼	C,L,S,M	JUN-SEP	1-2'	17,000	SC
<i>Carex gracillima</i>	Graceful Sedge	-	X	X	-	-	-	☼☼	C,L,S,M	MAY-JUL	1-3'	102,000	
<i>Carex granularis</i>	Meadow Sedge	-	-	X	X	X	-	☼☼☼	C,L,S,M	MAY-JULY	1-3'	16,000	
<i>Carex grayi</i>	Common Bur Sedge	-	-	X	X	X	-	☼☼	C,L,S,M	MAY-AUG	1-3'	1,200	
<i>Carex hystericina</i>	Porcupine Sedge	-	-	-	X	X	-	☼	C,L,S,M	MAY-SEP	1-3'	30,000	
<i>Carex lacustris</i>	Lake Sedge	-	-	-	X	X	X	☼☼☼	C,L,S,M	MAY-AUG	2-5'	26,000	
<i>Carex lupulina</i>	Hop Sedge	-	-	-	X	X	X	☼☼	C,L,S,M	MAY-JULY	1-3'	3,300	
<i>Carex lurida</i>	Shallow Sedge	-	-	-	X	X	X	☼☼	C,L,S,M	JUN-SEP	1-3'	12,000	
<i>Carex muhlenbergii</i>	Sand Bracted Sedge	X	X	-	-	-	-	☼☼	L,S	MAY-JULY	1-3'	12,000	
<i>Carex muskingumensis</i>	Palm Sedge	-	-	X	X	X	-	☼	C,L,S	MAY-JULY	1-2'	81,250	
<i>Carex scoparia</i>	Lance-fruited Oval Sedge	-	-	-	X	X	-	☼	L,S,M	MAY-AUG	2-3'	84,000	
<i>Carex sprengei</i>	Long-beaked Sedge	-	X	X	X	-	-	☼☼	C,L,S	APR-JULY	1-2'	10,000	
<i>Carex stipata</i>	Awl-fruited Sedge	-	-	-	X	X	X	☼☼☼	C,L,S,M	MAY-AUG	1-3'	34,000	
<i>Carex stricta</i>	Tussock Sedge	-	-	-	X	X	-	☼☼	L,S,M	APR-JUN	2-3'	53,000	
<i>Carex vulpinoidea</i>	Fox Sedge	-	-	X	X	X	X	☼☼	C,L,S,M	MAY-SEP	1-3'	100,000	
<i>Cinna arundinacea</i>	Common Wood Reed	-	-	X	X	X	-	☼☼	L,S,M	JUL-SEP	3-5'	308,750	
<i>Eleocharis acicularis</i>	Spike Rush	-	-	-	-	X	X	☼	C,L,S,M	JUL-SEP	6-12"	70,000	
<i>Eleocharis obtusa</i>	Blunt Spike Rush	-	-	-	-	X	X	☼	C,L,S,M	JUL-SEP	2-12"	100,000	
<i>Eleocharis palustris</i>	Great Spike Rush	-	-	-	-	X	X	☼	C,L,S,M	JUL-SEP	1-2'	51,000	
<i>Elymus canadensis</i>	Canada Wild Rye	X	X	X	-	-	-	☼☼	C,L,S	JUL-SEP	3-5'	5,200	
<i>Elymus riparius</i>	Riverbank Wild Rye	-	-	X	X	-	-	☼☼☼	C, L,S,M	JUL-SEP	3-5'	2,900	
<i>Elymus villosus</i>	Silky Wild Rye	-	X	X	X	-	-	☼	L,S	JUL-SEP	2-5'	5,500	
<i>Elymus virginicus</i>	Virginia Wild Rye	-	-	X	X	X	-	☼☼☼	C,L,S,M	JUL-SEP	2-5'	4,200	
<i>Glyceria canadensis</i>	Canada Manna Grass	-	-	-	X	X	X	☼☼	C,L,S,M	JUN-AUG	2-3'	74,000	
<i>Glyceria grandis</i>	Reed Manna Grass	-	-	-	X	X	X	☼	C,L,S,M	JUN-AUG	3-5'	80,000	
<i>Glyceria striata</i>	Fowl Manna Grass	-	-	X	X	X	-	☼☼☼	C,L,S,M	MAY-JULY	1-5'	160,000	
<i>Hystrix patula</i>	Bottlebrush Grass	X	X	X	-	-	-	☼☼	L,S	JUN-AUG	3-5'	7,600	
<i>Juncus dudleyi</i>	Dudley's Rush	-	-	X	X	X	-	☼☼	C,L,S,M	JUN-SEP	1-2'	3,200,000	
<i>Juncus effusus</i>	Soft Rush	-	-	X	X	X	X	☼☼	C,L,S,M	MAY-JULY	2-4'	1,000,000	
<i>Juncus tenuis</i>	Path Rush	X	X	X	X	-	-	☼☼☼	C,L,S	JUN-JULY	6-12"	1,000,000	
<i>Juncus torreyi</i>	Torrey's Rush	-	-	X	X	X	X	☼	C,L,S,M	JUN-SEP	1-2'	1,600,000	
<i>Koeleria cristata</i>	June Grass	X	X	-	-	-	-	☼☼	L,S	MAY-JULY	1-2'	200,000	
<i>Leersia oryzoides</i>	Rice Cut Grass	-	-	-	X	X	X	☼☼	C,L,S,M	JUL-SEP	2-4'	34,000	
<i>Panicum virgatum</i>	Switch Grass	X	X	X	X	-	-	☼	C,L,S,M	JUL-SEP	3-5'	14,000	
<i>Schizachyrium scoparium</i>	Little Bluestem	X	X	X	-	-	-	☼	L,S	AUG-OCT	2-4'	15,000	
<i>Scirpus acutus</i>	Hard-stem Bulrush	-	-	-	X	X	X	☼	L,S,M	MAY-AUG	3-9'	20,000	
<i>Scirpus atrovirens</i>	Dark Green Bulrush	-	-	-	X	X	X	☼	C,L,S,M	JUN-SEP	3-5'	460,000	
<i>Scirpus cyperinus</i>	Wool Grass	-	-	-	X	X	X	☼☼	C,L,S,M	JUN-SEP	3-6'	1,700,000	
<i>Scirpus fluviatilis</i>	River Bulrush	-	-	-	X	X	X	☼	C,L,S,M	MAY-AUG	3-7'	4,300	
<i>Scirpus pendulus</i>	Red Bulrush	-	-	-	X	X	-	☼	L,S,M	MAY-AUG	2-5'	378,125	
<i>Scirpus pungens</i>	Three-square Rush	-	-	-	X	X	X	☼	C,L,S,M	JUN-SEP	2-5'	125,000	
<i>Scirpus validus</i>	Soft-stem Bulrush	-	-	-	X	X	X	☼	L,S,M	MAY-AUG	4-8'	31,000	
<i>Sorghastrum nutans</i>	Indian Grass	X	X	X	X	-	-	☼	C,L,S	AUG-OCT	4-6'	12,000	
<i>Spartina pectinata</i>	Prairie Cordgrass	-	-	X	X	X	-	☼	C,L,S,M	JUL-SEP	4-8'	6,600	
<i>Sporobolus heterolepis</i>	Prairie Dropseed	-	X	X	X	X	-	☼	L,S	AUG-OCT	2-3'	16,000	SC
<i>Zizania aquatica</i>	Wild Rice	-	-	-	-	X	X	☼	C,L,S,M	JUL-SEP	3-8'	4,375	T

GUIDELINES FOR ESTABLISHING A NATIVE PLANTING BY SEED

Successful establishment of a native planting requires proper site preparation, the right plant selection based on the conditions of your site, the best method and time of installation, and a diligent maintenance schedule for the first three years after installation. These guidelines should be helpful in planning and implementing a successful native plant project.

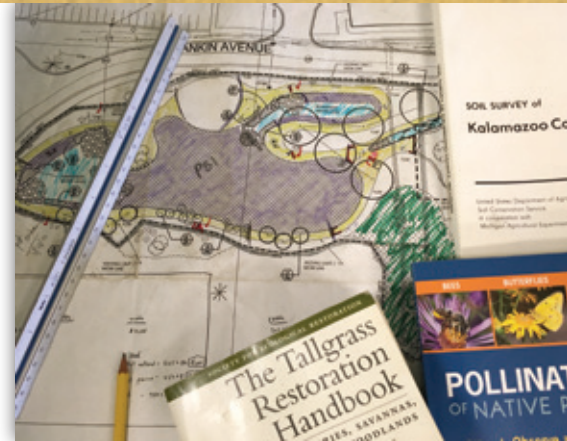
STEP 1: Project Planning & Design

The time you take to properly plan and design your project will pay off and result in a more successful and long lasting native plant establishment which will offer the environmental, economical and aesthetic benefits you are trying to achieve. The tips listed below will be helpful as you plan your project.

Determine the site conditions

- **Soil type:** Look at and feel the soil and determine whether you have sand, loam, clay, or organic soil. Sandy soil is gritty and will not stick together or clod. Loamy soils stick together, but will easily crumble. Clay soil is sticky with little or no grittiness and will form a hard clod that will not easily crumble. Organic soil, or muck, is dark black in color, is frequently mixed with mineral soil (sand, loam or clay) and occurs on former wetlands. Be sure to choose species based on your soil type.
- **Hydrology or Moisture level:** Determine if the site is dry, medium or wet in nature. Does the area puddle and retain water or does water drain quickly after rainfall? Is the site in a low-lying area or upland? Is the site near a river, lake or spring? Choose species that would thrive at your site. Species composition differs greatly between dry prairie, mesic prairie, wet prairie, and wetland habitats.
- **Topography:** Determine the slope of the site. The slope may influence the moisture levels and/or sun exposure. Keep in mind that steeper slopes may limit the methods of installation.
- **Sun exposure:** Be aware of how much sun the area will receive. Most sun-loving plants need at least a half-day of sun. If you have less than a half-day of sun, you need to select plants that tolerate part-sun or shade.
- **Existing vegetation:** The site should be inspected closely by someone familiar with the native and non-native plant species found in the area. If specific native species are present in sufficient numbers, the site may

need to be handled as a restoration project, requiring appropriate methods to protect the existing plants. If the site has invasive species present, prepare a plan for the removal of these species prior to the natives being introduced. This is a critical element that should not be overlooked.



Research typical plant species in the area

It is a good idea to research the history of the land prior to European settlement. Maps and natural community information are available on the Michigan Natural Features Inventory website at <http://mnfi.anr.msu.edu/data/index.cfm>. You should be able to determine the plant community that existed prior to development which would be a good clue as to what plant species will do best on your property. If similar natural areas are present near your site it may be helpful to determine what native species are found there.

Select proper species

Choose a mix of wildflowers and grasses based on your research. Select species that are suitable for your site based on soil type, hydrology, and sun exposure. This will be critical for the success of your native planting. Add as many species as possible for greater diversity. A well-designed mix will contain flowers that bloom at different times throughout the season, will include warm and cool season grasses for structure and diversity, and will attract a variety of wildlife. Your project size, objectives and budget will help determine the level of seed mix that is appropriate for your site.

Obtaining native seed

- **Local Genotype:** Consider purchasing native seed and plants from local or regional sources (Michigan or Great Lakes). Local genotypes are recommended because they are naturally adapted to the area and preserve our local diversity. Members of the Michigan Native Plant Producers Association (MNPPA) produce and provide native seed and plugs that originate from Michigan. MNPPA members are committed to enhancing the diversity and health of Michigan's unique natural heritage.

PLANTING GUIDELINES *continued*



- **Seeding Rates:** You will need to determine the size of the area, in acres or square feet. This will be very important so that you order a sufficient amount of seed. There are 43,560 square feet per acre. You should order a little more seed just to be safe (perhaps 10%). Seeding rates of grasses should range from 3 to 7 lbs per acre, and forbs should range from ½ to 4 lbs per acre, for a total mix of 6–10 lbs of seed per acre. Seeding rates depend on site conditions, preferred showiness, and budget.
- **Cover Crop:** Since natives are slow to germinate and establish, annual cover crops such as seed oats or annual rye, which germinate quickly, are often used to help stabilize the soil and compete against weeds the first year. Seeding rates of the cover crop range from 10 to 40 lbs per acre. Cover crop also acts as a carrier, making the native seed easier to disperse accurately.
- **Pure Live Seed (PLS):** Native seed tends to be quite bulky or fluffy, and may contain a fair amount of inert material. The germination rates can be quite variable, sometimes as low as 50% or less. For these reasons native seed is often sold on a Pure Live Seed (PLS) basis. This means that enough bulk seed is provided to the purchaser to ensure that the correct amount of viable seed is provided. For example, if a customer orders 10 lbs of a species that is only 50% PLS, 20 bulk lbs of the seed would be provided, and the customer would be charged for the 10 PLS lbs of actual, viable seed. Most suppliers sell native grasses this way, and some also do this for native forbs.

Plan the appropriate timing of installation

Planting can be done in the spring, or as a dormant seeding in late fall or winter. Each has its own advantages and disadvantages. As you think about scheduling installation, keep in mind that you should plan on at least a few months and up to 2 years of preparation before seed installation.

- **Spring seeding:** If planting in spring, native seed should be planted between April 15 and June 15. A spring seeding will generally favor the warm season grass species over the forb species during the first year. Many of the forb seeds that do not germinate the first season will appear the second year.
- **Dormant seeding (late fall – winter):** Dormant seeding is timed so that seeds will not germinate until the following spring. Dormant seeding can be done anytime

when there is no snow on the ground from late-fall to mid-winter (mid October – February). Most people choose to plant mid-October through late November to avoid planting in frozen soil. It can work after the ground freezes if a no-till drill is used to cut into the frozen soil. Planting in the winter may be a good idea in areas that are too wet during the rest of the year, or when areas need to be supplemented with new seed. Dormant seeding is generally more favorable to forb species than to grass species.

Caution: Avoid planting in the summer and early fall (July – September). There is a significant risk of heat and drought during the summer months and you might waste a lot of time and money in seed and installation. Also, resist planting too early in the fall. The soil is warm enough in early-fall for germination to take place, but root growth on the newly sprouted natives is minimal and may not survive the winter. Fall plantings should be delayed until the air and soil temperatures have cooled off — usually after mid-October.

STEP 2: Site Preparation

Arguably the most important step in establishing a successful planting is proper site preparation. One may feel hesitant about delaying the installation, but the site preparation is critical for achieving a successful planting. Many people underestimate the amount of weeds in the seed bank. Eradicating the existing non-native and/or invasive species is vital before installation of the native seeds.

You should plan on preparing your site at least one full growing season before installation, and depending on the species on the site, it may require up to two years of preparation. If this process is not done thoroughly, aggressive non-native species will compete (and may ultimately win) against the native plants you wish to establish.

The appropriate site preparation techniques will be dependent on the desirable and undesirable vegetation that already exist on the site. If you determine there is a significant amount of desirable plant life with relatively few non-native invasive species, you should consider restoring or enhancing the site. Remove unwanted species by pulling, spot herbiciding, or burning, and then inter-seed with native seed. If there is too much undesirable vegetation to make rehabilitation worthwhile, one should consider starting fresh. You will need to proceed by eliminating all existing vegetation by either applying herbicides, smothering, cultivating the area, or a combination of these methods.



Site preparation for wetland mitigation, Cincinnati, OH

Eradicating existing vegetation

- **Herbiciding:** If your site is quite large or if there is little or no native vegetation naturally occurring, careful application of herbicide can be an effective tool for vegetation removal. The number of herbicide treatments will depend on the condition of the site. Agricultural fields of corn or soybeans may only require one or two treatments late-spring, prior to installation. Old fields (fallow or pasture fields) may require several treatments per year for one or two years before installation. All weed species should be eliminated before installation. Use a broad-spectrum, non-persistent glyphosate herbicide. **There are many options and factors to consider when using herbicides. Consult with or hire a licensed commercial applicator and always read and follow the label completely when using herbicides.**
- **Smothering:** On small areas, such as portions of your lawn, you can smother and kill the vegetation without the use of chemical herbicides. Cover the vegetation with black landscaping fabric, leaf compost, or grass clippings, and leave in place for an entire growing season.
- **Cultivating:** Cultivation is labor intensive, and often brings up weed seeds, but you can avoid the use of chemicals if you are willing to cultivate the field beginning in spring and continuing through fall. Cultivate every 2–3 weeks at a depth of 4–5 inches using a harrow, springtooth or rototiller to destroy the roots and kill the weeds. Waiting longer than 2–3 weeks will allow perennial weeds to resprout. Plants with deep rooted rhizomes, such as Canada Thistle and Quackgrass may not be completely eliminated using cultivation for a single season, and may require herbicide treatments in conjunction with the cultivation. After most weeds have been eliminated, the cultivation depth should be made shallow for several months prior to seeding, as a firm soil bed is necessary for native establishment.

Converting lawns

If you wish to convert a section of your lawn to prairie or native garden, you could smother the sod for 2–3 months, cut the sod, or treat with herbicide. An effective and practical method for naturalizing a large area of lawn is to treat with a glyphosate herbicide in mid-spring when the grass is actively growing. Repeat herbicide in summer when some grass reemerges and then introduce seed (in late-fall or the next spring) into the dead sod using a native no-till drill. You could hand broadcast the seed if you first go over the dead sod with a dethatcher to bring up some loose soil. Be sure to set the dethatcher deep enough to bring up loose soil.

Preparing the seed bed

A level, firm seed bed that is relatively free of debris is recommended for proper installation. If your soil is soft and loose, it should be packed down with a heavy roller or culti-packer before and after installation. A good test method for adequate soil firmness is to walk over the seed bed and observe your footprints. If your print sinks in more than ¼ or ½ inch, the seed bed is too soft. If trees have been taken out, be sure to level the ruts and remove limbs and roots prior to seeding. This saves time during installation and prevents damage to equipment.

If the area to be seeded doesn't have much vegetation or old crop debris, most native no-till drills can successfully operate without clogging. Old soybean stubble usually presents little problem, however old corn stalk debris can plug the drill.

STEP 3: Installation

The method of installation will depend on the size of the planting, the condition of the soil, and your budget.

Seeding Methods

- **Hand-broadcasting:** For areas less than an acre or two, you can broadcast the seed by hand if the seed bed is prepared correctly. The mixed native seed can simply be put into a bucket and scattered by hand. Since it is challenging to distribute small quantities of native seed over an area, it is recommended to bulk up the seed mix by using a filler material such as cracked corn, sawdust, peat moss, or vermiculite. Mixed thoroughly with the native seed, it will aid in giving you more quantity to distribute over the site. Cover crop seed, such as annual rye or seed oats also aid in “bulking up” the seed, making it more flowable.

PLANTING GUIDELINES *continued*



Hand crank seeders can be used to scatter seed although some of the native grass and forb seeds are quite fluffy and will not flow through the dispersal holes. If you use a hand crank seeder, you may have to continually stir the seed with your hand to keep it flowing through the dispersal openings.

The goal is to distribute the seed evenly. Scatter the seed carefully and be sure not to run out before covering the entire area. A recommended strategy to accurately distribute the seed would be to divide your total seed mix in half and scatter the first half of the seed over the entire area, then scatter the second half of the mix over the area perpendicular to the first pass. If it is too windy, waiting for wind to decrease is recommended.

The seed should immediately be rolled or raked into the top surface of the soil for best results. If the area is too large to rake by hand, use a tractor or truck to pull a light piece of fence or very light drag.

- **Native No-till Drill:** For larger areas, areas with hard ground, or areas with existing vegetation or debris, a native no-till seed drill is recommended. Truax and Great Plains are the primary brands available. No-till drills cause minimal soil disturbance, and do not require the soil to be tilled before planting. These drills plant seed into rows by opening a shallow groove in the soil. A Truax drill has three seed boxes, one for fluffy seeds (most grasses), another box for very small seeds (many forbs), and a third box for the cover crop or large native seeds.

Calibration of the drill is critical and complicated and requires continual monitoring during installation. Drill adjustment for proper depth of seed placement is also vitally important; adjustments to the drill need to be made on a site-by-site basis, and sometimes with differing soil conditions within the same site. You may wish to hire a firm who specializes in native seed drilling. Many seed dollars are wasted and many projects unsuccessful due to improper knowledge of drill operation.

No-till drill
seed box



Prairie
installation



Seed installation

- **Culti-packer native seeder:** For bare soil, you could use a native culti-packer seeder. A culti-packer seeder firms the seed bed first, drops the seed, and then a roller packs the soil to ensure good seed-to-soil contact. These machines are less common, but are preferable to the no-till drill when planting into bare soils.

Watering

Watering is not necessary after fall plantings. Watering following a spring seeding is not essential either, however, the seeds may benefit from watering during the first 3 to 6 weeks after a spring planting, especially if no rain has fallen for 7–10 days. If watering is practical for your site and you decide to water, you will need to continue to water periodically to keep the soil from drying out completely while plant seedlings are establishing. In a dry spring, a quicker establishment may result with supplemental watering.

STEP 4: Post-Planting Management

Controlling weeds is the biggest priority the first three years after an area has been planted with native seed. The native seed you plant will only grow a few inches the first year; weeds will grow much thicker and taller than the natives and can shade out the native seedlings. Diligent weeding the first three years will greatly reduce the amount of weeds you have on your native establishment. Once the native species mature, they should be able to crowd out the weeds on their own.

First Year

Mowing is the primary tool for controlling weeds the first year. Keep the vegetation mowed to a height of 4–6 inches and mow when the vegetation reaches



10–12 inches. This may require mowing two to three times depending on the amount of rainfall. Mowing keeps the weeds from becoming too tall and shading out the natives and it also prohibits the weeds from setting and dropping new seed into the soil. Stop mowing at the end of the growing season (September). Some additional weed growth at this time of year will help protect the seedlings during their first winter.

Hand pulling weeds generally is not recommended the first year because of the risk of pulling out the seedlings and bringing up new weed seeds to sprout. In general, spraying herbicide on a native planting is discouraged. You can, however, consider spot treating with herbicide the aggressive weeds, such as Canada Thistle or Spotted Knapweed that can become very invasive if allowed to persist. Spot spraying needs to be done very carefully by a person who has experience in the use of herbicides as well as in the identification of all of the plant species present. The proper herbicides and rates depend upon the target species as well as the season of the year.

For some plant species hand-wicking with herbicide may be desirable. Mix up a strong solution of the appropriate herbicide and put the solution in a spray bottle or other non-spill container. Wear rubber gloves and put an absorbent cotton glove over the rubber glove on one hand, carefully saturate the cotton glove, and apply the herbicide to the leaves and stems of the plant. Try not to touch any desirable seedlings. It is imperative to closely monitor the gloves to make sure no tears in the rubber gloves allow the herbicide to contact the skin of the applicator.

Second Year

Weeds will often dominate in the second year as well, so continuing to mow is vital. You should mow the vegetation during the second year to a height of about 8 inches. Mow when vegetation reaches 12–18 inches. Some of the natives may be up and blooming but it is worth sacrificing the flowers at this stage to achieve a more successful native planting in the long term. The natives will not be killed by this mowing.

Hand pulling weeds and spot treating with herbicide may be needed and beneficial during the second year. Common competitive weeds in the second year include Spotted Knapweed, Canada Thistle, Burdock, Wild Parsnip, Sweet Clover, and Queen Anne's Lace. Mowing them when they are in full bloom will set them back and prevent them from setting and dropping seeds.

Burning the second year is not usually recommended; normally there is not enough fuel to sustain a fire and the young plants may be damaged by burning.

Third Year and Beyond

Burning the third year, and on a regular basis in future years, is the most important tool to manage the weeds on your property. If burning doesn't occur, a thatch layer can accumulate on the ground and cause poor growth or cause plants to die out completely. Prescribed burning kills or at least reduces weed growth and also stimulates new growth of the native species.

Spring burns in March or April are most effective for most plantings. Only experienced, trained crews should perform the prescribed burn. Be sure to check with your local fire regulations and obtain the appropriate permits. A wide path (10–15 feet) around the perimeter of the native planting, called a burn lane, acts as a firebreak and should be kept mowed throughout the growing season.

After the third year, burning should take place every one to three years. Consider a burn rotation in which only $\frac{1}{2}$ or $\frac{1}{3}$ of the area is burned each year. This will protect over-wintering butterflies, moths, as well as early nesting birds by leaving vital habitat for them to utilize.

If burning is not allowed in your area or it is not an option for other reasons, annual mowing, although not as effective, can be a good substitute. Mow down close to the surface (6 inches) in early spring (February through April). Note that some ground-nesting grassland birds nest as early as April, so the earlier the better.

Spot treating with herbicide may still be needed if weeds persist, however, once your natives are established, they should require minimum maintenance.



**Well
established
native
vegetation**



**Prescribed
burns are
an effective
tool for weed
management.**



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ENVIRONMENTAL BENEFITS OF NATIVE PLANTS

Restore Biodiversity • By planting native plants we preserve Michigan's botanical and biological heritage.

Create Wildlife Habitat • Native plants provide food and shelter for birds, butterflies and other wildlife that rely on native plants for their survival.

Improve Water Quality • The deep root systems of native plants absorb and filter water before it runs into lakes and rivers.

Conserve Water & Energy • Native plants are adapted to our local soils and climate and require minimal water and maintenance.

Reduce Global Warming • Native plants store carbon in their roots permanently removing it from the atmosphere.



Prescribed fire artwork by Amelia Hansen.

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