

Plant Chat

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for NRCS Field Offices in North Dakota, South Dakota, and Minnesota

Pollinator Planting Field Review in North Dakota



Seeding a pollinator planting with a high percentage grass mix resulted in few weeds.

by many of the species? In killed residue, can seed to soil contact be achieved with a shallow (¼ to ½-inch) seeding depth? If so, is there a limit to the depth of residue? Are the species mixes adapted to the site/soil?

The many variables within the plantings made it challenging to pinpoint precise causes of success or failure. Following are a few general observations noted from the reviews. Weed competition was greater where a higher percentage of forbs and lower percentage of grass were seeded. An increased percentage of grass in the seed mix provided better ground cover and reduced weed competition. Specific forb species established more consistently. Some forbs were quicker to emerge and were therefore able to compete aggressively with weeds.

Based on the field assessments, seed prices and availability, a fact sheet to provide guidance on forb species selection is being developed by North Dakota NRCS. The forbs will be divided into two lists. Species can be selected from both lists if soils and climatic conditions are favorable. List A will include forb species that were found to establish consistently in most environments. List B will include forb species that were less consistent or less successful in establishment.

A pollinator habitat planting will be seeded at the Plant Materials Center to demonstrate establishment success of forbs found in each of the two lists.

There have been numerous pollinator habitat plantings throughout North Dakota in recent years. Various grass and forb species have been seeded in these plantings. As a way to measure establishment success, 50 sites were field reviewed in 2014 and 2015 by North Dakota NRCS staff. Soils, seeding dates, seed mixes and management differences were considered for each site assessment. Unfortunately, many plantings did not create the desired habitat. Good to excellent stands of diverse species of grasses and forbs were found at only a few locations. Weeds were a problem in most plantings. While almost all had annual weeds, some also had perennial weed problems, including noxious weeds. Perennial weeds most commonly found were Canada thistle, absinth wormweed, leafy spurge, field bindweed, smooth brome and Kentucky bluegrass.

Reviewer discussion of the various field sites focused on reasons for establishment success or failure. Many questions were raised. What is the best method for site preparation? Is modern field equipment designed for the shallow seeding depths required



Seeding a pollinator planting with a high percentage forb mix resulted in severe weed problems.

LIST A. Pollinator species listed have demonstrated consistent establishment on various sites state-wide, based on several field reviews of pollinator plantings. Select 3 species from each bloom period to create a basic pollinator seed mix.

Early Bloom (Er)	Full Seed PLS lb/ac*	Middle Bloom (Mi)	Full Seed PLS lb/ac*	Late Bloom (L)	Full Seed PLS lb/ac*
Black-eyed susan (RUHI2)	0.8	Black-eyed susan (RUHI2)	0.8	Butterfly milkweed (ASTU)	16.2
Lewis flax (blue) (LILE3)	3.8	Blanketflower (GAAR)	7.0	Dotted gayfeather (LIPU)	8.0
Plains coreopsis (COTI3)	0.7	Butterfly milkweed (ASTU)	16.2	False boneset (EUPE3)	0.4
Shell-leaf penstemon (PEGR7)	4.0	Canada milkvetch (ASCAC6)	4.0	Fragrant giant hyssop (ADAST)	0.8
Western yarrow (ACMIO)	0.4	Dotted gayfeather (LIPU)	8.0	Maximilian sunflower (HEMA2)	1.0
		Illinois bundleflower (DEIL)	18.0	Purple coneflower (ECPU)	9.0
		Narrow-leaved purple coneflower (ECAN2)	9.0	Stiff goldenrod (SORI2)	1.4
		Purple coneflower (ECPU)	9.0	Stiff sunflower (HEPAS)	2.5
		Purple prairieclover (DAPU5)	3.8	Wild bergamot (MOFI)	0.9
		Scarlet globemallow (SPCO)	2.0		
		Stiff sunflower (HEPAS)	2.5		
		Western yarrow (ACMIO)	0.4		
		Wild bergamot (MOFI)	0.9		
		Yellow coneflower (RACO3)	1.5		

*Seeding rates for most species are based upon approximately 25 seeds/sq.ft.

LIST B. Additional species to consider for pollinator plantings.

<i>Early Bloom (Er)</i>	<i>Full Seed PLS lb/ac*</i>	<i>Middle Bloom (Mi)</i>	<i>Full Seed PLS lb/ac*</i>	<i>Late Bloom (L)</i>	<i>Full Seed PLS lb/ac*</i>
American vetch (VIAM)	36.0	Canada goldenrod (SOCA6)	0.2	Blue aster (SYLAL3)	1.5
Black-eyed susan (RUHI2)	0.8	Canada tickclover (DECA7)	12.3	Blue vervain (verbena) (VEHA2)	1.0
Canada anemone (ANCA8)	10.0	Culvers root (VEVI4)	0.1	Canada goldenrod (SOCA6)	0.2
Columbine (AQCA)	3.0	False sunflower (HEHES)	18.0	Cup plant (SIPE2)	9.0
Evening primrose (OEBI)	0.8	Heath aster (SYER)	0.4	Grayhead coneflower (RAPI)	1.7
Golden Alexanders (ZIAU)	6.2	Joe Pye weed (EUMAB)	0.7	Hoary vervain (VEST)	2.4
Prairie phlox (PHPI)	4.0	Missouri goldenrod (SOMI2)	0.5	Ironweed (VEFA2)	2.8
Rocky Mountain bee plant (CLSE)	20.0	Prairie onion (ALST)	6.2	Joe Pye weed (EUMAB)	0.7
Silvery lupine (LUAR3)	8.0	Purple meadow rue (THDA)	6.2	Missouri goldenrod (SOMI2)	0.5
Spiderwort (TROC)	7.0	Silvery lupine (LUAR3)	8.0	New England aster (SYNO2)	0.8
		Spiderwort (TRBR)	7.0	Sneezeweed (HEAU)	0.4
		Stiff goldenrod (SORI2)	1.4	Swamp milkweed (ASIN)	15.0
		Swamp milkweed (ASIN)	15.0	Thickspike gayfeather (LIRY)	8.0
		Thickspike gayfeather (LIRY)	8.0		
		White prairieclover (DAAL)	3.9		

*Seeding rates for most species are based upon approximately 25 seeds/sq.ft.

Canada Milkvech: A Native Legume to Consider for Pollinator Plantings

Canada milkvech (*Astragalus canadensis* L.) is a native, perennial, rhizomatous legume that can enhance diversity and value of conservation plantings. A stout plant with pinnately compound leaves, it is locally common in moist prairies or dry prairie drainages. The plant is generally 2-3 feet tall. The numerous greenish white pea-like flowers bloom from mid to late summer. Long tongued insects such as bumblebees, honeybees, and leafcutter bees pollinate the flowers and use the nectar. The ½-inch long seed pods form in clusters at the top of the plant. The abundant seed produced is small; similar in appearance to alfalfa. The roots are analgesic and have been used to treat chest and back pains and coughs. The plant is palatable and eaten by livestock and deer.

Canada milkvech should not be confused with crown vetch, which is considered invasive in many states.

Seed of Canada milkvech is available from various seed vendors. Seed should be scarified and inoculated prior to sowing into a firm seedbed. Seeding rates for single species and mixes are found in the NRCS Field Office Technical Guide for each state.



Canada milkvech in a native planting.

Trees and Shrubs Really Can Benefit Pollinators

Most folks rightly believe that flowers of legumes and forbs are important food sources for pollinators, including native bees. What many may not know is that properly managed windbreaks can greatly enhance the health and effectiveness of pollinators. Key benefits are listed below:

- Windbreaks reduce wind speeds across open areas. This allows bees to forage across protected fields and meadows, which may otherwise be impossible some days.
- Most flowering trees and shrubs produce pollen and nectar in the early spring. Willows are some of the earliest pollen producers and are heavily utilized. Basswood provides pollen that is utilized a bit later in the season.
- Some native pollinators live in decayed wood or pithy stems such as those of smooth sumac and elderberry, which are found in mature windbreaks.
- Most native pollinators of the Northern Plains are ground dwellers. The untilled soil and undisturbed sites of a windbreak are excellent habitat.
- Windbreaks are rarely treated with insecticides, so are “safe” places for pollinators.

The belief that windbreaks provide food and shelter for bees is evident by the beekeepers choice to place most hives in or near windbreaks.



Shrub species like this native plum are one of the earliest spring flowering species available for pollinators.