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Pollinators are an integral component to our food supply and therefore are worthy of efforts aimed at protection and habitat conservation or creation. Additional benefits documented from creating pollinator habitats include supporting populations of birds, improving water quality by reducing nutrients and sediment in runoff, and providing forage for livestock.

Illinois agricultural landscapes provide unique opportunities to provide habitat for multiple species (i.e. biodiversity), including pollinators. This guidebook provides general, non-all-inclusive information to establish larger plots of pollinator habitat on these lands. These landscapes can be smaller corners and edges of production fields or larger plots that may be enrolled in the United States Department of Agriculture (USDA) Conservation Reserve Program (CRP). If lands intended for habitat conversion are enrolled in a USDA program, the first step is to check with your local office to ensure any existing agreements or conservation plans are followed.

SEEDBED PREPARATION

Preparing the seedbed for pollinator habitat establishment is the first and most important step toward success. If planting into an already bare or clean production field, skip ahead to the Planting section on page 6. However, most habitat is established into existing grass areas which can be enhanced with a diversity of native plants for pollinator use. When doing this, the grasses must be managed to introduce a variety of other plant species.

Weed control in grassy areas is required to ensure that new pollinator plants will sustain for many years. If the time is available, it is suggested to dedicate one year towards this effort to minimize the weed pressure in these habitats. The three main methods for habitat preparation are **chemical, tillage, and prescribed burning**. These options are not all-inclusive, but basic suggestions are outlined below.

Successful preparation can be observed by a minimal residual cover on a smooth, firm surface. For reference, adult footprints should barely be visible in the soil, which should be at least 60% bare. However, if planning to broadcast the seed, enough loose soil is required to cover and pack the seed successfully.

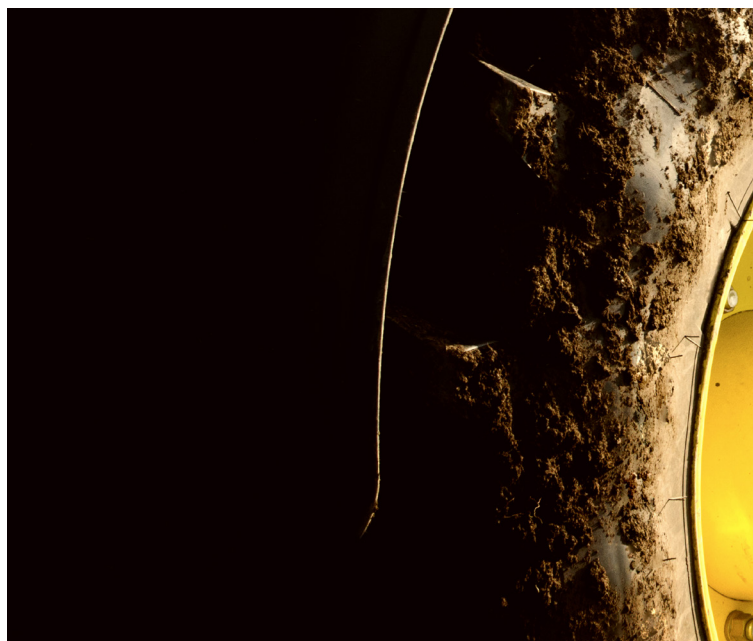
NOTE: Some assistance programs require specific seeding methods; reference those suggestions to determine the course of action.

Chemical

If opting to control weeds with chemicals, use an herbicide on the grasses between the fall and the hard freeze prior to the year of seeding. Each herbicide will have specific label instructions to follow; however, in general, spraying should occur when the grass is at least six inches high. Attempting to manage the grass at heights above this threshold will pose greater difficulty for control.

In the weeks following the first application, prescriptively spot-spray any persistent species.

A combination of tillage or prescribed fire with this method may be used for maximizing preparation success. Chemical application and tillage will specifically support the beneficial incorporation of residue into the soil. It will also help clear out remaining plant tissue left on the soil surface to maximize seed-to-soil contact. In old CRP fields, this will help diminish the risk of weed infestations in the future.



Tillage

When tilling to prepare the habitat, it is important to be mindful of how often the tilling occurs. One option would be to disk until the seedbed is clean. After mowing the area, disk harrow in multiple directions to chop up clumps of sod every two to four weeks for a one to two month period. Tilling will dismantle existing root systems but may stimulate the growth of some dormant weeds, making subsequent tillage necessary to break down the grasses for pollinator habitat preparation. Another option is to establish into existing grasses or expired CRP habitat by using a shallow disk to slice open the ground at a depth of one to two inches, then broadcast the seed and follow with a harrow. A disadvantage to the latter option is that it relies on the pollinator seed outcompeting or establishing alongside the existing vegetation.



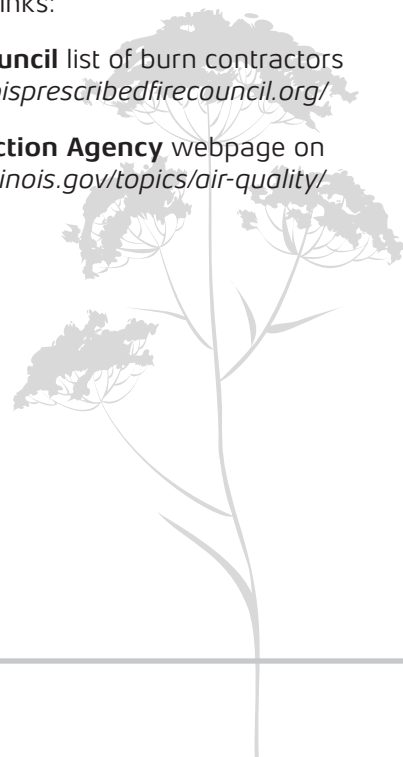
Prescribed Burning

Prescribed burning can be used to prepare an area for planting pollinator habitat or maintaining the habitat into the future. This approach is beneficial because native plants in Illinois have evolved to re-establish themselves after being exposed to routine fires. The use of fire has benefits such as releasing nutrients back to the soil, preventing the growth of trees and some shrubs, and providing warmth for seed germination. **However, several considerations must be taken when using this approach.** An open burn permit must be obtained by Illinois Environmental Protection Agency (IEPA), as well as checking and following any local ordinances which may be more restrictive and require additional permits. It is also a good idea to have a burn plan which will help document the process. Local USDA offices have resources available to help navigate a successful prescribed burn; a link to this directory has been provided in the Technical Assistance section on page 14.

NOTE: For more information regarding prescribed burning, see the following links:

Illinois Prescribed Fire Council list of burn contractors in Illinois: <https://www.illinoisprescribedfirecouncil.org/>

The Environmental Protection Agency webpage on open burning: <https://epa.illinois.gov/topics/air-quality/open-burning.htm>



PLANTING

Pollinator plant seeds can be planted at any point between spring and fall [March 1-soil freeze], however pollinator seeds need to be exposed to cold, damp conditions before germinating. Therefore, growth will not appear until the spring after the first winter season. However, most pollinator seeds will not germinate until the second year after planting and most pollinator plants will not bloom until later in year two or into year three. Do not be discouraged if the habitat does not flower after the first year. The first few years are essential for the pollinator plants to establish themselves in the plot.

When deciding when to plant, any time during the growing season is suitable, depending on when it does not coincide with other farm activities. Fall, however, is the ideal time to plant, especially after the first frost. This allows planted seeds to establish themselves without the competition of persistent unwanted plants. If opting for this timeframe, it is best to seed after a frozen morning, when the ground will thaw in the afternoon and is right before a light rain or snow. If this is not possible, seeding will also be successful when a light snow is going to melt within one to two days.





Seed Selection

Before determining what seeds are needed for pollinator habitat, consider the following logistics for the project: soil type, land history, desired pollinators, and tools available. Additionally, choose a mix that will provide constant blooms from April-October with at least three varieties always blooming.

Choose plant varieties that are native to Illinois, as these plants attract native pollinators, have deep roots for increased water filtration, prevent invasive species encroachment, and are accustomed to local conditions. The chart on page 8 contains a sample of potential pollinator varieties to include in a mix. Pollinator seed mixes can be purchased that include a wide variety of Illinois-native plants, some of which may or may not be included in this chart. For more information on selecting and purchasing pollinator seed, see your local farm supply retailer or refer to the Additional Resources section on page 14.

A successful seed mix should have a combination of native flowers and grasses. Although they do not supply pollen or nectar, grasses provide a home for pollinators throughout their lives and are a staple for pollinator habitats. When choosing grass varieties, it is best to use native species to minimize maintenance and promote the attraction of native pollinators. Short varieties of native bunch grasses are ideal, as they will work with the native flowers to fight weed pressure. Only a few varieties of grasses are necessary to foster success of the pollinator seed mix; ideal mixes should be comprised of no more than 25% of grass seeds.

NOTE: Grasses tend to take over the habitat, so ensure that they are being maintained and managed regularly to prevent overgrowth.

TABLE OF FLOWERS & GRASSES

FLOWERS	Common Name	Light Needs (Full Sun (FS), Part Sun (PS), Shade (SH))	Bloom Period	Bloom Months	Soil Condition	Bloom Color
	Cream Wild Indigo	PS	early	April-June	moist	cream
	Golden Alexander	FS, PS	early	April-June	moist	yellow
	Marsh Marigold	FS, PS	early	April-June	moist, wet	yellow
	Wild Geranium	FS, PS	early	April-June	moist	purple, pink
	Common Spiderwort	FS, PS	early, early-mid	April-July	moist	blue
	Foxglove Beardtongue	FS	early-mid	May-July	moist	white
	Pale Penstemon	FS, PS	early-mid	May-July	dry	white
	White Prairie Clover	FS	early-mid	May-July	dry, moist	white
	Pale Purple Coneflower	FS	mid	June-July	dry, moist	purple
	Butterflyweed	FS, PS	mid	June-Aug	moist, dry	orange
	Swamp Milkweed	FS	mid	June-Aug	wet	pink
	Wild Bergamot	FS, PS	mid-late	July-Aug	dry, moist	pink
	Dotted Mint	FS, PS	mid-late	July-Sept	dry	purple
	Marsh Blazingstar	FS, PS	mid-late	July-Sept	wet, moist	purple
	Narrowleaf Mountain Mint	FS	mid-late	July-Sept	moist	white
	Turtlehead	FS, PS	mid-late	July-Sept	moist, wet	white
	Culver's Root	FS, PS	mid, mid-late	June-Sept	moist	white
	Mountain Mint	FS, PS	mid, mid-late	June-Sept	wet, moist	white
	Purple Prairie Clover	FS	mid, mid-late	June-Sept	dry, moist	purple
	Purple Coneflower	FS	mid-late, late	July-Oct	dry, moist	purple
	Gray Goldenrod	FS, PS	late	Aug-Sept	dry	yellow
	Rough Blazingstar	FS	late	Aug-Sept	dry, moist	purple
	New England Aster	FS	late	Aug-Oct	moist, wet	purple
	Showy Goldenrod	FS	late	Aug-Oct	moist	yellow
	Smooth Blue Aster	FS, PS	late	Aug-Oct	moist, dry	blue
	Stiff Goldenrod	FS	late	Aug-Oct	moist	yellow
GRASS	Little Bluestem	FS	–	–	dry, moist	–
	Prairie Dropseed	FS	–	–	dry	–
	Prairie Junegrass	FS, PS, SH	–	–	dry	–
	Side-Oat Grama	FS, PS	–	–	dry	–

Flower Colors Attract These Species of Pollinators

- birds, moths, butterflies
- bees
- birds
- moths
- bees
- moths, flies, butterflies
- beetles
- flies



Pollinator Blooming Timeline

EARLY

common spider wort



APRIL

golden alexander



MAY

wild geranium



JUNE

foxglove beard tongue



MID

butterfly weed



JULY

swamp milkweed



AUGUST

new england aster



SEPTEMBER

marsh blazingstar



OCTOBER

LATE

PLANTING METHODS

Planting methodology should be determined by habitat quality and tool availability. For any method the general rule of thumb is to plant the seeds as deep as two times the seed's diameter (e.g. 2 mm seeds should be planted at four mm depth). However, when using a pollinator mix with varying seed sizes, seeds should be planted in the top 1/8 inch of soil, with about 30% of the seed on the surface. This ratio does not have to be perfect; the shallower the seeds are, the better. Above all, seeds need to have good seed-to-soil contact. To achieve this, there are three main methods of planting: drilling, broadcasting, and hand tossing.



Drilling

It is advantageous to drill on large plots of land that are typically greater than five acres and have the potential for low seed-to-soil contact due to the opportunity for more precise seed placement and calibration. Check in with a local National Resource Conservation Service (NRCS) office to see if they have if they have drills available for borrow.

NOTE: For more information regarding drilling seed for pollinator plants and practices for calibration, see the following links:

USDA – Plant Materials Technical Note – Calibrating a Seed Drill: https://efotg.sc.egov.usda.gov/references/public/TX/StpmcTN10_CalDrill.pdf

Broadcasting

Because small amounts of small seed do not work well in larger drills, pollinator plots that are less than five acres are usually planted by broadcasting the seed. This method has great success when there is potential for an abundance of seed-to-soil contact. This means that the ground cannot be obstructed by any grass, leaves, branches, etc. Additionally, after broadcasting, rolling or harrowing the area may help provide more seed-to-soil contact.

Hand Tossing

Another planting method is to toss the seeds across the landscape by hand. This should be done as uniformly as possible across the entire landscape. Carriers can be added to assist with this process. However, be mindful that plants may not be as evenly distributed as they would be with the other methods.

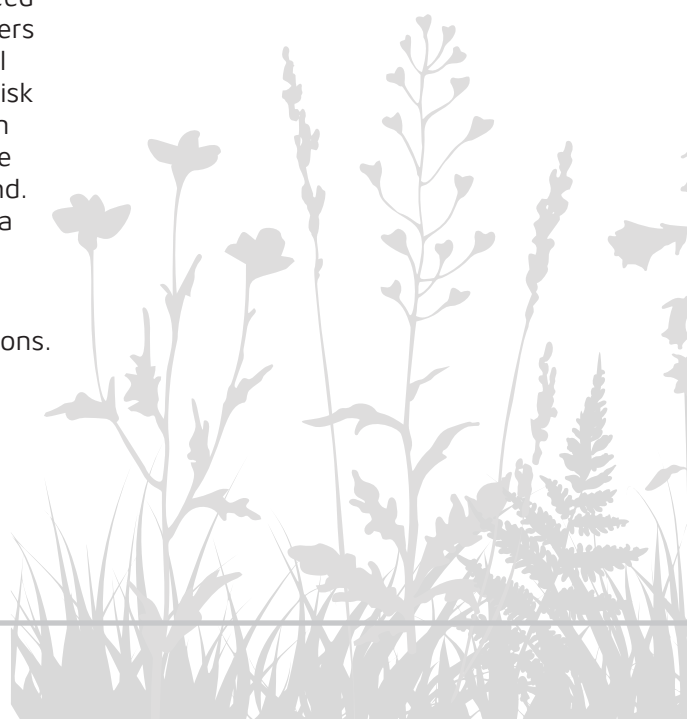


Other Considerations

Carriers – Carriers are an additional material mixed in with the seed to add more weight, which supports even seed distribution. Carriers are an essential addition to pollinator seed mixes due to the small size and mass of these native seeds. Without carriers, there is a risk of these seeds blowing away in the wind when seeding. Common carriers that are used with native grasses and pollinator seeds are cracked corn, wheat, oats, sunflower seed, pelletized lime, or sand. If broadcasting the seeds, distribute them in small amounts with a carrier that is about the same size as the seed.

Fertilizer – Applying fertilizer to native pollinator plants is unnecessary. This is because they are adapted to regional conditions. Applying a fertilizer will likely increase weed pressure, which is naturally limited.

Roller – Using a roller after broadcasting or tossing seeds is an excellent way to get better seed-to-soil contact.



MANAGEMENT

Managing the pollinator plot is important for maximizing habitat longevity, especially in years one through five, as this is the time the pollinator plants establish themselves as the dominant species in the plot. Tackling the entire plot, however, may put too much stress on the pollinators; therefore, at most, only manage one-third of the habitat in any given year to afford the pollinators an opportunity to re-establish their colonies. Subsequently, observing the habitat for unwanted plants should happen throughout the year – at least three times each growing season (spring, summer, fall). A specific routine management schedule is not necessary, and there is flexibility as far as completing management for pollinator habitat.

NOTE: Certain assistance programs have specific management requirements to maintain eligibility.



Mowing

Mowing promotes greater growth of native grasses and pollinator-friendly plants. For the first mow in the first year, do not mow until the grasses are at least 18-20 inches tall and do not mow plants shorter than eight inches. In years one and two, only mow once or twice, especially if there is a lot of rain. After the very first mow, mow again when the plants are 10-12 inches tall. No mowing is necessary after year two.

For more information, please see the “Mowing on the Farm: Guidelines for Protecting Pollinators” document for a guide to best practices of mowing on the farm and protecting pollinators <https://ifbflipbook.ilfb.org/Mowingonthefarm/?page=1>.



Scan QR code for:
Mowing on the Farm:
Guidelines for Protecting Pollinators

Inter-Seeding

Take note of when the habitat is blooming. Between the bloom period of April-October, the goal is to have constant blooms from varying species throughout, with the longest period between the first bloom and the last. If this is not the case for the habitat after the first three years, take this opportunity to introduce new species to the seed mix, ensuring the inclusion of varieties that will elongate the continuous bloom period (see page 8 for suggestions). This will maximize the value and success of the pollinator habitat.

To initiate this process, one suggestion is to use a prescribed burn to create a clean seedbed. See the next section for more details.

NOTE: When inter-seeding, do not forget that high seed-to-soil contact is required for seeding success.

Prescribed Burns

Prescribed burns may help manage litter build-up and clear large sections of unwanted plants in the pollinator habitat, leading to an increase in usable habitat for larval development and nesting. Prescribed burns should be heeded with caution, as low-intensity burns should only occur on one-third of the plot in any given year, with preference taken to early and late season burns. Just as with using prescribed burns to prepare the seedbed, it is a good idea to have a burn plan which will help document the process. Additionally, an open burn permit must be obtained by IEPA, as well as checking and following any local ordinances which may be more restrictive and require additional permits.

NOTE: If using insecticides near a pollinator habitat, exercise care and opt for formulas that target specific species and minimize harmful ingredients. Most insecticides are potentially harmful to bees, so at the least, apply them on calm, dry evenings when pollinators are least active. Even when pollinator plants are not in bloom, pollinators may be in the area and may be impacted. It will also be advantageous to consult with neighboring farms to discuss the location of the pollinator habitat, so they are aware when using insecticides.



ADDITIONAL RESOURCES

Technical & Financial Assistance

The Conservation Technical Assistance Program (CTA)

<https://www.nrcs.usda.gov/getting-assistance/conservation-technical-assistance>



Local USDA Service Center Directory

<https://www.nrcs.usda.gov/contact/find-a-service-center>



Local Conservation District Directory

<https://www.nacdn.net.org/general-resources/conservation-district-directory>



NRCS Pollinator Habitat Technical Note

<https://www.nrcs.usda.gov/sites/default/files/2022-09/BTechNote23.pdf>



Seed Mixes & Planting

Pheasants Forever

Pollinator Food Plot Mix: <http://www.pfhabitatstore.com/files/13955/Pollinator%20Food%20Plot.pdf>



Pheasants Forever

Illinois CRP Seed Mix: <http://www.pfhabitatstore.com/store/items/IL>



Pollinator Gardens Design

<https://www.nrcs.usda.gov/sites/default/files/2022-09/PollinatorGardens.pdf>



Other

Cover Cropping for Pollinators and Beneficial Insects

<https://www.sare.org/resources/cover-cropping-for-pollinators-and-beneficial-insects>



Illinois Farm Bureau

<http://www.ilfb.org/pollinators>





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