

FY17 EQIP Honey Bee Pollinator Fiscal Year 2017

Guidelines for Improving and Increasing Honey Bee Habitat in Ohio

Background

NRCS in Ohio is increasing efforts to support honey bee health. The focus of the EQIP Honey Bee effort is to create or improve plant forage habitat high in nectar and pollen sources. Emphasis is on identifying practices and plant species to promote honey bee forage for resident honey bees and for migratory beekeepers who summer their bees in Ohio from June through September. Establishment of bee forage areas with low or no pesticide risk for honey bees will improve the condition and condition of honey bees. These actions will be beneficial both for those producers relying on honey bees for pollination of crops as well as those focused on honey production.

The selection of plant species for honey bee forage sites is dependent on many factors including: ability to provide desirable bee forage, site conditions, compatibility with other plant species, the ability of these species to address other resource concerns, availability, ease of establishment and potential weediness. Species included in this guidance were selected based on these factors. These species are not all inclusive; there may be other species that will provide good bee forage while meeting the other conditions for new or existing plantings. Additional information on species may be found in EFOTG, Section IV, Appendix A.

The most desired situation is to provide bee forage areas with appropriate blooming plants through all three bloom periods: early, middle and late. This allows the bees to familiarize themselves with established sources and meets their requirements throughout the entire season as well as provide food sources for other pollinators throughout the growing season. However, there may be situations in which appropriate bee forage may be provided for only part of the season. The beekeeper may already have other sources of nectar or pollen available for part of the season and there is only need for sources during one or two of the other bloom periods. The bee presence may be seasonal and the planned practices are only necessary when the bees are planned to be present. Some of the management actions (such as grazing or haying) may not be done in a way that will provide appropriate blooming plants throughout the season and, therefore, provide forage only during one or two of the bloom periods. In all cases, contracts under this effort will provide bee forage areas for at least one entire bloom period; the period(s) selected will be the most needed or critical based on the expected beekeeper needs.

Options to improve honey bee forage

1. Perennial legumes – Provides high quality bee forage habitat in a perennial planting with soil-improvement benefits. For an all-legume mix choose 3 or more compatible species which cumulatively provide a long period of bloom. These may be established under practice 327 or 386.

Common Name	Species Name	Bloom Period
Canada Milkvetch – Native	<i>Astragalus canadensis</i>	Mid
White Prairie Clover – Native	<i>Dalea candida</i>	Early-Mid
Purple Prairie Clover – Native	<i>Dalea purpurea</i>	Early-Mid
Alfalfa – Nonnative	<i>Medicago sativa</i>	Mid
Birdsfoot Trefoil - Nonnative	<i>Lotus corniculatus</i>	Mid
Hairy Vetch - Nonnative	<i>Vicia villosa</i>	Mid
White Sweet Clover Nonnative Possibly invasive	<i>Melilotus alba</i>	Early
Alsike Clover – Nonnative	<i>Trifolium hybridum</i>	Early
Red Clover – Nonnative	<i>Trifolium pratense</i>	Early - Mid
White Clover – Nonnative	<i>Trifolium repens</i>	Early - Mid
American Vetch – Native	<i>Vicia americana</i>	Early - Mid

2. Cover Crops – Use these species as cover crops as part of a soil improvement plan or as a component in perennial plantings to provide immediate benefit. Grass or grain cover crops do not provide benefits for honey bees. Special considerations are necessary when used as a cover crop:
 - a. Ensure that these species will reach full bloom during peak honey bee activity (May through September) to maximize the forage value. The cover crop cannot be killed prior to blooming. Manage these species for their floral resources when possible.
 - b. Ensure that plantings aren't contaminated with pesticides that are toxic to honey bees, especially during the bloom period when bees will be attracted to the field.
 - c. Use with other desirable, compatible species in cover crop mixes to improve honey bee forage.
 - d. Consult with specialists to ensure compatibility with commodity crop production cycles.

Canola (<i>Brassica napus</i> or <i>Brassica rapa</i>)
Buckwheat (<i>Fagopyrum esculentum</i>)
Sweet Clover (<i>Melilotus alba</i>)
Red Clover (<i>Trifolium pratense</i>)
Oilseed Radish (<i>Raphanus sativus</i>)
Hairy Vetch (<i>Vicia villosa</i>)
White Dutch Clover (<i>Trifolium repens</i>)
Mustard (<i>Sinapis alba</i> , <i>Brassica juncea</i> , <i>B. nigra</i>)
Austrian Winter Pea (<i>Pisum sativum ssp. arvense</i>)
Crimson Clover (<i>Trifolium incarnatum</i>)

3. Perennial native wildflower planting – These may be established using practice 327 or 386. Establish native perennial wildflowers with bloom periods throughout the growing season to support honey bees, other pollinators, and other wildlife. This list was compiled based on the following criteria:

- commercial availability
- reasonable ease of establishment from seed
- moderate cost, or high value to honey bees for the cost
- documented value to honey bees

Choose species from this list and incorporate them into mixes to increase the value of pollinator plantings for honey bees. Typically grasses will not be part of this mix; if necessary, up to 20% of the mix may be established to non-sod forming grass species. This list is not exclusive—add other species based on input from researchers and honey bee experts. Select species which bloom throughout the growing season. Note that there are not as many early season bloomers among the native wildflowers used by honey bees; this deficit can be addressed by also planning perennial legume plantings or tree/shrub plantings which have more early-season blooming species

Common Name	Species Name
Early-Season Species	
Smooth Penstemon	<i>Penstemon digitalis</i>
Blue False Indigo	<i>Baptisia australis</i>
Wild Lupine	<i>Lupinus perennis</i>
Canada Milk Vetch	<i>Astragalus canadensis</i>
Mid-Season Species	
Purple Prairie Clover	<i>Dalea purpurea</i>
Black Eyed Susan	<i>Rudbeckia hirta</i>
Figwort	<i>Scrophularia lanceolata</i>
Purple Giant Hyssop	<i>Agastache scrophulariaefolia</i>
Yellow Giant Hyssop	<i>Agastache nepetoides</i>
Common Milkweed	<i>Asclepias syriaca</i> *
Wild Bergamot	<i>Monarda fistulosa</i>
Swamp Milkweed	<i>Asclepias incarnata</i> *
Butterfly Milkweed	<i>Asclepias tuberosa</i> *
Blue Vervain	<i>Verbena hastata</i>
Virginia Mountain Mint	<i>Pycnanthemum virginianum</i>
Partridge Pea	<i>Chamaecrista fasciculata</i>
Purple Coneflower	<i>Echinacea purpurea</i>
Late-Season Species	
Westernn Sunflower	<i>Helianthus occidentalis</i>
Sawtooth Sunflower	<i>Helianthus grosseserratus</i>
Showy Sunflower	<i>Helianthus pauciflorus</i>
Wingstem	<i>Verbesina alternifolia</i>
Sneezeweed	<i>Helenium autumnale</i>
Rough Goldenrod	<i>Solidago rugosa</i>

Common Name	Species Name
Showy Goldenrod	<i>Solidago speciosa</i>
Stiff Goldenrod	<i>Solidago rigida</i>
Boneset	<i>Eupatorium perfoliatum</i>
New England Aster	<i>Aster novae-angliae</i>
Smooth Aster	<i>Aster laevis</i>
Heath Aster	<i>Aster ericoides</i>

* *Asclepias* species (milkweeds) have the added benefits of supporting habitat for Monarch butterflies and the use of milkweeds should be encouraged in appropriate plantings. However, many species milkweed are toxic to livestock (sheep, cattle, and occasionally horses). Avoid planting *Asclepias* species on pasture sites which will be grazed or hayed.

4. Tree and Shrub Plantings – Use shrubs and trees to establish shelterbelts (380) or as block plantings (612). These plantings may be done in conjunction with herbaceous plantings to increase the diversity of floral resources for honey bees. Most tree and shrub species are early season bloomers and may be a good addition to herbaceous plantings with primarily mid or late season bloomers. At least three of the following species should be included in any planting.

Common Name	Species Name
Shrubs	
False Indigo	<i>Amorpha fruticosa</i>
Black Chokeberry	<i>Aronia melanocarpa</i>
Red Chokeberry	<i>Aronia arbutifolia</i>
Blackberry and Raspberry	<i>Rubus sp.</i>
Serviceberry	<i>Amelanchier arborea</i>
Nannyberry	<i>Viburnum lentago</i>
Arrowwood	<i>Virburnum dentatum</i>
Smooth Sumac	<i>Rhus glabra</i>
Pussy Willow	<i>Salix discolor</i>
Elderberry	<i>Sambucus racemosa, S. canadensis</i>
Trees	
Basswood	<i>Tilia americana</i>
Crabapple	<i>Malus sp.</i>
Catalpa	<i>Catalpa speciosa</i>
Hop Tree	<i>Ptelea trifoliata</i>
Maple	<i>Acer sp.</i>
Tulip Poplar	<i>Liriodendron tulipifera</i>
Willow	<i>Salix sp.</i>

5. Forage Management By allowing common alfalfa to go through full bloom this will extend honey bee foraging by 2-3 weeks. The producer could use various strategies, such as harvesting half the field in early bloom stage and allowing the other half to bloom to full maturity. This has an added benefit of a second flowering period from the early harvested plants. For the late-harvest hay, the lower quality may still be acceptable to beef producers.

Guidance for Completing Ranking Tool

National Priorities

Guidance on the National Issues is not available at the time of this printing but will be provided as soon as it is available.

State Issues

Answer yes or no for each question.

State 2. This question is based on the distance between the cover established through the contract and any known bee apiaries. If the presence of apiaries is unknown, select “Greater than 2 miles”. There is no centralized record or map of registered apiaries in Ohio that can be used to answer this question. The County Apiary Inspector or local beekeeper associations may be the best sources of information to answer this question. A list of these county inspectors and bee groups may be found at <http://www.ohioagriculture.gov/divs/plant/apiary/apiary.aspx>). This site also has other information on ODA’s Apiary program. The source of the information and results (distance, name of beekeeper, etc.) should be recorded in the CONS6 notes for documentation.

State 3. This question is based on practice lifespans. For one-year management practices, multiple years may be considered if the practice will be implemented each year. For vegetative (5-year lifespan), assume the practice will be in place for the lifespan even if that is beyond the end of the contract.

State 4. Answer this question based on how many of the bloom periods will be covered by the practice(s) implemented in the contract. Although all three bloom periods is best, there may be instances where only one or two bloom periods are covered.

State 5. Answer this question based on the number of bee forage species that will have sufficient blooming to provide pollen or nectar for bees established under the contract.

Local Issues

Answer yes or no for each question.

Local 2. Answer yes if at least 75% of the mix, based on number of species, is comprised of species native to Ohio. The “Guidelines for Improving and Increasing Honey Bee Habitat in Ohio” lists many of the species that may be used for this effort and indicates whether they are native or not; all cover crops listed there are non-native. If other species are used, Appendix A in EFOTG Section IV is a good source for determining if a species is native to Ohio or not.

Local 3. ‘Ohio native wildflowers’ would primarily be the species listed under item 3 in the “Guidelines for Improving and Increasing Honey Bee Habitat in Ohio”; other species may be found in Appendix A in EFOTG Section IV. Answer yes if 4 or more of these species are included in the mix established under the contract.

Local 4. Answer yes if the program participant has a written agreement allowing another person to maintain a bee hive or hives on the participant’s land where the bee forage is being

established. This may also be answered yes if the program participant's own hives are on the land.