SDSU Extension Missouri Valley Master Gardeners

Landscaping with Native Plants

This information is prepared and/or presented by an SDSU Extension volunteer.

South Dakota State University Extension
Volunteer Program

“Native plant” defined – *A native plant species is one that occurs naturally in a particular region, ecosystem and/or habitat, and was present prior to European settlement.*

Advantages of Native Plants

Advantages

- **Save time and money**

LEARN MORE: https://www.chicagotribune.com/opinion/commentary/ct-stop-mowing-your-lawn-20150805-story.html https://earthobservatory.nasa.gov/features/. Lawn/lawn2.php

Lawns are a soul-crushing timesuck and most of us would be better off without them

By Christopher Ingraham
Washington Post • Aug 05, 2015 at 10:45 am

Expand

FEEDBACK

Advantages

- **Save time and money**

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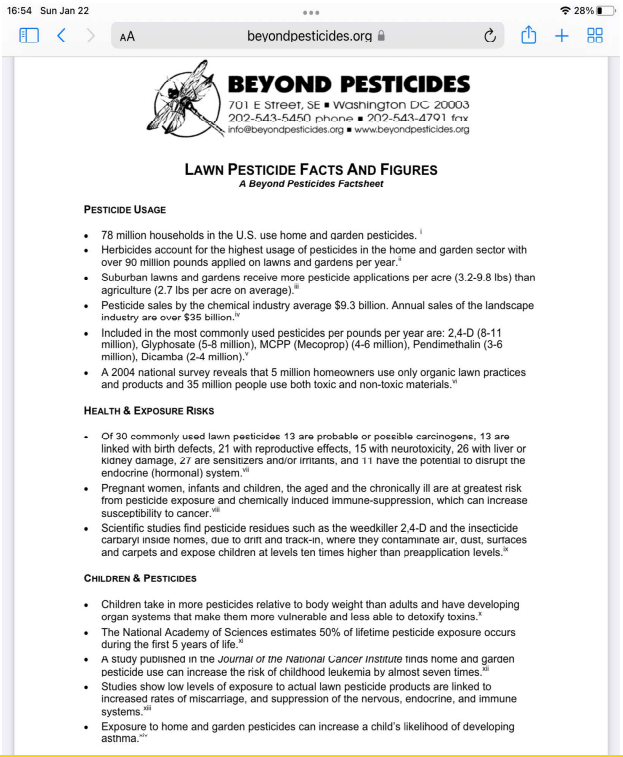
Advantages

- Save time and money
- **Improved water quality**



16:54 Sun Jan 22 — 28% — beyondpesticides.org

BEYOND PESTICIDES
701 E Street, SE ■ Washington DC 20003
202-543-5450 phone ■ 202-543-4791 fax
info@beyondpesticides.org ■ www.beyondpesticides.org

LAWN PESTICIDE FACTS AND FIGURES
A Beyond Pesticides Factsheet

PESTICIDE USAGE

- 78 million households in the U.S. use home and garden pesticides. [i]
- Herbicides account for the highest usage of pesticides in the home and garden sector with over 90 million pounds applied on lawns and gardens per year.[ii]
- Suburban lawns and gardens receive more pesticide applications per acre (3.2-9.8 lbs) than agriculture (2.7 lbs per acre on average).[iii]
- Pesticide sales by the chemical industry average $9.3 billion. Annual sales of the landscape industry are over $35 billion.[iv]
- Included in the most commonly used pesticides per pounds per year are: 2,4-D (8-11 million), Glyphosate (5-8 million), MCPP (Mecoprop) (4-6 million), Pendimethalin (3-6 million), Dicamba (2-4 million).[v]
- A 2004 national survey reveals that 5 million homeowners use only organic lawn practices and products and 35 million people use both toxic and non-toxic materials.[vi]

HEALTH & EXPOSURE RISKS

- Of 30 commonly used lawn pesticides 13 are probable or possible carcinogens, 13 are linked with birth defects, 21 with reproductive effects, 15 with neurotoxicity, 26 with liver or kidney damage, 27 are sensitizers and/or irritants, and 11 have the potential to disrupt the endocrine (hormonal) system.[vii]
- Pregnant women, infants and children, the aged and the chronically ill are at greatest risk from pesticide exposure and chemically induced immune-suppression, which can increase susceptibility to cancer.[viii]
- Scientific studies find pesticide residues such as the weedkiller 2,4-D and the insecticide carbaryl inside homes, due to drift and track-in, where they contaminate air, dust, surfaces and carpets and expose children at levels ten times higher than preapplication levels.[ix]

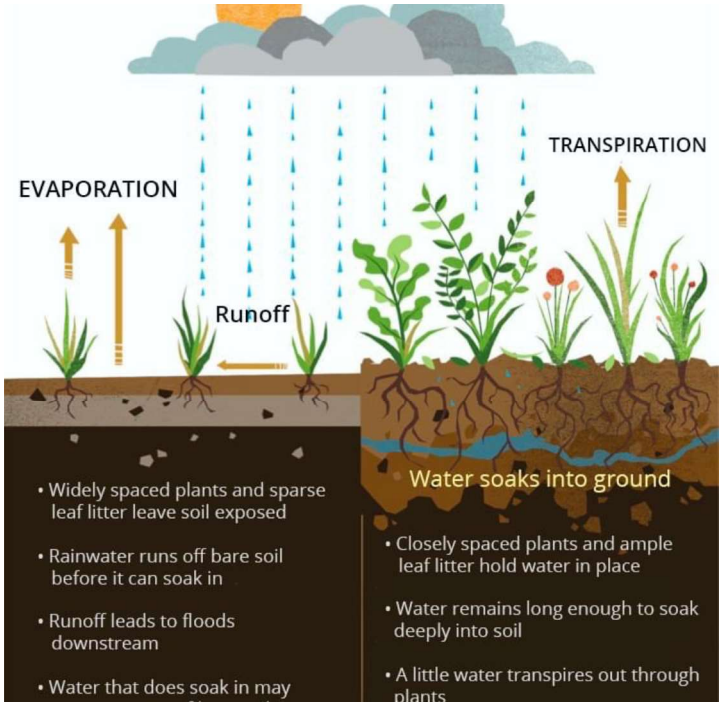
CHILDREN & PESTICIDES

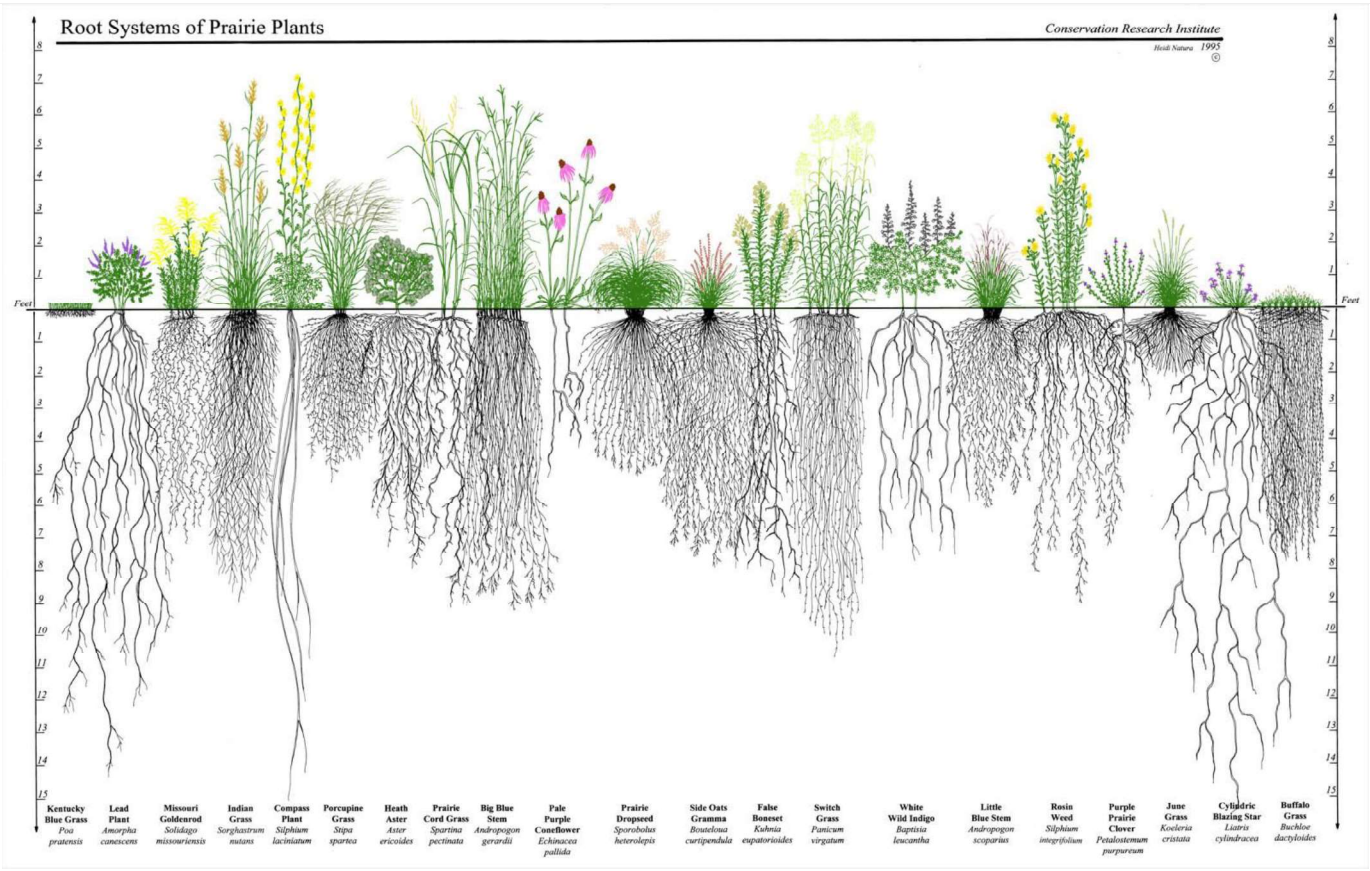
- Children take in more pesticides relative to body weight than adults and have developing organ systems that make them more vulnerable and less able to detoxify toxins.[x]
- The National Academy of Sciences estimates 50% of lifetime pesticide exposure occurs during the first 5 years of life.[xi]
- A study published in the *Journal of the National Cancer Institute* finds home and garden pesticide use can increase the risk of childhood leukemia by almost seven times.[xii]
- Studies show low levels of exposure to actual lawn pesticide products are linked to increased rates of miscarriage, and suppression of the nervous, endocrine, and immune systems.[xiii]
- Exposure to home and garden pesticides can increase a child's likelihood of developing asthma.[xiv]

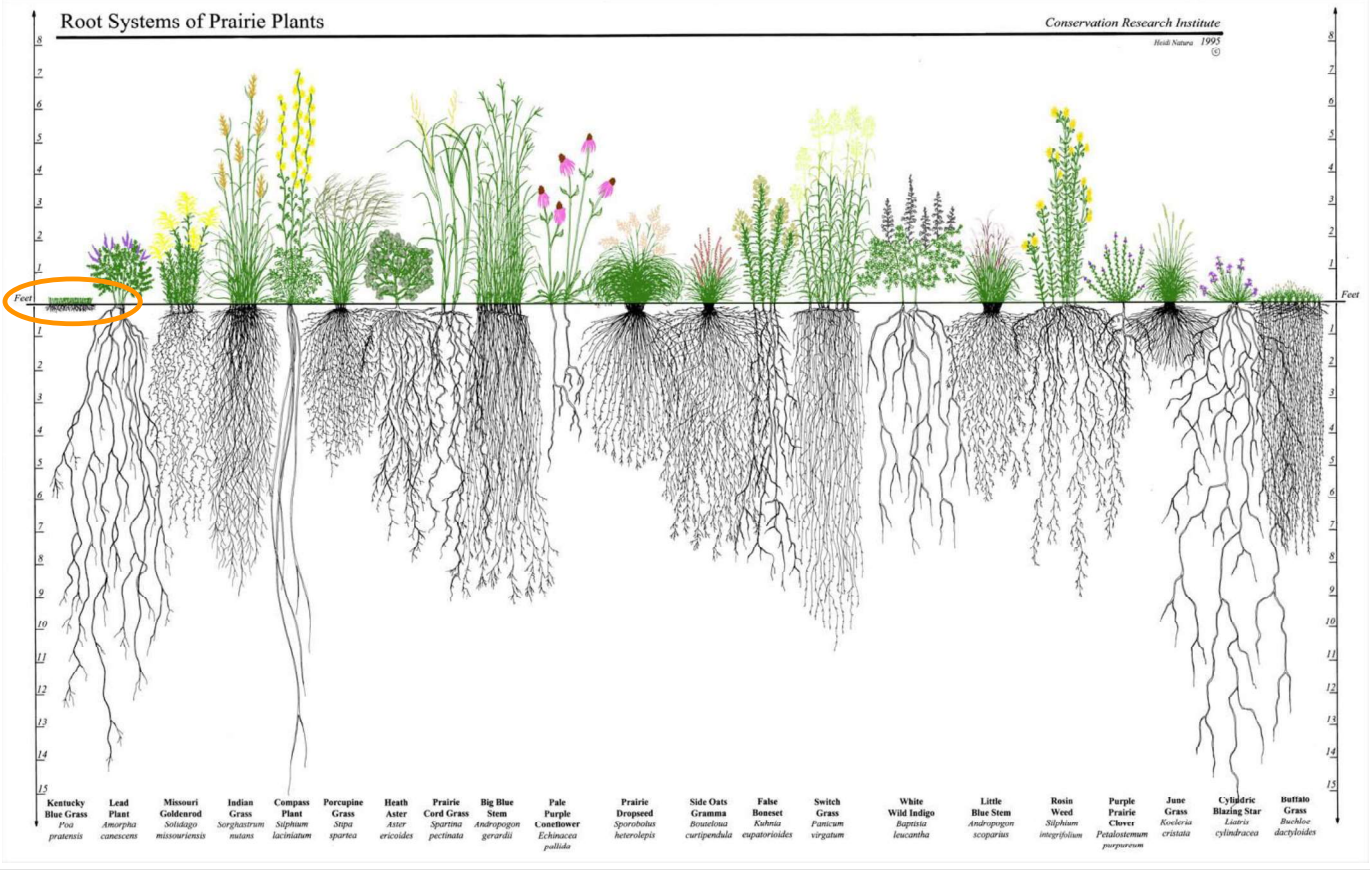
LEARN MORE: https://www.beyondpesticides.org/assets/media/documents/lawn/factsheets/LAWNFACTS&FIGURES_8_05.pdf

Advantages

- Save time and money
- Improved water quality
- **Storm water management**




Root Systems of Prairie Plants
Conservation Research Institute
Heidi Natura 1995
Feet
Kentucky Blue Grass Poa pratensis
Lead Plant Amorpha canescens
Missouri Goldenrod Solidago missouriensis
Indian Grass Sorghastrum nutans
Compass Plant Silphium laciniatum
Porcupine Grass Stipa spartea
Heath Aster Aster ericoides
Prairie Cord Grass Spartina pectinata
Big Blue Stem Andropogon gerardii
Pale Purple Coneflower Echinacea pallida
Prairie Dropseed Sporobolus heterolepis
Side Oats Gramma Bouteloua curtipendula
False Boneset Kuhnia eupatorioides
Switch Grass Panicum virgatum
White Wild Indigo Baptisia leucantha
Little Blue Stem Andropogon scoparius
Rosin Weed Silphium integrifolium
Purple Prairie Clover Petalostemum purpureum
June Grass Koeleria cristata
Cylindric Blazing Star Liatris cylindracea
Buffalo Grass Buchloe dactyloides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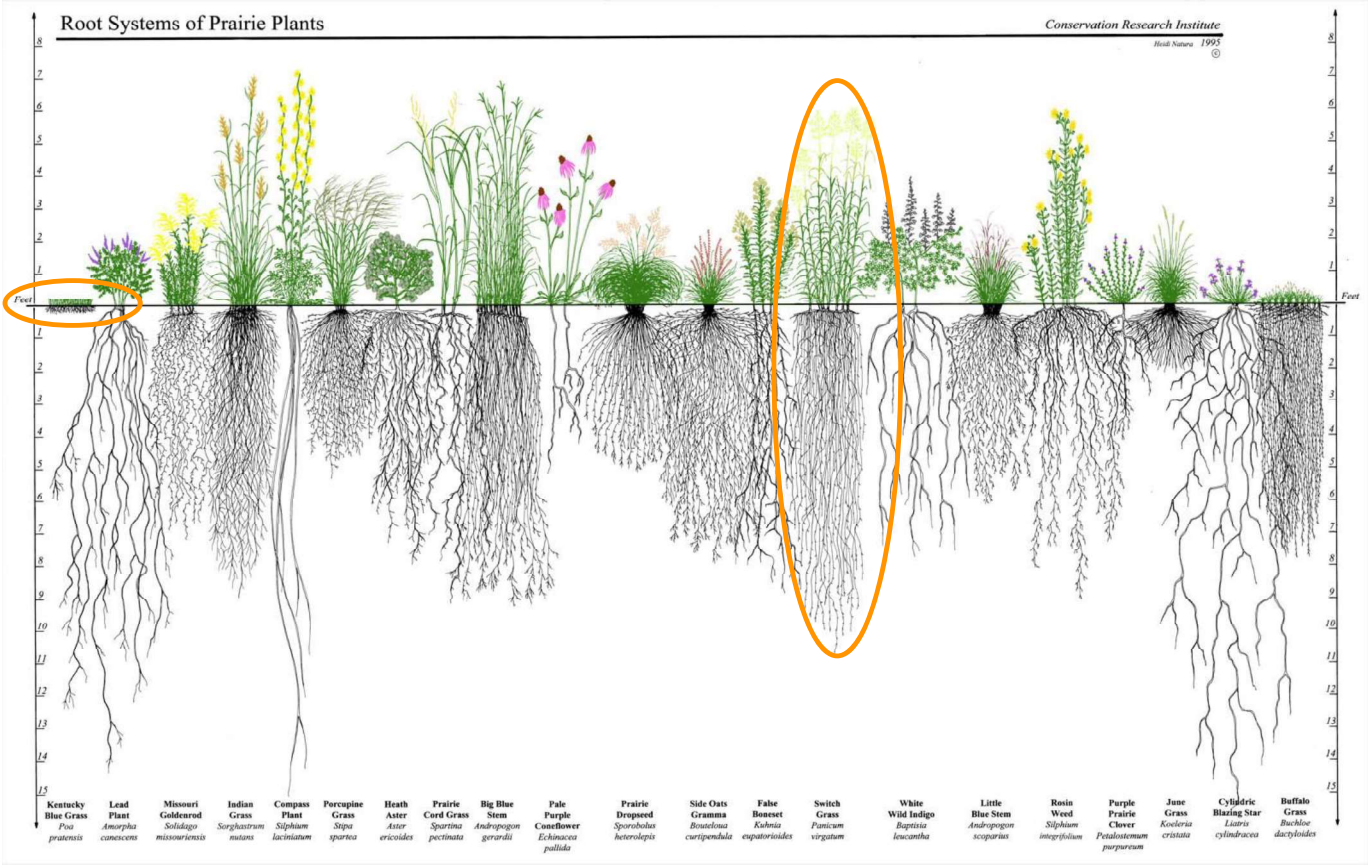
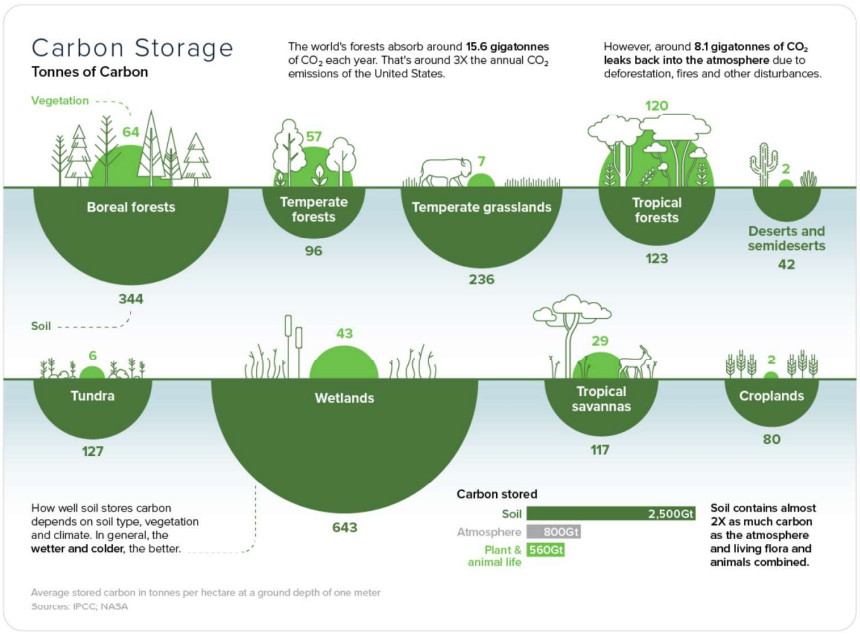


Advantages

- Save time and money
- Improved water quality
- Storm water management
- **Carbon sequestration**



Advantages

- Save time and money
- Improved water quality
- Storm water management
- Carbon sequestration
- **Support native fauna**

LEARN MORE: https://www.pnas.org/doi/full/10.1073/pnas.1809259115

Benefits of Supporting Native Fauna

Benefits of Native Fauna

Ecosystem Services

are goods and services humans obtain from managed and natural ecosystems such as food, fuel, fiber, and recreation. **POLLINATORS & NATURAL ENEMIES** are examples of beneficial insects that play a vital role in ecological processes that support these services.

Pollinators

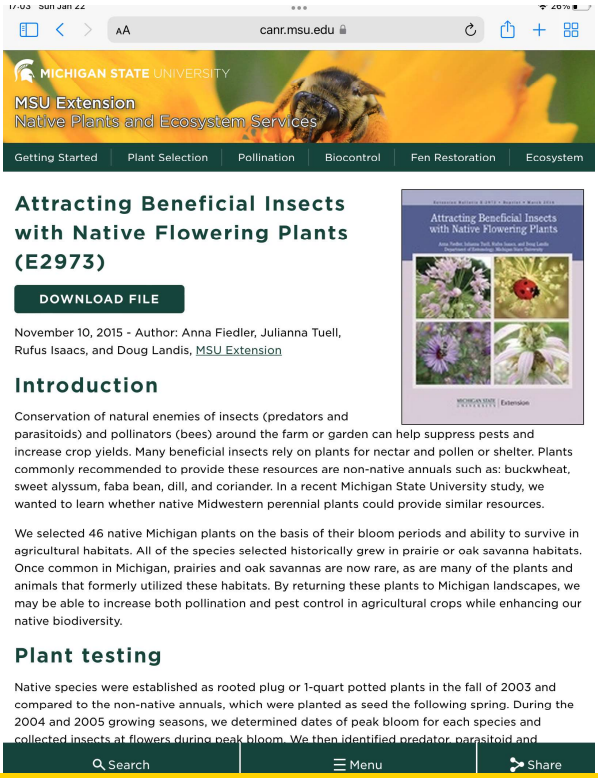
contribute to food production through crop pollination. The annual value of pollination services to U.S. agriculture is estimated at $20 billion. Insects also pollinate wild plants (top), which is essential for natural ecosystems. Honey bees, are the most recognized pollinator, however there are 4,000 species of wild bees in North America and several other insects are considered pollinators.

Natural Enemies

insects predators (bottom right) and parasitoids (bottom left) attack and feed on other insects. They protect cultivated and wild plants through the suppression of insect plant pests. Natural enemies can reduce the need for insecticides.

Benefits of Native Fauna

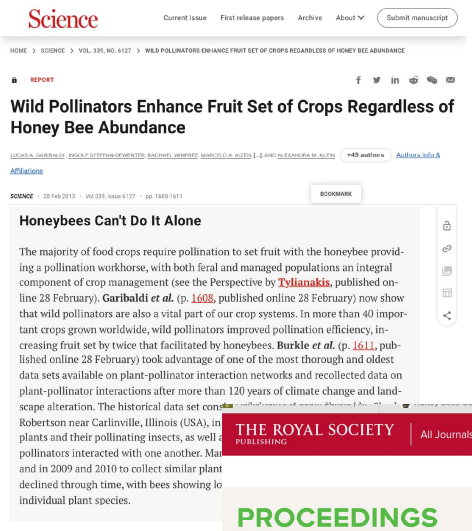
- **Pest control for the vegetable garden**



LEARN MORE: https://www.canr.msu.edu/resources/attracting_beneficial_insects_with_native_flowering_plants_e2973

Benefits of Native Fauna

- Pest control for the vegetable garden
- **Efficient pollinators**


Science

Wild Pollinators Enhance Fruit Set of Crops Regardless of Honey Bee Abundance

Honeybees Can't Do It Alone

The majority of food crops require pollination to set fruit with the honeybee providing a pollination workhorse, with both feral and managed populations an integral component of crop management (see the Perspective by Tylianakis, published online 28 February). Garibaldi *et al.* (p. 1608, published online 28 February) now show that wild pollinators are also a vital part of our crop systems. In more than 40 important crops grown worldwide, wild pollinators improved pollination efficiency, increasing fruit set by twice that facilitated by honeybees. Burkle *et al.* (p. 1611, published online 28 February) took advantage of one of the most thorough and oldest data sets available on plant-pollinator interaction networks and recollected data on plant-pollinator interactions after more than 120 years of climate change and landscape alteration. The historical data set cons... Robertson near Carlinville, Illinois (USA), in... plants and their pollinating insects, as well a... pollinators interacted with one another. Ma... and in 2009 and 2010 to collect similar plant... declined through time, with bees showing lo... individual plant species.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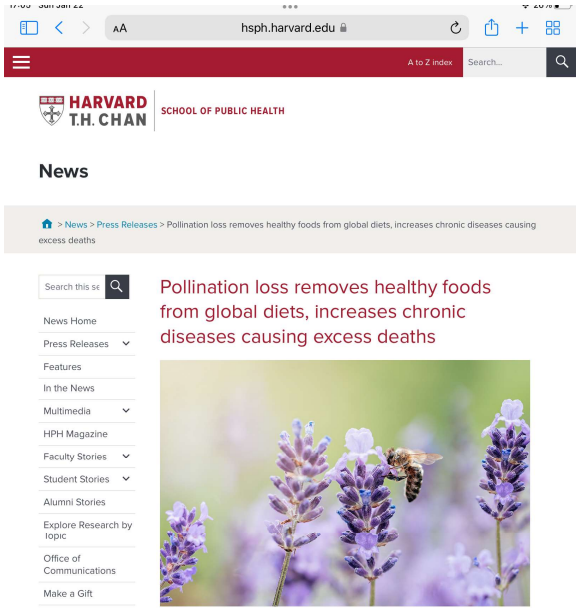
Importance of pollinators in changing landscapes for world crops

LEARN MORE: https://www.science.org/doi/10.1126/science.1230200
https://royalsocietypublishing.org/doi/10.1098/rspb.2006.3721

Benefits of Native Fauna

- Pest control for the vegetable garden
- Efficient pollinators
- **Health benefits**


hsph.harvard.edu

HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH

News

> News > Press Releases > Pollination loss removes healthy foods from global diets, increases chronic diseases causing excess deaths

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Pollination loss removes healthy foods from global diets, increases chronic diseases causing excess deaths

For immediate release: December 14, 2022

Boston, MA – Inadequate pollination has led to a 3–5% loss of fruit, vegetable, and nut production and an estimated 427,000 excess deaths annually from lost healthy food consumption and associated diseases, including heart disease, stroke, diabetes, and certain cancers, according to research led by Harvard T.H. Chan

LEARN MORE: https://www.hsph.harvard.edu/news/press-releases/pollination-loss-removes-healthy-foods-from-global-diets-increases-chronic-diseases-causing-excess-deaths/?fbclid=IwAR0Im0epTI1P8Po-ZrX8NV2FrUkWzZyX8aha9Mqf_zC3M-J41zswFcKatC8

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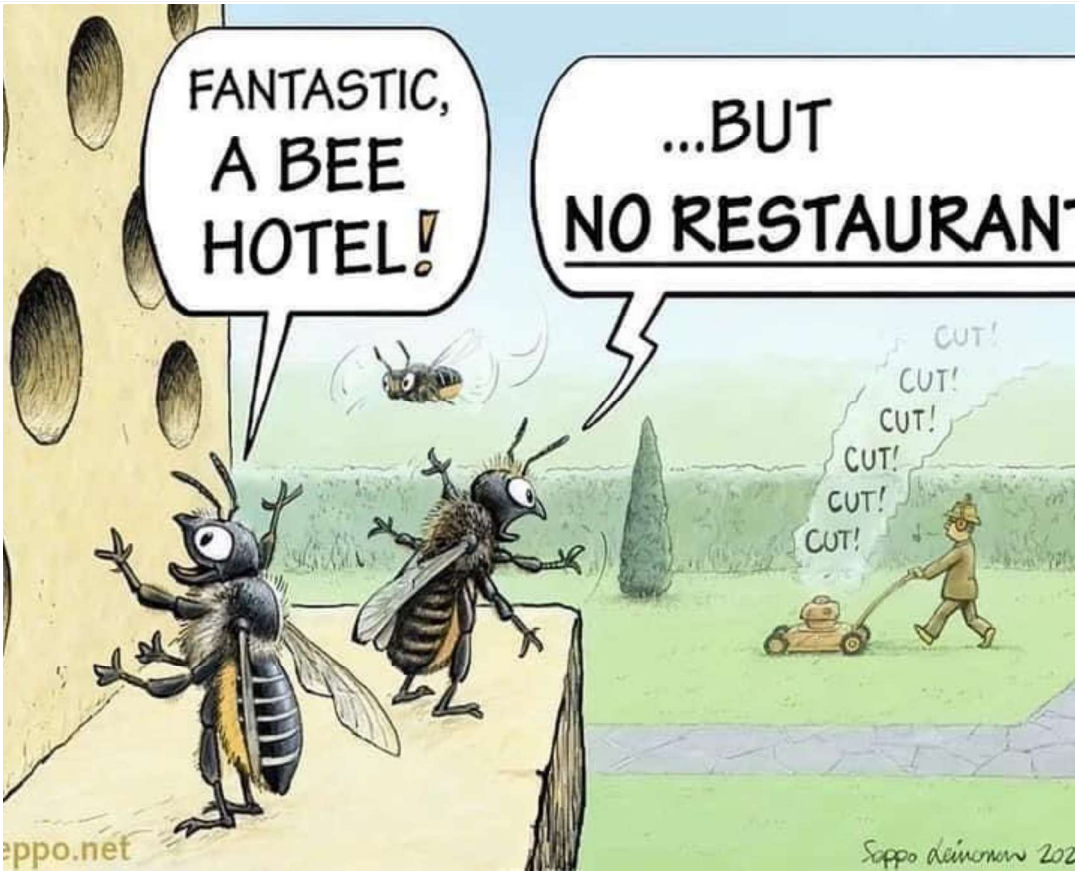
FANTASTIC, A BEE HOTEL!
...BUT NO RESTAURANT
CUT!
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CUT!
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eppo.net
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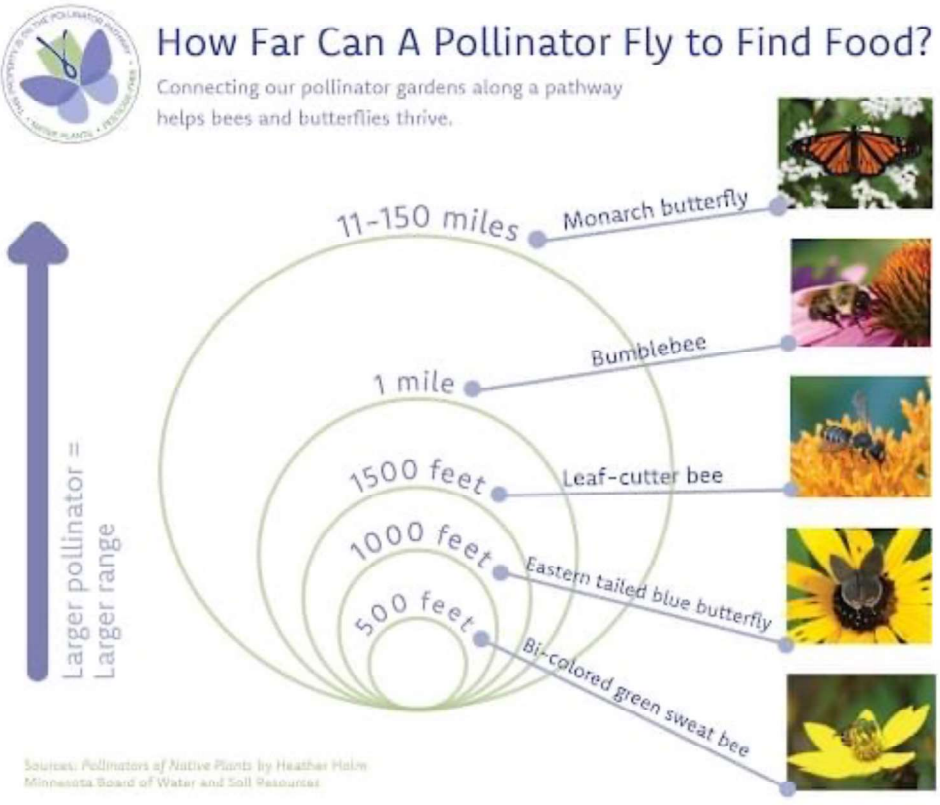
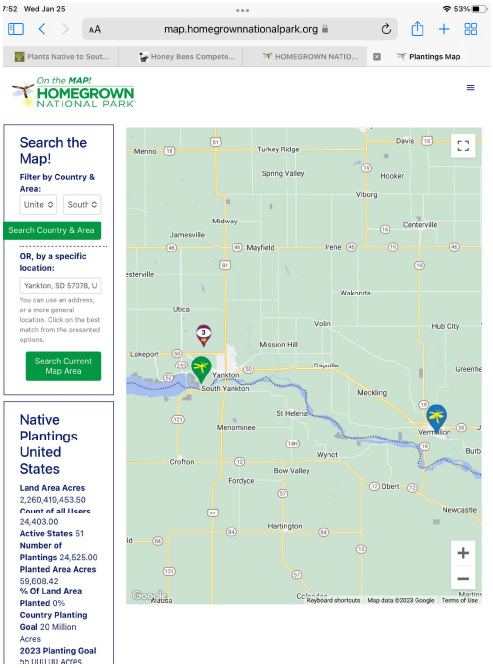
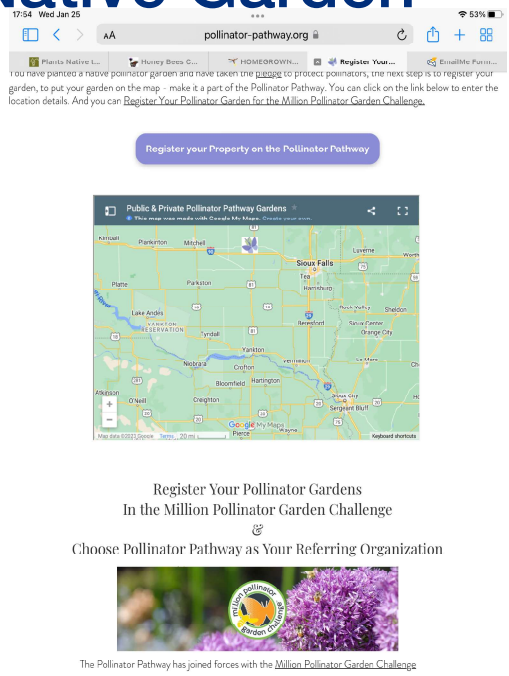

How Far Can A Pollinator Fly to Find Food?
Connecting our pollinator gardens along a pathway helps bees and butterflies thrive.
11-150 miles
Monarch butterfly
1 mile
Bumblebee
1500 feet
Leaf-cutter bee
1000 feet
Eastern tailed blue butterfly
500 feet
Bi-colored green sweat bee
Larger pollinator = Larger range
Sources: Pollinators of Native Plants by Heather Holm
Minnesota Board of Water and Soil Resources

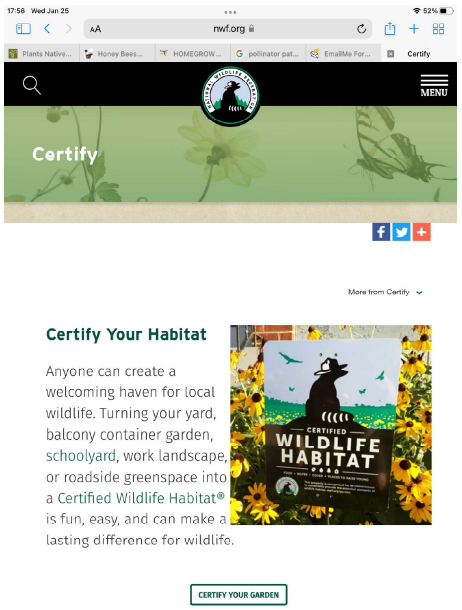
Register Your Native Garden



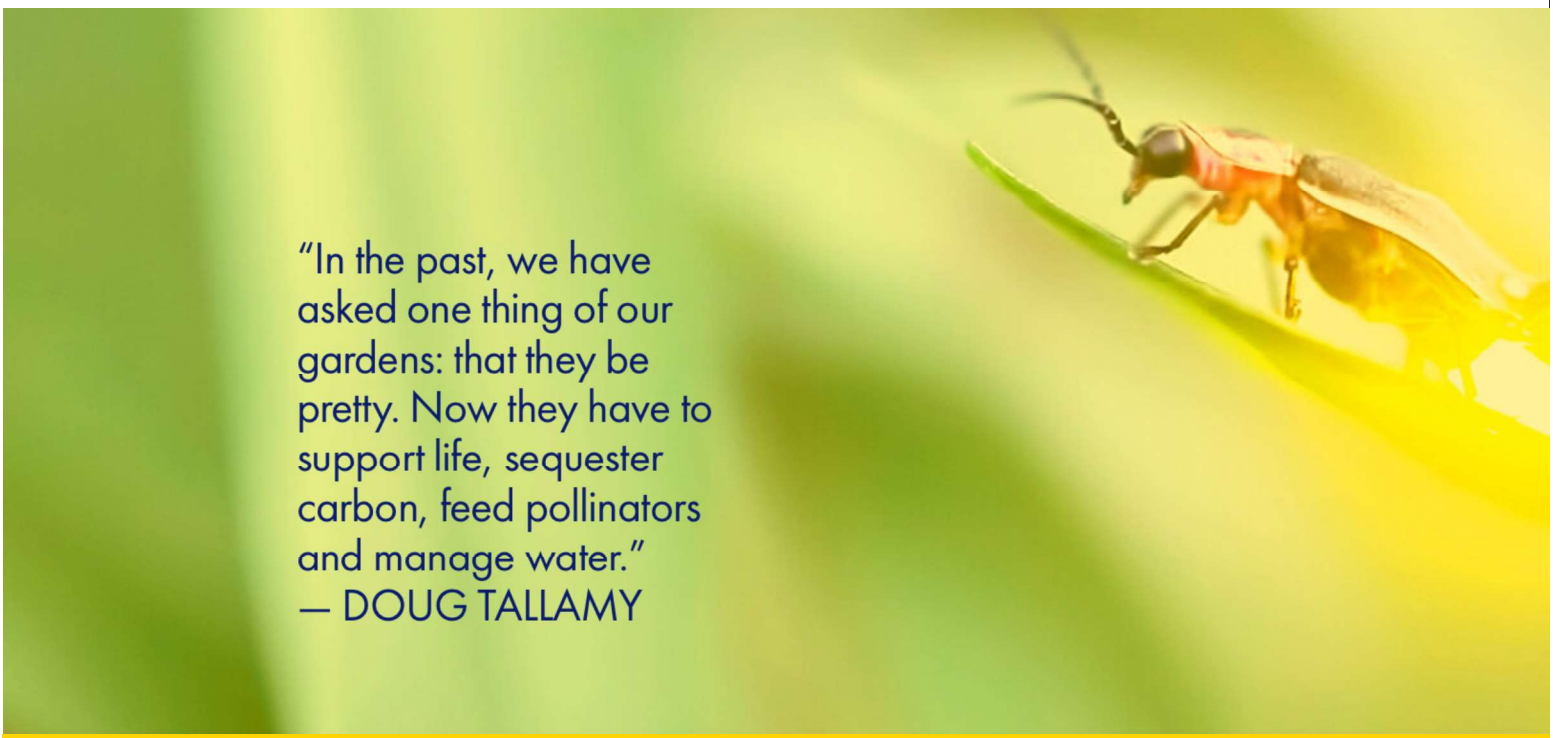
https://map.homegrownnationalpark.org



https://www.pollinator-pathway.org/register



https://www.nwf.org/CERTIFY



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Plan your Native Plant Community

Choosing Your Site

- **Remove invasive species and replace with natives**

Choosing Your Site

- Remove invasive species and replace with natives
- **Shade garden under a tree**

Choosing Your Site

- Remove invasive species and replace with natives
- Shade garden under a tree
- **Increase the depth of foundation plantings**

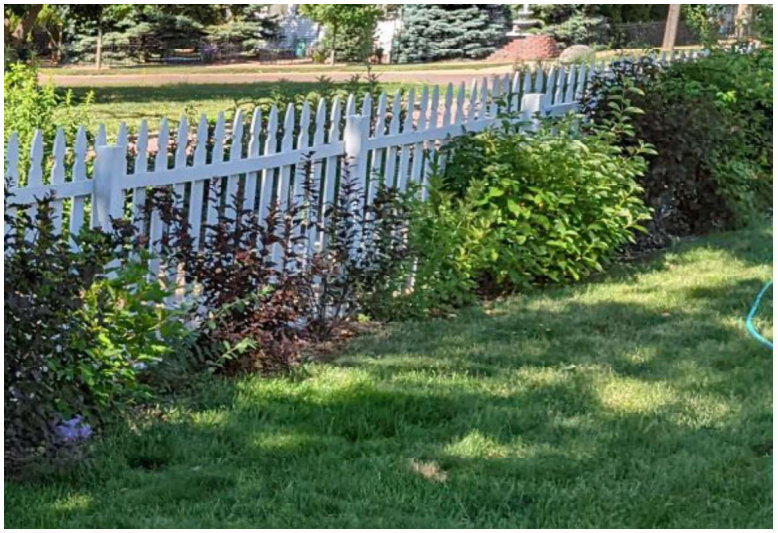
Choosing Your Site

- Remove invasive species and replace with natives
- Shade garden under a tree
- Increase the depth of foundation plantings
- **Rethink the front lawn**

https://siouxcityjournal.com/advertorial/at_home/yard-of-the-year-winners-promote-native-gardening/article_ee23ce28-a9c4-59cb-8757-f8201943a491.html?fbclid=IwAR1YB2BcQP_wpkEtmlKHFHBICdM-J8cy_GDcfdDEGLwuy9aPTbTkQFxNlrA

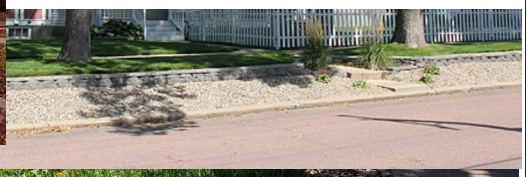
Choosing Your Site

- Remove invasive species and replace with natives
- Shade garden under a tree
- Increase the depth of foundation plantings
- Rethink the front lawn
- **Create a layered forest edge hedge row for privacy**



Choosing Your Site

- Remove invasive species and replace with natives
- Shade garden under a tree
- Increase the depth of foundation plantings
- Rethink the front lawn
- Create a layered forest edge hedge row for privacy
- **Remove hard scape areas and plant natives**



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Evaluating Your Site

Site considerations

- Soil moisture
- Soil type
- Light availability
- Slope and aspect

Right Plant, Right Place

Plant Considerations

- Size, height, and spacing
- Water and drainage needs
- Bloom color and time
- USDA hardiness zone

DETAILS

~Seeds/Packet	1,000
~Seeds/Ounce	75,000
Germination Code	C(60) D
Life Cycle	Perennial
Sun Exposure	Full, Partial
Soil Moisture	Medium, Medium-Dry, Dry
Height	5 feet
Bloom Time	September, October, November
Bloom Color	Yellow

Right Plant, Right Place

Plant Considerations

- **Reproductive habit**

Conoclinium coelestinum

Moore, April

Conoclinium coelestinum (L.) DC.

Blue Mistflower, Wild Ageratum, Blue Boneset

Asteraceae (Aster Family)

Synonym(s): *Eupatorium coelestinum*

USDA Symbol: coco13

USDA Native Status: L48 (N), CAN (I?)

Mistflower grows to 3 feet high, but often lower, with leaves opposite, somewhat triangular in shape, and bluntly toothed. At the top of the plant the branches, with their short-stemmed clusters of flowers, form an almost flat top. Disc flowers are bright blue or violet, about 1/4 inch long. There are no ray flowers.

Blue Mistflower attracts bees and butterflies. However, this wildflower spreads quickly and can become a pest.

Right Plant, Right Place

Plant Considerations

- Reproductive habit
- **Lifespan**

Rudbeckia hirta

Page, Lee

Rudbeckia hirta L.

Black-eyed Susan, Common Black-eyed Susan, Brown-eyed Susan, Blackeyed Susan

Asteraceae (Aster Family)

Synonym(s):

USDA Symbol: ruhi2

USDA Native Status: L48 (N), AK (I), CAN (N)

Depending on growing conditions, this species may act as an annual, biennial or as a short-lived perennial. Bright-yellow, 2-3 in. wide, daisy-like flowers with dark centers are its claim-to-fame. They occur singly atop 1-2+ ft. stems. The stems and scattered, oval leaves are covered with bristly hairs. Coarse, rough-stemmed plant with daisy-like flower heads made up of showy golden-yellow ray flowers, with disc flowers forming a brown central cone.

Stems, leaves and phyllaries are covered with hairs that give it a slightly rough texture. The similar Green-headed Coneflower (*R. laciniata*) has yellow ray flowers pointing downward, a greenish-yellow disc, and irregularly divided leaves.

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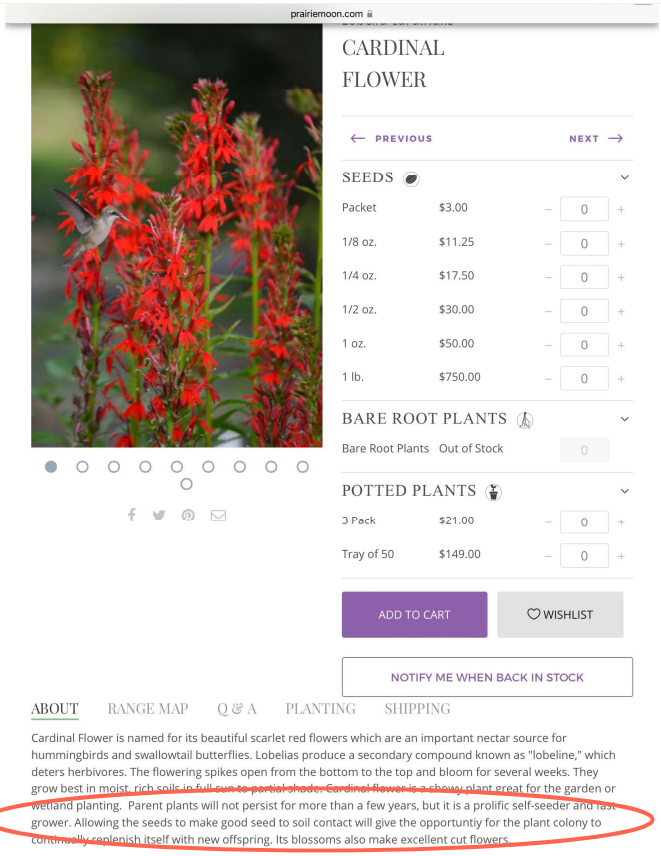
Right Plant, Right Place

Plant Considerations

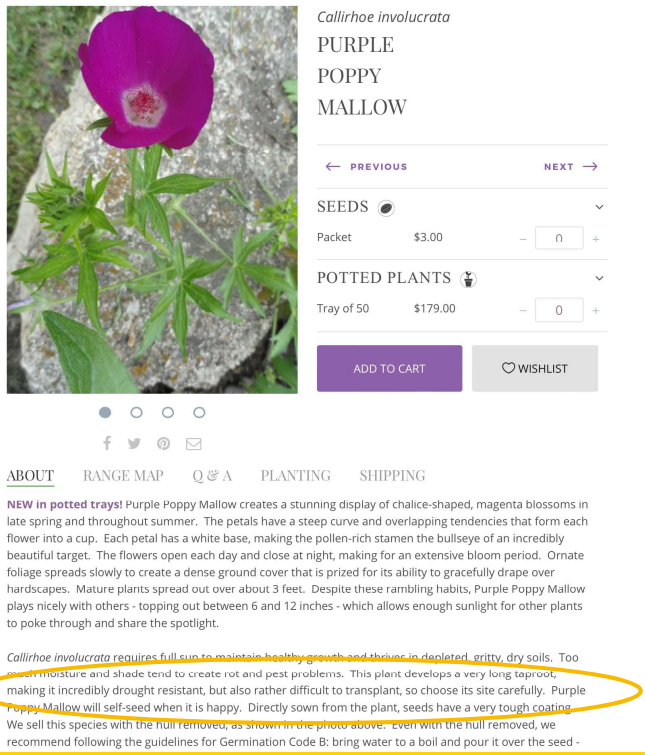
- Reproductive habit
- Lifespan
- **Management needs**



Right Plant, Right Place

Plant Considerations

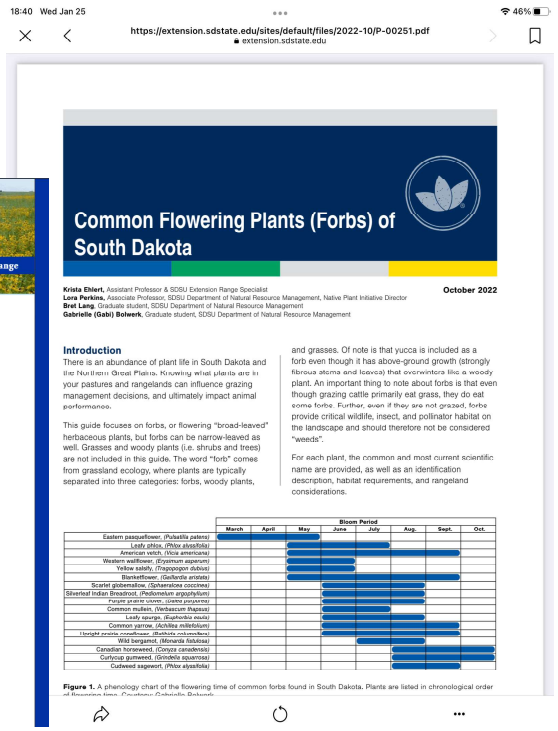
- Reproductive habit
- Lifespan
- Management needs
- **Root zone**



Choosing the Right Species

Get familiar with native plants in your area

- **Species lists**



LEARN MORE: https://openprairie.sdstate.edu/nativeplant/
https://extension.sdstate.edu/common-flowering-plants-forbs-south-dakota?fbclid=IwAR10iihfNRJBafGDDLdJKMoRu-rzlBFzXxQdTY6SNBOr3gVGEYwpEyd0JoE

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Choosing the Right Species

Get familiar with native plants in your area

- Species lists
- **Seed mixes**

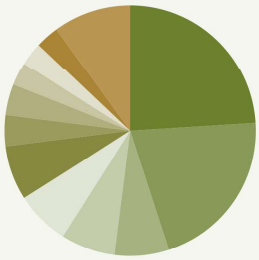
MIX RATIOS

Baby's Breath	15%
Siberian Wallflower	12%
African Daisy	8%
"Polka Dot" Cornflower Mix	8%
California Popppy	8%
Blanketflower	8%
Indianblanket	8%
Blue Flax	8%
Others	25%

These amounts are based on percentage of full seeding rate. Cosmos, Clarkia, Prairie Coneflower, Shasta Daisy, Snapdragon, Gloriosa Daisy, Catchfly, Black-Eye Susan, Purple Coneflower, Garland Daisy, Evening Primrose, Poppy Corn, Sweet Alyssum, Plains Coreopsis *This mix is subject to change based on species availability.

MIX RATIOS

Little Bluestem	24%
Sideoats Grama	21%
Black-Eyed Susan	7%
Plains Coreopsis	7%
Western Yarrow	7%
Blue Grama	7%
Prairie Coneflower	4%
Prairie Junegrass	4%
Foxglove Beardtongue	3%
Purple Prairie Clover	3%
Virginia Wildrye	3%
Other	10%

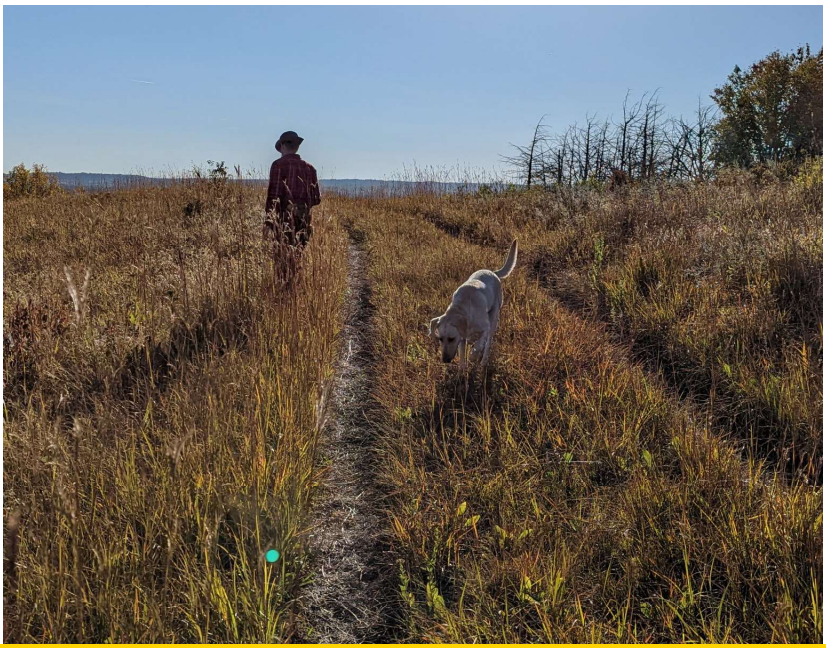


These amounts are based on percentage of full seeding rate. None of the following exceed 2% of the Total Mixture Weight: Blue Flax, Sand Dropseed, Lance-Leaved Coreopsis, Purple Coneflower, White Prairie Clover, Heath Aster, Blanketflower, Ohio Spiderwort

Choosing the Right Species

Get familiar with native plants in your area

- Species lists
- Seed mixes
- **Explore a local prairie**



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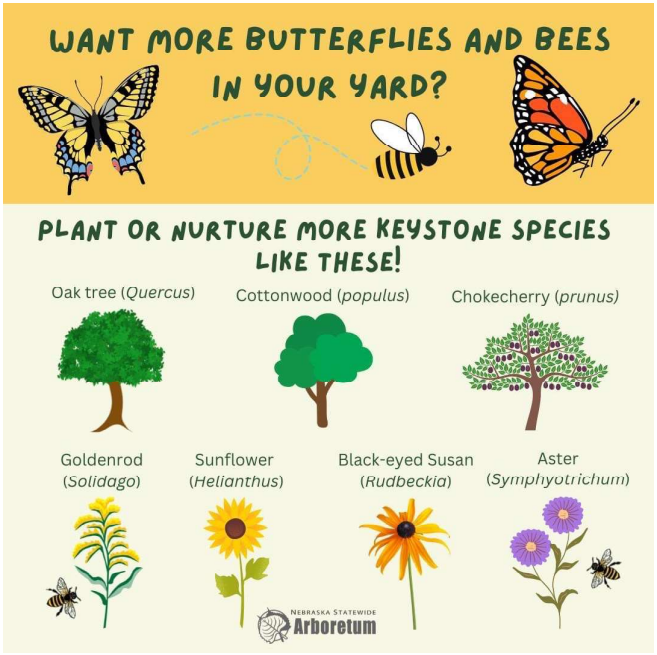
Choosing the Right Species

Choose plants based on faunal needs

- **Pollinator guides**

For the pollinators
https://www.pollinator.org/guides
For the birds
https://www.audubon.org/native-plants
For the moths and butterflies
https://www.nwf.org/NativePlantFinder/
For the bees
https://xerces.org/publications/plant-lists/pollinator-plants-northern-plains



Choosing the Right Species

Choose plants based on faunal needs

- Pollinator guides
- **Plant kits**

32 Plant Butterfly Garden

$169.00

32 Plant Hummingbird Garden for Dry Soils

$169.00

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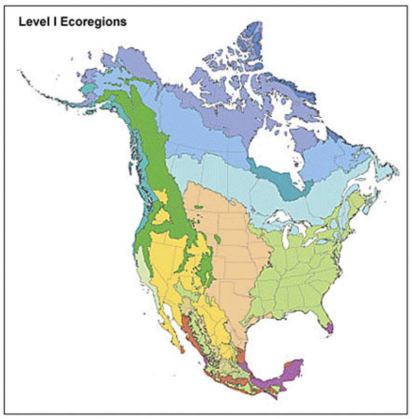
Choosing the Right Species

Choose species that are native to your ecoregion

Ecoregions



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- Level III & IV Ecoregions of the Continental United States
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- Level III & IV Ecoregions by State
- Ecoregions Publications
- Applications

Background

Ecoregions are areas where ecosystems (and the type, quality, and quantity of environmental resources) are generally similar. This ecoregion framework is derived from Omernik (1987) and from mapping done in collaboration with EPA regional offices, other Federal agencies, state resource management agencies, and neighboring North American countries. Designed to serve as a spatial framework for the research

LEARN MORE: https://www.epa.gov/eco-research/ecoregions-north-america

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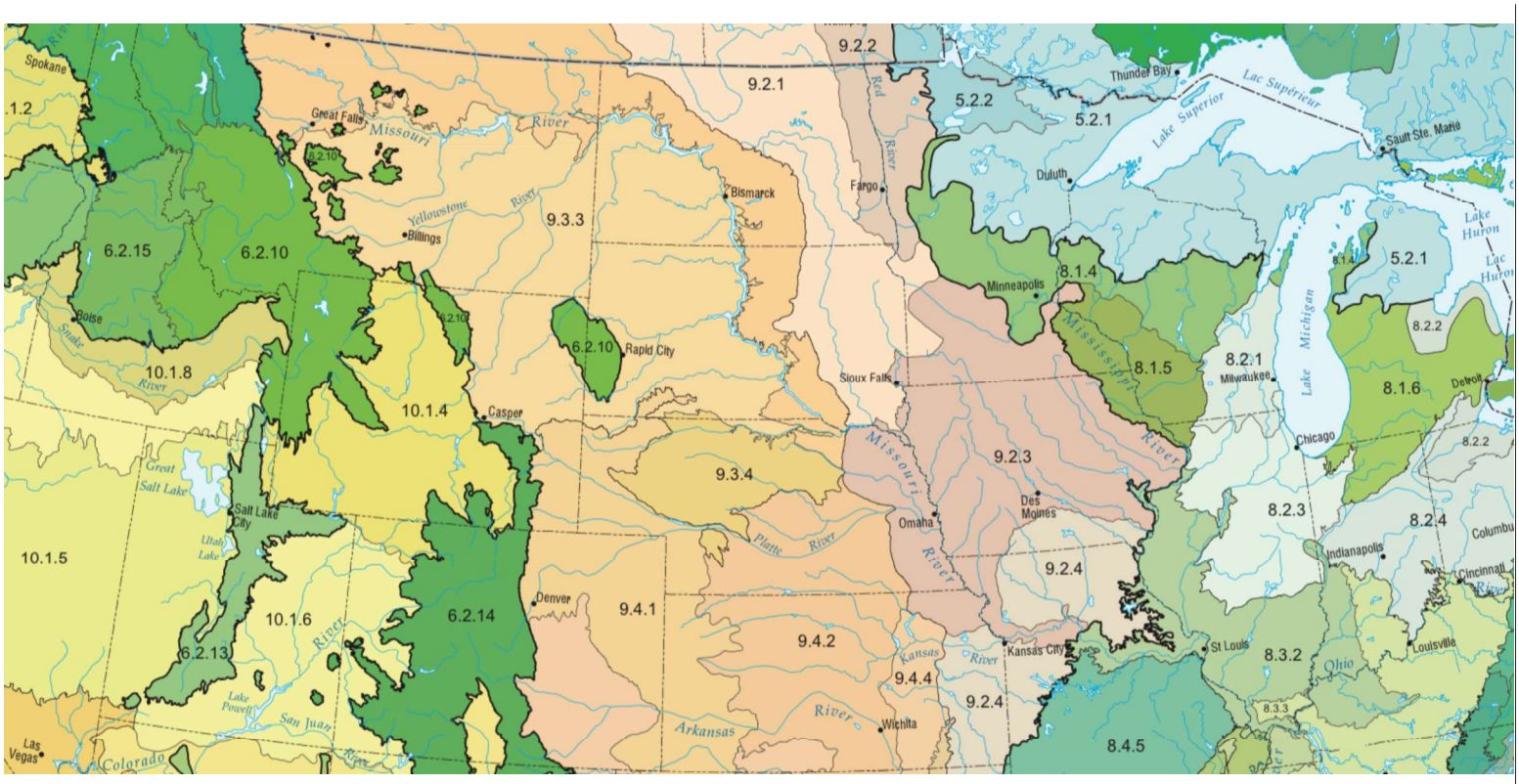
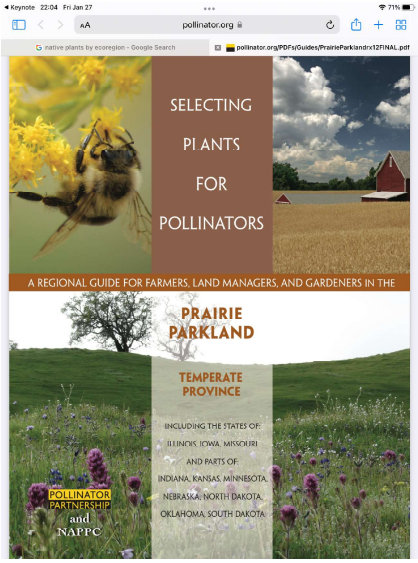
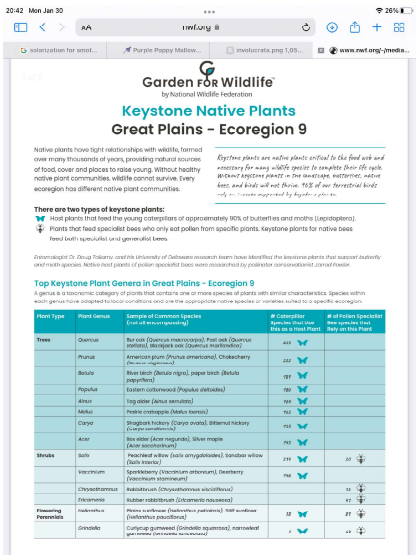


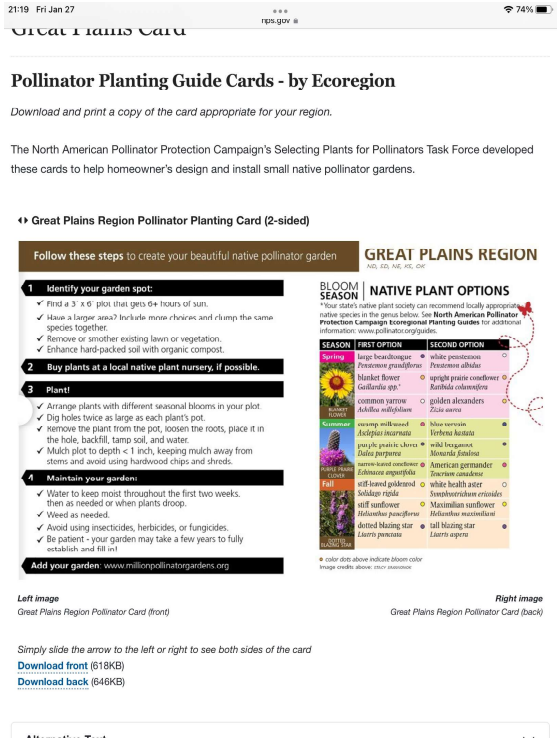
LEARN MORE: https://www.epa.gov/eco-research/ecoregions-north-america
https://www.backyardecology.net/gardening-with-native-plants-hardiness-zones-and-ecoregions/

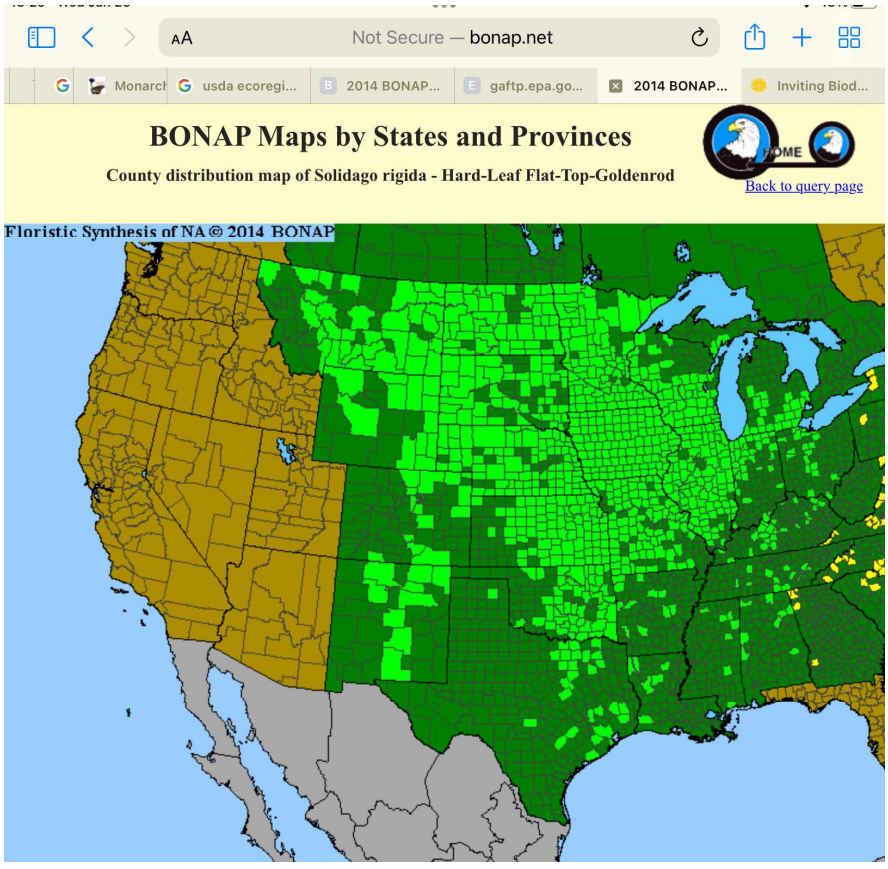
Choosing the Right Species

Choose species that are native to your ecoregion

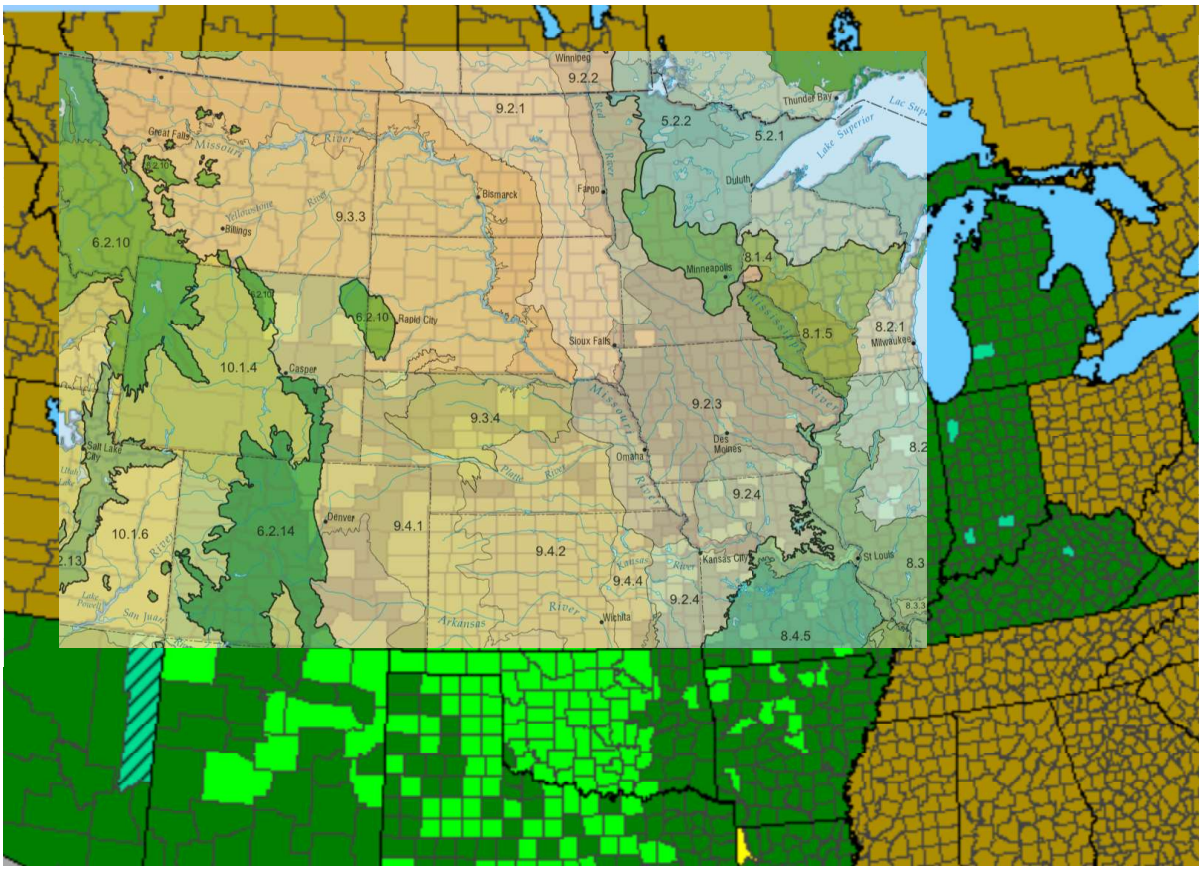








LEARN MORE: http://bonap.net/napa



Choosing the Right Species

Avoid non-natives and cultivars

- Change of leaf color to red or purple modified chemistry so caterpillars won't use them
- Large showy blossoms have fewer fertile flowers
- Flowers with extra petals have reduced nectaries.
- Questions on dwarf plants
- Cultivars propagated by cloning lack genetic variation making them less adaptable.

Physocarpus opulifolius

Allium cernuum

Echinacea pallida

Physocarpus opulifolius 'Ginger Wine'

Allium 'Globemaster'

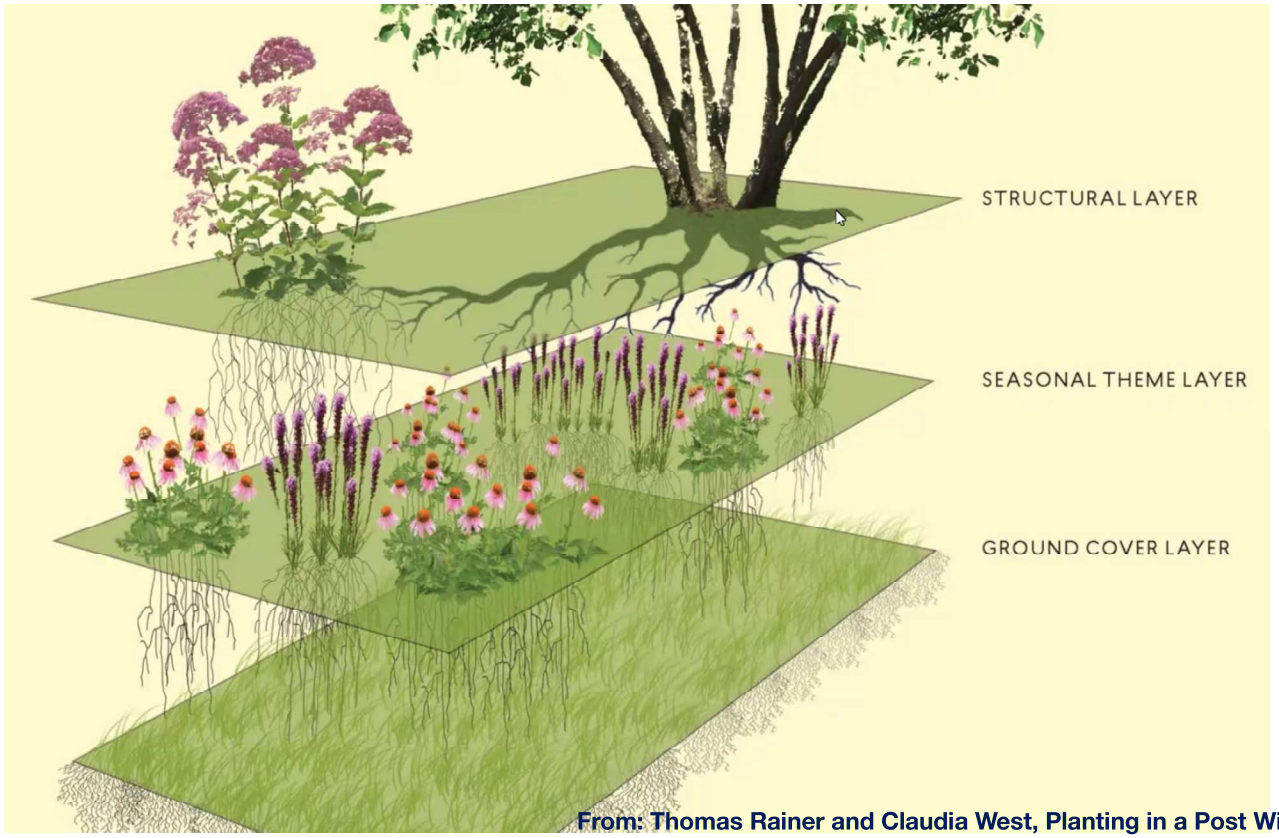
Echinacea 'Sunseekers sweet fuchsia

LEARN MORE: https://journals.ashs.org/horttech/view/journals/horttech/28/5/article-p596.xml
https://scholarworks.uvm.edu/graddis/626

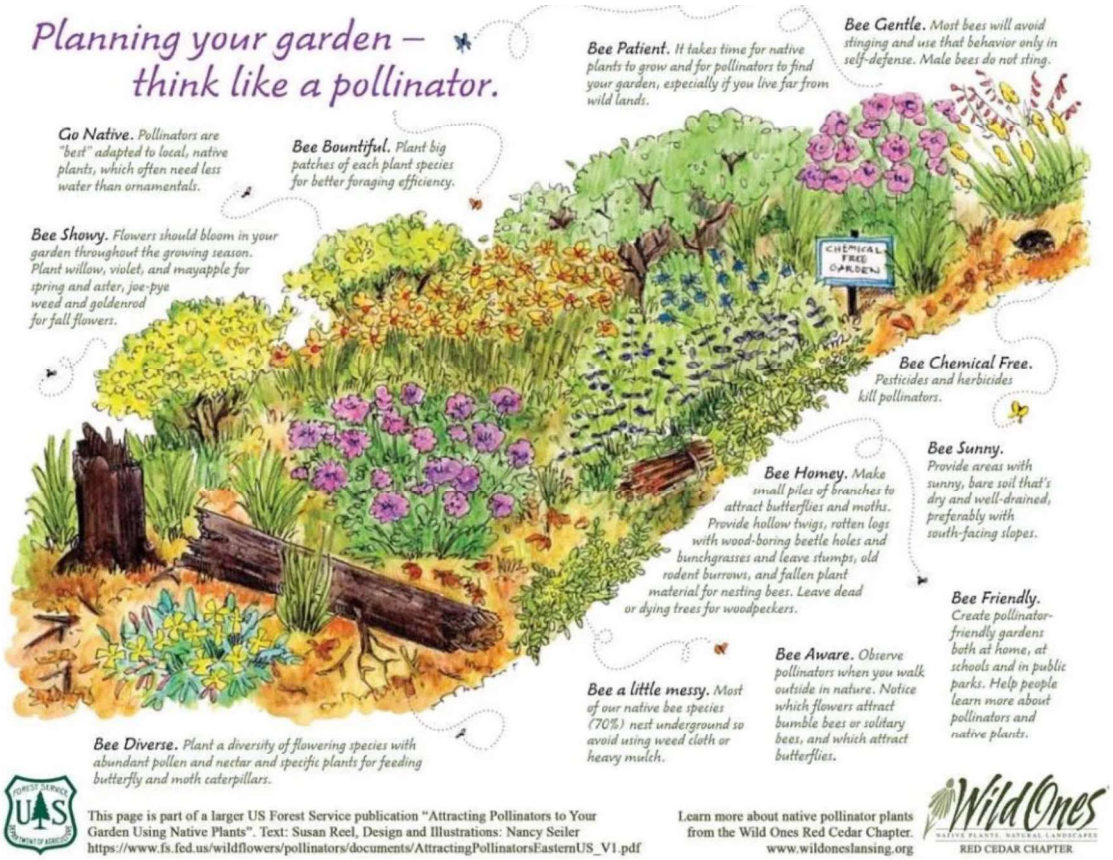
Designing Your Garden

Diversify Your Plantings

- Grasses and forbs
- Bloom time
- Legumes
- Seasonal interest

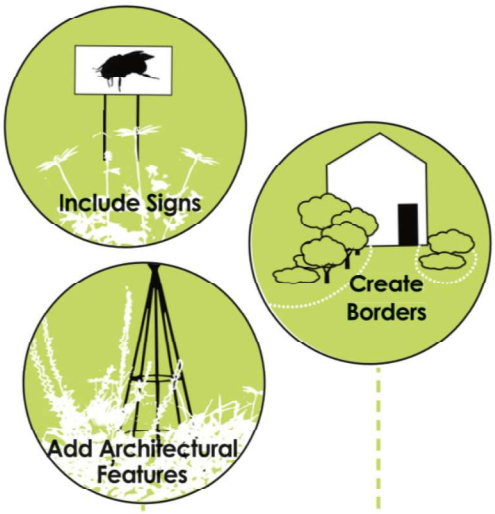


From: Thomas Rainer and Claudia West, Planting in a Post Wild World



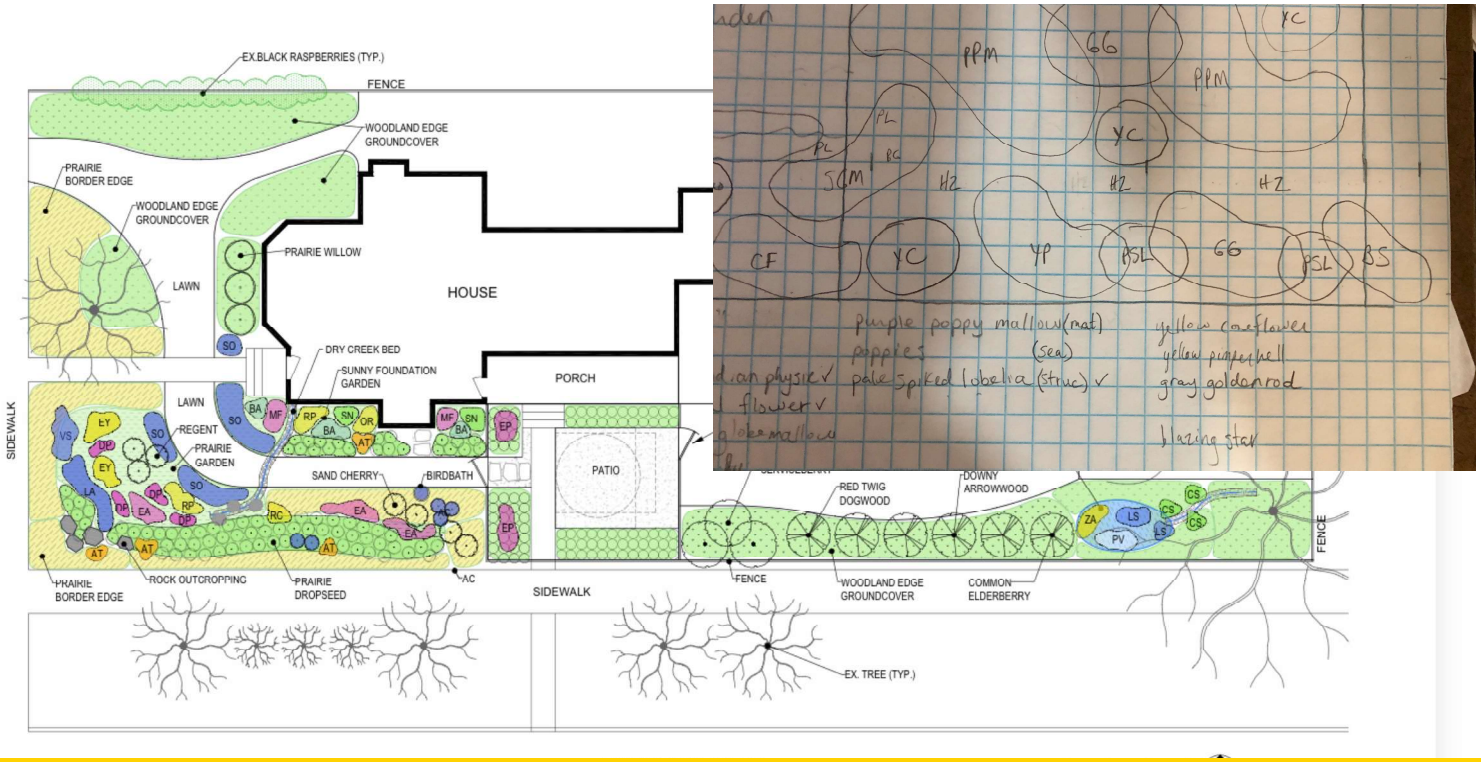
Cues of Care: Carefully planned additions to the landscape help indicate that a garden is intentional and maintained.

Planting Design: Creating a Sense of Order

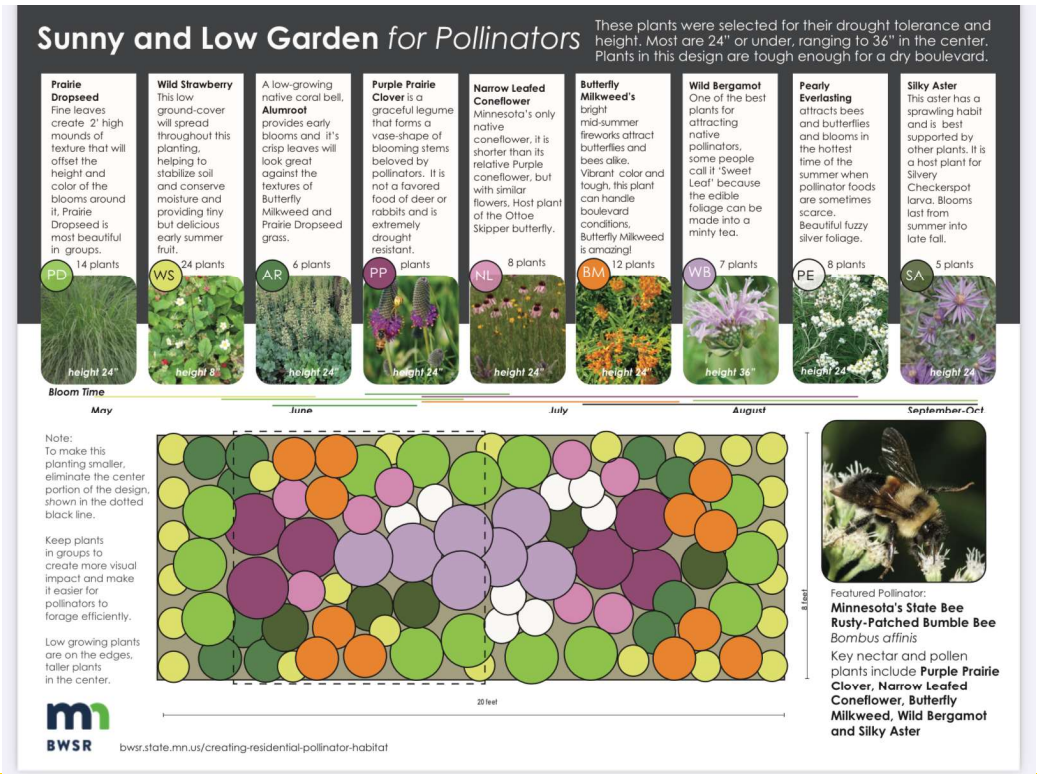


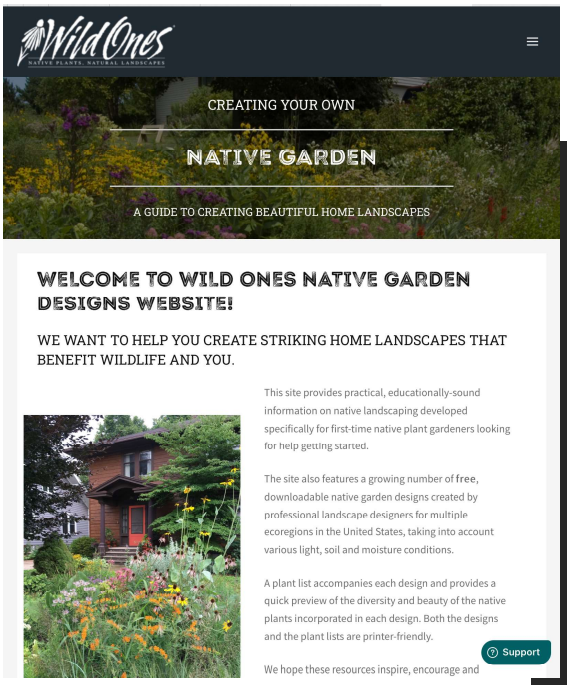
- **Create Borders** by mowing edges or creating pathways with mulch or ground cover in the areas immediately adjacent to sidewalks, driveways, and property lines.
- **An Orderly Framework** prevent plants from obstructing traffic and falling into the neighbors' properties or onto the sidewalk. This framework also shows tidiness and human intention.
- **Add Architectural Features** and human elements such as fences, lawn ornaments, wildlife houses and feeders, and keep features well maintained.
- **Include Signs** to communicate with your neighbors about your project and promote pollinator and natural habitats. see sign option featured in the appendix

https://bwsr.state.mn.us/sites/default/files/2020-05/Planting for Pollinators_updated_2020_0.pdf

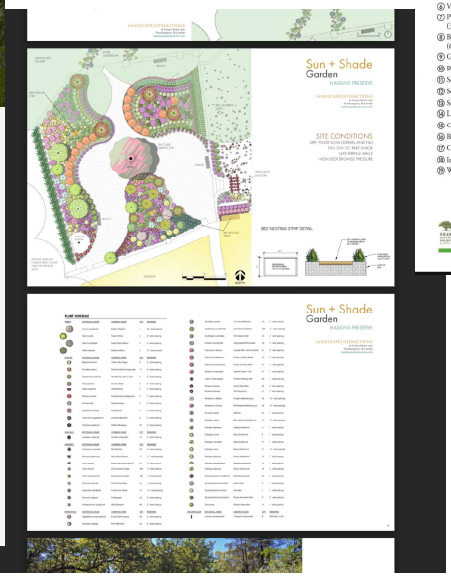


https://www.youtube.com/watch?v=7fdLWqJ9bi0

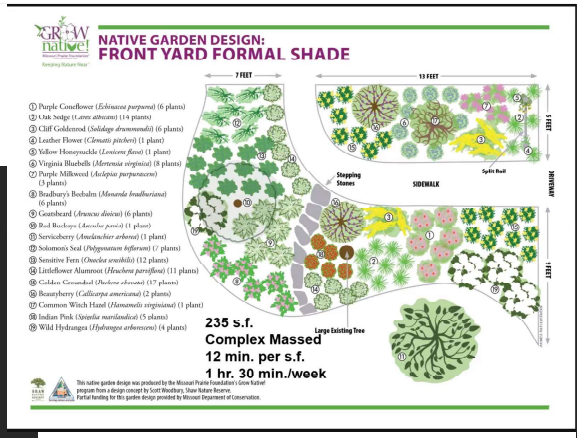




https://nativegardendesigns.wildones.org



https://www.landscapeinteractions.com/projects



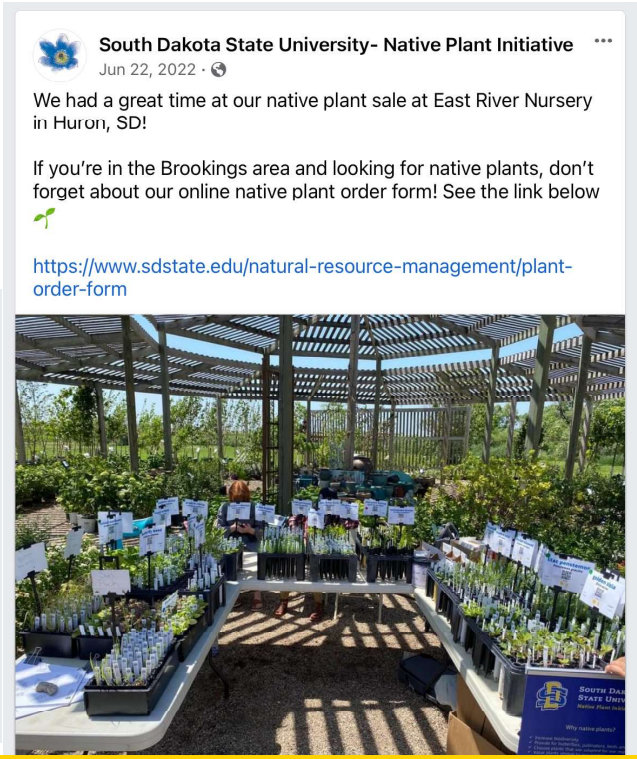
https://grownative.org/learn/native-landscape-plans/

Sourcing Native Plants/Seeds

Sourcing

Find a local supplier

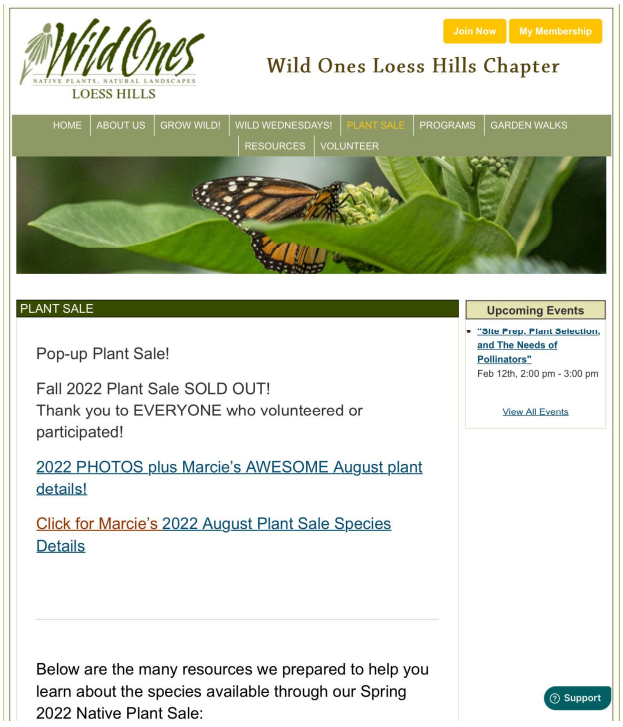
- **SDSU Native Plant Initiative**



Sourcing

Find a local supplier

- SDSU Native Plant Initiative
- **Loess Hills Wild Ones Chapter**



Sourcing

Find a local supplier

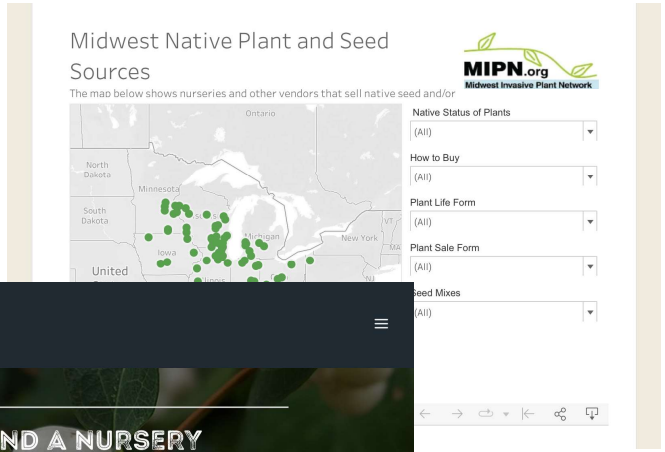
- SDSU Native Plant Initiative
- Loess Hills Wild Ones Chapter
- **SDSU Extention Missouri Valley Master Gardeners Tour of Lawns and Gardens Plant Sale**

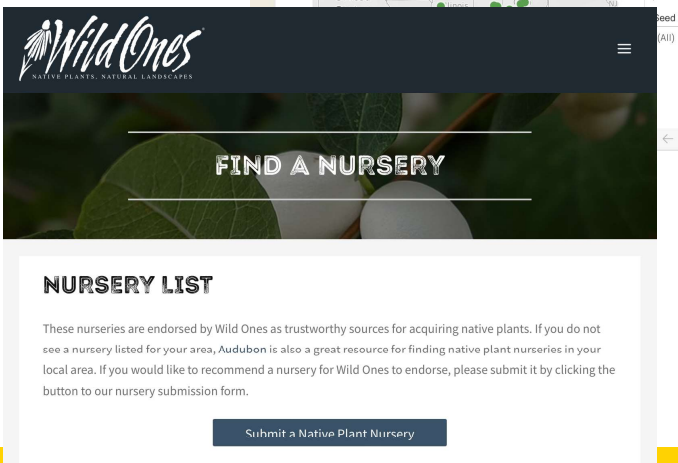
Saturday, July 8, 2023 at 8 AM - 12 PM
2022 Tour of Lawns and Gardens
Riverview Park Reformed Church · Yankton, SD

Sourcing

Find a regional supplier

- **Wild Ones Nursery List**
- **MNDNR List**
- **Google**





Sourcing

Collect your own seed

- From a friends yard or prairie
- From a volunteer opportunity
- ALWAYS get permission

LEARN MORE: https://xerces.org/publications/guidelines/collecting-and-using-your-own-wildflower-seed

Sourcing

Collect your own seed

- From a friends yard or prairie
- From a volunteer opportunity
- ALWAYS get permission

Grow your own plants

- **Indooors/Greenhouse**

LEARN MORE: https://www.youtube.com/watch?v=juL409NcgMc
https://www.youtube.com/watch?v=rb0jdwXwihE

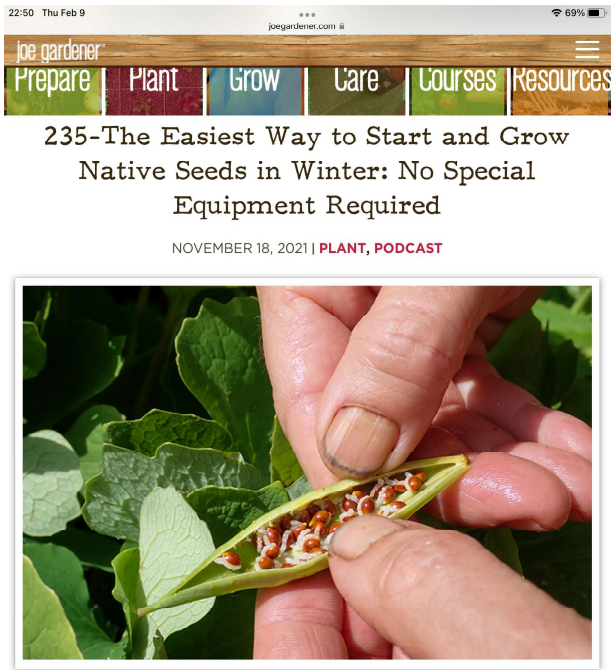
Sourcing

Collect your own seed

- From a friends yard or prairie
- From a volunteer opportunity
- ALWAYS get permission

Grow your own plants

- Indooors/Greenhouse
- **Outdoor**



LEARN MORE: https://joegardener.com/podcast/easiest-way-to-start-and-grow-native-seeds-winter/

Sourcing

Collect your own seed

- From a friends yard or prairie
- From a volunteer opportunity
- ALWAYS get permission

Grow your own plants

- Indooors/Greenhouse
- Outdoor
- **Winter Sowing**

LEARN MORE: https://www.youtube.com/watch?app=desktop&fbclid=IwAR3id_fJysebg9pbcxc8ZIEZ19PBf227hddI9c8LGaVgn749gsyE9ZnKxuk&v=mhqT1kUVSk0&feature=youtu.b
https://marylandgrows.umd.edu/2019/01/23/winter-sowing-how-i-get-a-jump-start-on-my-summer-flower-garden/?amp=1

Supplies needed

1. **Containers; Clear or translucent jugs, or pots/cups in clear totes, or pots with clear plastic covers.**
2. **High quality well draining potting soil mix (no moisture control, no seed starter)**
3. **Seeds**
4. **Tool for making holes; drill, soldering iron, hot glue gun without the glue, sharp knife, awl**
5. **Tool for cutting open containers; scissors, tin snips, utility blade**
6. **Water**
7. **Tape; painters tape, duct tape (no to packaging tap)**
8. **Oil based paint pens or china markers (no to regular sharpies, it fades)**

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Steps

1. Wet your soil
2. Make drainage holes in containers
3. Cut open container if needed
4. Place 3-4 inches of soil in container
5. Sprinkle in seeds

Steps

6. Cover with dry soil (note some seeds don't need to be covered)
7. Wet the top layer of soil
8. Tape container back together, or cover with clear top with holes
9. Label
10. Set outside in sunny location where moisture can get into containers

What to do when seeds germinate

It all depends on the weather

If it is dry, water

If it is hot, move to part shade

If it is really hot, move to part shade and open containers (but close them again at night if it will get below freezing

If it is rainy, make sure containers are draining

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When and how to plant

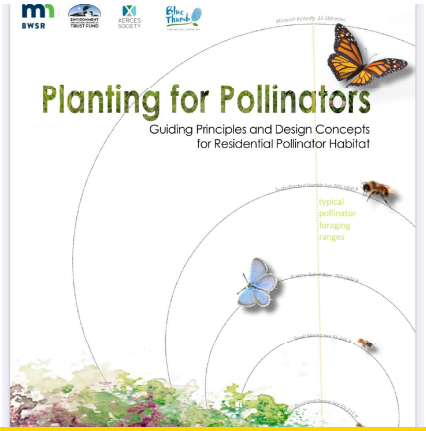
1. Once plants have two sets of true leaves, plant out or up-pot for fall planting
2. If seeds were sown densely then use Hunk o seedling method to separate plants (cut like brownies or use kitchen tongs) otherwise seeds sown sparsely should be easy to tease apart
3. Wintersown seedlings are tough, no hardening off required

Installing Your Native Landscape

Site Preparation Guides

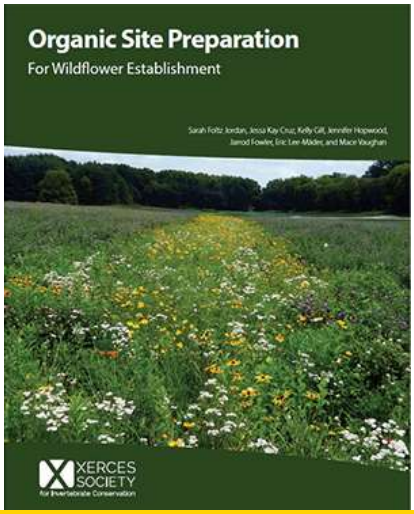
Principles and Design for Residential Pollinator Habitat.

https://bwsr.state.mn.us/sites/default/files/2020-03/Planting for Pollinators Design Guide with logos.pdf



Organic Site Preparation for Wildflower Establishment

https://xerces.org/publications/guidelines/organic-site-preparation-for-wildflower-establishment



Site Preparation

- **Remove turf by hand or with a sod cutter**

Site Preparation

- Remove turf by hand or with a sod cutter
- **Smother**

Site Preparation

- Remove turf by hand or with a sod cutter
- Smother
- **Herbicide**

LEARN MORE: https://www.rewildingmag.com/replace-lawn-with-native-plants/?fbclid=IwAR0_Ntqk81MuBa0jBOec1nQcSRtFcQrHyQLIUVZcBTq_2OoltgMu2V5l3E4

Planting

Plugs vs.Seeds

Seed Vs. Transplants for Native Pollinator Habitat	
Starting from Seed	**Starting from Transplants**
Lower Cost	**Higher Cost** (cost is reduced if you are able to grow transplants yourself)
More weed control needed, since native seeds can easily get out competed by weeds	**Less weed control** needed, since native plants will have more of a competitive advantage against weeds
Requires mowing for weed management during establishment	**No establishment mowing needed.** Spot weed as needed
Slower to bloom. Blooms usually not abundant until 3rd or 4th year of project (considering site prep and establishment mowing)	**Quick to bloom.** Blooms abundant the **1st or 2nd year** of project, depending on timing of planting
Tend to have **higher diversity** (although diversity of seed mix is not always realized in the planting)	Tend to have **lower diversity,** since some species are not available as plugs
Less control (design is mostly limited to seed mix)	**More control & design** opportunities (desired plants can be clustered, evenly distributed, etc.)
Installation time/labor is low	**Installation time/labor is high**
Suitable for **small or large areas**	**Only suitable for small areas** (1/10 acre = 4K plants)
No irrigation needed	**May require irrigation** at time of transplant, or during dry periods

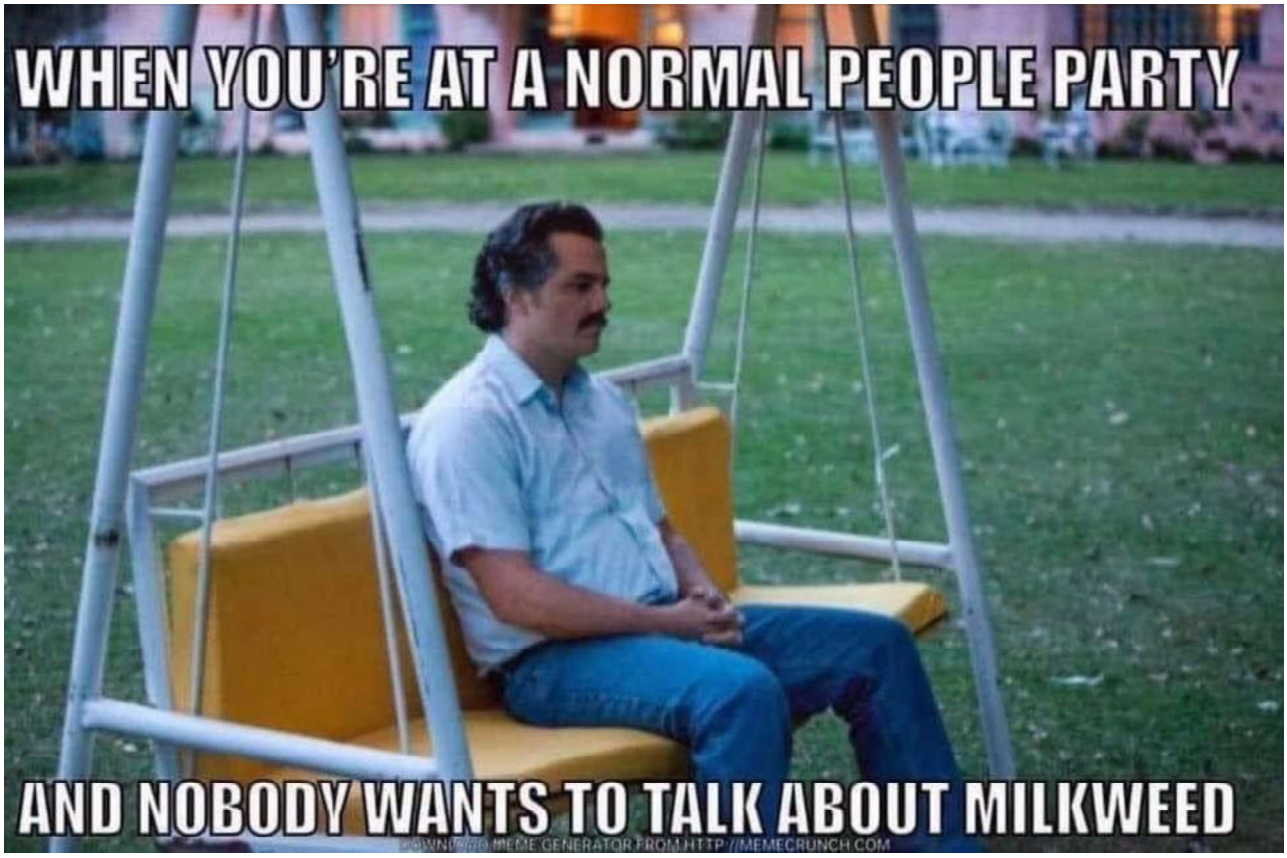
Citation: Foltz Jordan, Sarah. 2020. Comparison Table of Seed vs. Transplants for Native Pollinator Habitat. Xerces Society Fact Sheet. Available at: www.xerces.org

This material is based upon Xerces Society on-farm habitat trials in Iowa, supported by the Natural Resources Conservation Service, U.S. Department of Agriculture, under number 69-6114-17-007. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the U.S. Department of Agriculture.

XERCES SOCIETY for Invertebrate Conservation

Seasonal Stewardship

- May - garden cleanup; remove excess duff in prairie areas, mow/ weed whip to 8 inch height
- May/Jun- infill with new plants, divide, remove/relocate seedlings
- Jun/Sep- enjoy the garden and keep weeds at bay, water if drought
- Late Fall - leave the leaves, cut back to 12 in tall if you can't leave it standing
- Winter - watch the wildlife forage and shelter


WHEN YOU'RE AT A NORMAL PEOPLE PARTY
AND NOBODY WANTS TO TALK ABOUT MILKWEED
MEME GENERATOR FROM HTTP://MEMECRUNCH.COM