



Pollinator Meadow

ESTABLISHMENT GUIDE

Planting native wildflowers and grasses to replace excess lawn or unused fields can provide countless ecosystem benefits. Creating this habitat not only supports pollinators and beneficial insects, but other imperiled songbird and wildlife species as well. The large root systems that native perennials possess help increase rain infiltration which reduces storm water runoff and soil erosion. Once established, these meadows require little maintenance. With no need for weekly mowing, these sites help reduce emissions and provide the plant type and soil space to sequester atmospheric carbon deep underground. Lastly, once a meadow reaches maturity, its visual appearance is unmatched.

A 'native' plant is one that occurred within the region prior to European settlement and in Pennsylvania includes more than 2,100 species. Since the time of European contact, many 'introduced' or 'non-native' plant species have been brought to the state, now equating to more than 37% of the total plant species present. Although many introduced species are not, some become 'invasive' and can aggressively spread and displace native species.

A meadow planting helps to reintroduce the beneficial plant species once in abundance and offers a continual source of food and cover for pollinators. To provide an added dimension of diversity, native tree and shrub species can be planted along the meadow's edge. Flowering shrubs such as elderberry, dogwood, common ninebark, viburnum, serviceberry, hawthorn, and willow can bring an additional level of habitat to the site.

For more information about native plants, visit:

<https://www.dcnr.pa.gov/Conservation/WildPlants/Landscaping/withNativePlants/Pages/default.aspx>

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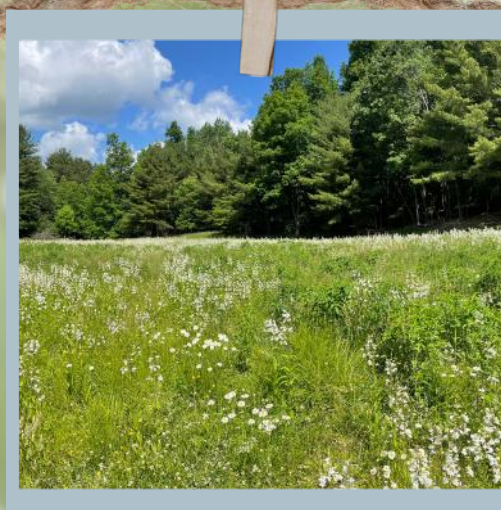
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stateforests/cornplanter/index.htm](http://www.dcnr.state.pa.us/forestry/stateforests/cornplanter/index.htm)



Year 1



Year 2



Year 3

Expectations

Like with many things, the success in establishing a pollinator meadow is dependent on the steps that are taken to get there. Planting without proper preparation will likely lead to failure. To assure success, it is important to follow the proper steps and to set realistic expectations for what the meadow will look like as it matures. Having the patience to allow these native perennials an adequate amount of time to establish is half the battle.

It is important to know that root growth typically exceeds above-ground growth for most native wildflowers and grasses within the first year. Based on the visual observations of the planting during the first growing season, it may appear unsuccessful. Again, patience is important! Most native perennials require 2-3 growing seasons to appear fully established therefore the planting's success or failure should not be speculated until then. Even once established, these meadows are dynamic and will change from year to year in species composition.

Planning

Establishing and maintaining a pollinator meadow is a multi-year commitment; therefore, selecting an appropriate planting site and species mix that are compatible is crucial. Regardless of most site conditions, native seed mixes rarely require additional soil amendments such as lime and fertilizer. Collecting soil samples and having them analyzed is recommended before committing to a site. Soil testing is available through Penn State Extension.

Once the planting site is determined, choosing the appropriate seed mix will be the next step. The most beneficial plantings include a variety of wildflowers and grasses that offer multiple species in bloom throughout all portions of the growing season. This attribute is not only aesthetically pleasing but will attract pollinators year-round. Native seed mixes are becoming more available for purchase in box stores; however, it is recommended to purchase one through a native plant nursery or a retailer specializing in native seeds.



Site Preparation

Possibly the biggest contributor to a successful meadow is the site preparation that takes place prior to planting the seeds in the ground.

Ensuring the seeds have a chance to germinate and grow with limited competition will play a big role in whether the planting succeeds or is overtaken by weeds. The goal here is to eliminate unwanted vegetation and to prepare a seedbed suitable for germination. A combination of mowing, herbicide applications, and raking will be necessary.

Mowing can be done to a height of 2-3 inches with either a brush hog or a finish mower depending on the equipment available. After mowing, wait approximately one week before applying a non-selective herbicide to the planting site. Herbicides with the active ingredient glyphosate (Round Up) is recommended at a ratio of 5% herbicide concentrate to 95% water. This equates to about 3 - 5 ounces of chemical per gallon of water. It is important to read and follow the product label and to wear all recommended personal protective equipment (PPE) when handling any herbicide. ATV boom sprayers and/or backpack sprayers are adequate, although boom sprayers are ideal for larger sites (>0.5 acres). This mowing and herbicide application process should be completed at least twice in order to remove additional weeds that may potentially germinate after the completion of the first application.

After the second herbicide application, tilling may not be necessary to prepare a seedbed. To maximize the seed's contact with the soil, a rake should be used to lightly remove as much vegetation debris as possible. Raking should be done carefully in an attempt to limit soil disturbance that would otherwise agitate the seedbank and encourage additional weed seed germination. If using a no-till drill to plant the seed, raking is not recommended, and the planting can be done at the same time as the last herbicide application.



Planting

Two methods are most utilized when planting native seed mixes: hand broadcasting and no-till drilling. Of these, most plantings will employ the hand broadcasting method. Many native seeds are light, fluffy, and vary in size, which make spreading in an even distribution very difficult. To assist with this, adding an aggregate such as non-clumping, natural kitty litter to the seed mix is recommended at a rate of 80 pounds per acre. This combination will be easier to spread evenly and will help prevent over-seeding. It is also necessary to add a cover crop seed to the mix. This should be an annual species that is intended to limit weed competition as the seed mix germinates and begins to grow. Annual oats are recommended for spring plantings and winter rye is recommended for fall plantings, both at a rate of 30 pounds per acre.

When preparing to plant, combine the native seed mix, kitty litter, and cover crop at the appropriate rates in a large container and mix thoroughly. Then, pour manageable amounts of the mixture into buckets or gallon sized Ziplock bags for broadcasting. If multiple people are planting together, line up approximately 10 feet apart and walk in straight rows. Once you've covered the entire planting site in one direction, line up and continue broadcasting in perpendicular rows. Repeat this process until all the seed is spread.

After the seed has been broadcasted, ensure good seed-to-soil contact by using a cultipacker, ATV/tractor tires, or your boots to press the seed into the soil.



Maintenance

During the first growing season, once the cover crop reaches a height of about 15 inches (knee high), mow the entire site to a height of 8 inches (mid-shin). This mowing will remove the seed heads of the cover crop and will reduce its likelihood of being reseeded. Mowing lower than 8 inches may harm the development of the native species, so using a finish mower for this is not appropriate. Instead, a brush hog or a string trimmer is recommended.

As germination rates are monitored, identify weeds and invasive species, and consider treatment, if necessary. Most annual weeds are likely to diminish each year as the native species take hold, but some invasives may require spot treatment.

Prior to the second growing season, mowing of the vegetation residue down to 3 – 4 inches can occur. Many native pollinators and beneficial insects overwinter in the stems of native wildflowers and grasses, so it is recommended that this mowing not take place until March or April, once environmental conditions allow.

Disking could eventually be considered to break-up vegetation mats and create more space between stems and grass clumps. This provides improved areas for mobility of small wildlife species. When desired, disking should occur in the dormant season (November – April) and may only be necessary once every 7 – 10 years. In April or May following disking, consider hand broadcasting more wildflower seeds to supplement the site with additional diversity.



POLLINATOR MEADOW ESTABLISHMENT TIMELINE

SPRING PLANTING

PLANNING	YEAR	ACTIVITY DESCRIPTION	DATES	
			PLANNED	COMPLETED
	1	Choose planting site location and determine size. Collect soil samples and submit for testing to determine characteristics. **Native seed mixes rarely require additional ammedments such as lime or fertilizer.	n/a	
SITE PREPARATION	1	Mow entire planting site to 2-3 inches.	April / May	
	1	Apply herbicide on the planting site. Use 3-5 ounces of glyphosate (RoundUp) per gallon of water. **Herbicide application should be done approximately one week after mowing.	April / May	
	1	Mow entire planting site to 2-3 inches, if necessary.	Aug / Sept	
	1	Apply herbicide on the planting site. Use 3-5 ounces of glyphosate (RoundUp) per gallon of water. **Herbicide application should be done approximately one week after mowing.	Aug / Sept	
	2	Select and order a native seed mix appropriate for the ecoregion.	Dec - March	
	2	Mow entire planting site to 2-3 inches, if necessary.	April / May	
	2	Apply herbicide on the planting site. Use 3-5 ounces of glyphosate (RoundUp) per gallon of water. **Herbicide application should be done approximately one week after mowing.	April / May	
	2	Lightly rake the planting site to remove excessive vegetation debris. **Must be done at least 2 weeks after the last herbicide application.	May / June	
	2	Pour native seed mix, kitty litter (80 lbs per acre) and cover crop seed (30 lbs per acres of annual oats) into a large container; mix thoroughly.	May 15 - June 15	
	2	Hand broadcast the seed mix throughout the entire planting site. <u>**Planting preferred after the last frost and right before measurable precipitation.</u>	May 15 - June 15	
ESTABLISHMENT	2	Press the seeds into the soil using a cultipacker, ATV/tractor tires, or your boots to ensure good seed-to-soil contact.	May 15 - June 15	
	2	Monitor germination, and once the cover crop grows to approximately 15 inches tall (knee high), use a brush hog or string trimmer to mow to approximately 8 inches (shin high) - no lower!	June / July	
	3	Mow entire planting site to approximately 3-4 inches.	March / April	
MAINTENANCE	3	Monitor for undesirable plant species. Hand-pull or spot herbicide, if necessary.	May - Oct	



Remember, be patient! Early on, native perennials put most of their energy into root growth and need time to become established!

POLLINATOR MEADOW ESTABLISHMENT TIMELINE

FALL PLANTING

	YEAR	ACTIVITY DESCRIPTION	DATES	
			PLANNED	COMPLETED
PLANNING	1	Choose planting site location and determine size. Collect soil samples and submit for testing to determine characteristics. **Native seed mixes rarely require additional amendments such as lime or fertilizer.	n/a	
	1	Select and order a native seed mix appropriate for the ecoregion.	Dec - March	
SITE PREPARATION	1	Mow entire planting site to 2-3 inches.	April / May	
	1	Apply herbicide on the planting site. Use 3-5 ounces of glyphosate (RoundUp) per gallon of water. **Herbicide application should be done approximately one week after mowing.	April / May	
	1	Mow entire planting site to 2-3 inches, if necessary.	Aug / Sept	
	1	Apply herbicide on the planting site. Use 3-5 ounces of glyphosate (RoundUp) per gallon of water. **Herbicide application should be done approximately one week after mowing.	Aug / Sept	
	1	Lightly rake the planting site to remove excessive vegetation debris. **Must be done at least 2 weeks after the last herbicide application.	Oct / Nov	
ESTABLISHMENT	1	Pour native seed mix, kitty litter (80 lbs per acre) and cover crop seed (30 lbs per acres of winter rye) into a large container; mix thoroughly.	Oct 15 - Nov 15	
	1	Hand broadcast the seed mix throughout the entire planting site. <u>**Planting preferred after the first frost.</u>	Oct 15 - Nov 15	
	1	Press the seeds into the soil using a cultipacker, ATV/tractor tires, or your boots to ensure good seed-to-soil contact.	Oct 15 - Nov 15	
MAINTENANCE	2	Monitor germination, and once the cover crop grows to approximately 15 inches tall (knee high), use a brush hog or string trimmer to mow to approximately 8 inches (shin high) - no lower!	May 15 - June 15	
	3	Mow entire planting site to approximately 3-4 inches.	March / April	
	3	Monitor for undesirable plant species. Hand-pull or spot herbicide, if necessary.	May - Oct	



Remember, be patient! Early on, native perennials put most of their energy into root growth and need time to become established!