



POLLINATOR HABITAT - **ESTABLISHMENT AND MANAGEMENT GUIDELINES**

Benefits

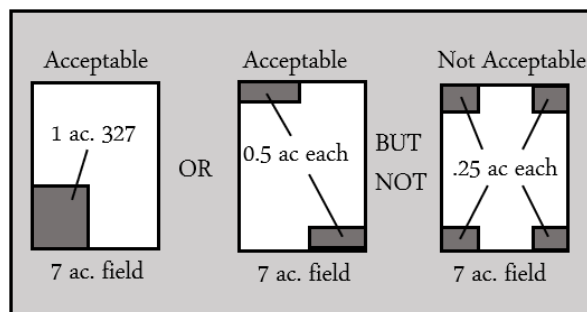
Agricultural productivity is directly dependent on pollinators. Approximately 75% of all cultivated crops require pollination to produce seed and fruit. The majority of pollinators are insects but some birds and bats also play a role. The services of native pollinators are worth an estimated \$4.1 billion dollars a year to U.S. agriculture. Both native and domestic pollinators are disappearing, largely due to habitat loss. Increased habitat for pollinators will improve fruit set, size and quality, productivity per acre, biodiversity, beneficial insect populations, and the food base for many wildlife species. The increased plant diversity of pollinator habitat will enhance wildlife habitat and may increase populations of other beneficial insects, reducing the need for pesticides.

Purpose: To establish habitat to support a diversity of pollinator species.

Eligible Land: Cropland and grassland.

Size Requirements: Pollinator habitat must remain in the location as designated in the conservation plan. The habitat, size, shape, and composition must meet the following requirements: **fields must have at least 1.0 acre of pollinator habitat, either as one contiguous block, or two 0.5 acre blocks or strips.** If not planted in whole fields, block plantings are preferred over strips. **If planted in strips, each strip must be a minimum of 20 feet wide.**

Example 1: Producer has a 7 acres field, pollinator habitat **must be no smaller than 0.5 acres each.**



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Vegetation: The pollinator habitat cover must meet the following requirements.

Seed Mix - Seeding mixes shall contain a minimum of 9 species of pollinator-friendly flowering plants, including wildflowers, legumes, **and/or** shrubs. (Trees are **not** an eligible component.) More than 9 species are encouraged. At least 3 species shall have their primary onset of blooming during each period of: April-June 15, June 15-July, and August-October. The 3 species need not be in bloom for the entirety of a bloom period. Though wildflower, legume, and/or shrub species planted are encouraged to be native, beneficial introduced flowering plants (for example clover) may be part of the seeding mix.

Grass is **not** required in pollinator habitat. However, if grass is included, the seeding mix shall include no more than 25 percent grasses based on pure live seeds per square foot. Grasses seeded in pollinator habitat **must be native**. To provide quality nesting habitat for native bees, non-sod forming bunch grasses are preferred over sod-forming grasses.

The recommended seed mixture, seeding rates, and seeding dates are as listed below. Changes in grass, forb, legume, or shrub species and/or seeding rates due to unavailability, higher costs, or on site conditions such as past use of residual herbicides may be authorized by the COC but must be recommended by a qualified wildlife biologist.

Forb and Legume Substitutions. Introduced flowering plants, limited to approved clovers, such as red clover, ladino clover, or crimson clover may be substituted in the pollinator mix, but a single species substitution cannot exceed 10% of the planting mixture, and multiple species substitutions cannot exceed 20% of the planting mixture. Substitution species must contain the same or more seed per acre as the forb being replaced to meet the required grass/forb seed ratios and bloom periods.

Shrub Component (Optional). Shrubs included in pollinator habitat are optional but strongly encouraged due to the time of flowering and the extensive flowering. The shrub component of the pollinator habitat must consist of at least 0.1 acre within each habitat block or strip. If planted in strips, each strip **must** be a minimum of 20 feet wide.

Site Preparation/Planting -

- 1 Minerals. No lime is required if the soil pH is 5.0 or above. Nitrogen will not be applied during establishment. Phosphorus and potassium may be applied if determined necessary during establishment.
- 2 Seedbed Preparation. For broadcast seeding of wildflowers and legumes, the seedbed should be prepared by plowing and disking (or harrowing), then rolling or cultipacking, broadcasting seed with a carrier, then rolling or cultipacking again. If native warm season grasses (NWSG) are planted then a NWSG drill should be used for planting.
- 3 Temporary Cover. Temporary cover when required is authorized when contracts are approved outside of planting dates. Temporary cover plantings do not require lime or fertilizer.
- 4 Establishment Period Weed Control. Existing introduced grasses, temporary cover, or other non-native invasive plants if present must be eradicated prior to planting native grasses and forbs. Herbicide applications will be required as part of the needed control prior to planting. Control of weed competition for the first growing season after planting may consist of mowing no lower than 12 inches and/or the use of a post-emergence herbicide.

Woody Habitat for Pollinator Nesting: Brush piles built within the pollinator area, naturally downed trees, or trees/limbs may be cut from adjacent woodlands and dropped into the pollinator habitat if desired by the landowner, but must be documented in the plan. Individual brush piles must have a minimum 12 foot base and 4 foot height. Trees dropped into the habitat must be a minimum diameter of 6 inches to provide the targeted habitat for the life of the practice. Woody habitat shall **not** exceed 1,500 square feet for every 1 acre of pollinator habitat, up to 1 acre in total woody habitat.

Maintenance and/or Management Methods: Pollinators shall be disturbed on a rotational basis by light disking, prescribed burning, selective herbicide application, or other prescribed methods. Management methods shall enhance or maintain flowering plant diversity, setback vegetative succession and woody encroachment, and expose soil for pollinator nesting sites. Mowing is generally an inadequate means of disturbance for pollinator habitat, **except** as needed to remove annual weeds during establishment, or to facilitate prescribed burning or light disking. Management/Maintenance activities must be conducted outside of the growing season or bloom period and should be done on less than ½ to 1/3 of the acreage during any given year.

Management. Management of pollinator habitat is required to maximize function and life span of the practice. Method will consist of a choice of strip disking or prescribed burning. These management options should be implemented once every 2-3 years after establishment outside of the primary nesting season of April 1-August 15. Rotationally managing 1/2 to 1/3 the acreage will provide more wildlife benefits than managing all acreage in the same year. Each acre of the pollinator (except the shrub component of pollinator habitat) must be treated at least once with a management treatment. Mowing by itself is not a management, but can be used to prepare for other management methods (e.g. fall strip disking).

Firebreaks may be established around field perimeters and within planted fields as determined needed to protect shrubs and downed woody habitat when prescribed burning is planned for management. Firebreaks may also be planned adjacent to high risk areas such as farmsteads but must be documented in the plan.

Normal Maintenance. Normal maintenance options include: (a) mowing no more frequently than once every other year outside the primary nesting season of April 1-August 15 at a height above 12 inches. Alternate strip mowing half the acreage each year will provide more wildlife benefits than mowing all acreage once every other year. Mowing all acreage in any given year is not allowed to avoid total loss of critical nesting and brood rearing habitat in that year.; (b) chemical control consisting of spot spraying woody seedlings and undesirable plants in any year these invasive plants become prevalent; or (c) a combination of these maintenance treatments. Mowing of pollinator stands may cause the build-up of thatch and smother re-growth and does not adequately control woody invasion. NOTE: NORMAL MAINTENANCE WOULD NOT BE SCHEDULED ON THE SAME ACREAGE IN YEARS SCHEDULED FOR APPLICATION OF A MID-CONTRACT MANAGEMENT TREATMENT.

Insecticides should not be used in the habitat planting area. Even natural botanical insecticides can harm bees and other pollinators. If adjacent crop areas are treated use one or more of the following actions to limit insecticides in the pollinator habitat area:

- a. Create insecticide free buffers in the first 25 feet of crop area,
- b. Use application methods that minimizing drift to the adjacent habitat,
- c. Apply active ingredients in the evening when most insect pollinators are not active.

Any use of the pollinator habitat area must not compromise its intended purpose.



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Recommended Pollinator Mix - Moist to Dry Sites

<u>Species</u>	<u>Seeding Rate</u> <u>Per Acre</u>	<u>Bloom Period</u>	<u>Planting Dates</u>
Grasses:			
Little bluestem, <i>Schizachyrium scoparius</i>	1.5 lbs. PLS	mid summer, early fall	April – May
Big bluestem, <i>Andropogon gerardii</i>	0.5 lb. PLS	mid summer, early fall	
Indiangrass, <i>Sorghastrum nutans</i>	0.5 lb. PLS	mid summer, early fall	
Forbs and Legumes:			
Smooth beardtongue, <i>Penstemon digitalis</i>	4 oz	spring, mid summer	spring
Lanceleaf coreopsis, <i>Coreopsis lanceolata</i>	6 oz.	spring, mid summer	fall/spring
Golden tickseed, <i>Coreopsis tinctoria</i>	5 oz.	spring, mid summer	fall/spring
Black-eyed susan, <i>Rudbeckia hirta</i>	6 oz.	late spring, summer, fall	fall/spring
Roundhead lespedeza, <i>Lespedeza capitata</i>	4 oz.	mid summer, early fall	spring
Native sunflowers, <i>Helianthus spp.</i>	8 oz.	mid summer, fall	spring
Partridge pea, <i>Chamaecrista fasciculata</i>	4 oz.	summer, fall	spring
Giant ironweed, <i>Vernonia gigantea</i>	4 oz.	summer, fall	fall/spring
Rough goldenrod, <i>Solidago rugosa</i>	4 oz.	late summer, fall	fall/spring

Shrubs

(Planting Dates for Plants: November 15 - March 15)

<u>Species</u>	<u>Spacing***</u>	<u>Approximate Plants/Acre</u>
American Beautyberry	6' x 6'	1200
Native Blueberries (<i>Vaccinium spp.</i> , ex.: highbush blueberry)	6' x 6'	1200
Chokeberry (black and red)	8' x 8'	700
Crabapple	10' x 10'	450
Deerberry	6' x 6'	1200
Native Dogwoods (<i>Cornus spp.</i> , ex.: Silky Dogwood)	8' x 8'	700
Elderberry	8' x 8'	700
Hawthorn spp.	6' x 6'	1200
Native Hollies (<i>Ilex spp.</i> , ex.: Deciduous Holly)	8' x 8'	700
Huckleberry	6' x 6'	1200
Pawpaw	8' x 8'	700
Sassafras	10' x 10'	450
Serviceberry	8' x 8'	700
Sumac	8' x 8'	700
Viburnum spp.	6' x 6'	1200
Native Plums (<i>Prunus spp.</i> , ex.: Chickasaw)	8' x 8'	700

NOTE: Johnsongrass, fescue, and other non-native invasive plants must be chemically controlled if present for survival and establishment of shrub seedlings.



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Pollinator habitat will not be a separate practice.

Configuration: In all cases, pollinator habitat patches should be a minimum of 0.5 acres and 20 feet in width.
(See example configurations below.)

