United States Department of Agriculture

Natural Resources Conservation Service

South Dakota Fact Sheet

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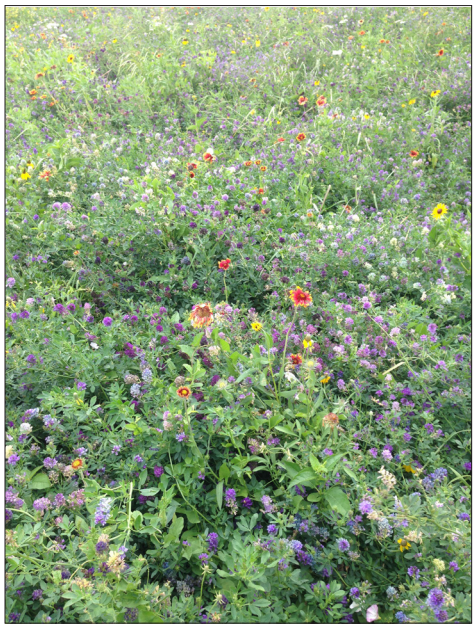
Honey Bee

The NRCS has partnered with the Xerces Society's Pollinator Conservation Program to develop the best guidance available for supporting honey bees, as well as, native bees and other pollinators. For more information on the technical support provided by Xerces, visit www.xerces.org.

To locate state honey bee information and to find an apiary map please go to http://arcgis.sd.gov/server/ag/sensitivesites/default-map.aspx

To learn more please contact your local NRCS office, or go to www.sd.nrcs.usda.gov.



Honey bee planting mix.

What is the honey bee and beekeeping?

The European honey bee (Apis mellifera) is one of the most familiar insects in North America. This iconic insect is unlike any other bee in the United States (U.S.), with its queen, tens of thousands of workers, and perennial colonies that can persist in a hive year after year.

Introduced to the U.S. in the early 1600s, today over 2 million honey bee colonies are managed by commercial beekeepers who earn their living producing honey or renting their hives to farmers for crop pollination. To meet the pollination needs of farmers, beekeepers move hives all across the country, following the bloom of citrus, almonds, tree fruit, berries, vegetable seed, squash, and melons. At the end of pollination season, each beekeeper returns to a home base where the hives are rested and – if all goes well – a honey crop is produced. The north central states are the most important honey bee resting ground in the U.S.

Where in South Dakota do they call home?

Honey bees live in colonies, also known as hives. While many beekeepers are year-round residents, most honey bees are transported to the state to recuperate after being shipped to other states for pollinator services. Beekeepers maintain apiaries (groups of 20 to 32 hives) in most counties within the state from late spring (May) through the summertime.

The ideal honey bee apiary is located near high-quality "bee pastures." A bee pasture is any grassy cover containing suitable flowering plants that provide abundant nectar and pollen for honey bees to collect. The nectar is made into honey and the pollen provides protein and nutrients to raise new bees. Beekeepers prefer to locate their apiaries less than two miles from high quality bee pasture and/or an agriculture crop such as sunflower or canola if they know their bees will be protected from insecticide use.

What is happening to the honey bee?

Over the past 25 years, a variety of pests and diseases that attack honey bees have been introduced into the U.S. Honey bees are also exposed to pesticides across wide landscapes, and they are facing a dramatic loss of the wildflowers from which they gather nectar and pollen to strengthen and grow their colonies. As a result of these increasing stresses, beekeepers are now losing an unprecedented and unsustainable 30 percent to 34 percent of their hives each year. Beekeepers need our help to reverse this trend.

What are the threats?

- Loss of foraging habitat (bee pastures) to cultivated agriculture (nonforaging crops).
- Loss of foraging plants within bee pastures – indiscriminate use of broadleaf herbicides.
- Loss of foraging plants within bee pastures due to lack of (or inappropriate) management (grasses take over and wildflowers cannot compete).
- Honey bee mortality due to indiscriminate use of insecticides or lack of bee-safe Integrated Pest Management.

What are the opportunities?

For a listing of preferred honey bee wild and cultivated forage, please see the attached list. Three of the most common commercially available preferred foraging plants are Rocky Mountain bee plant, purple prairie clover, and white prairie clover.

Specific actions landowners can take are:

Wild Forage Establishment/Enhancement:
Establishing honey bee-friendly forage in cropland and/or enhancing grassy cover within two miles of a known apiary (beekeepers hives) may help this species.

Inter-seeding (stand enhancement seeding) honey bee-friendly flowering plants into existing grassy cover provides honey bee forage.

Ensure that native prairie restoration is developed and implemented that addresses both livestock and honey bee needs. The Natural Resources Conservation Service (NRCS) can help develop a management plan that provides livestock forage and bee habitat.

Cover Cropping:
Establishing cultivated forage in cropland may help this species. Blocks of honey bee-friendly cover crops provide honey bee forage when the cover cropping occurs within two miles of a known apiary (beekeepers hives). The cover crop must be allowed to flower for its full bloom period. The cover crop may be harvested for livestock forage after the bloom period ends.

The NRCS can help develop a cover cropping system that provides preferred honey bee forage and potential livestock grazing.

Integrated Pest Management (IPM):
Since pesticide use on all crops may drift onto adjacent habitat, all agricultural producers play an important role in honey bee protection and conservation, not just growers of fruits, berries, seeds, and nuts. Managed honey bees cannot always be moved out of agricultural areas to protect them from pesticide applications.

Integrated Pest Management is a decision-making framework that uses least hazardous pest management options only when there is a demonstrated need, and takes special precautions to reduce the hazards of pest management activities to people, other living organisms, and the environment. It employs a four-phase strategy: 1) Reduce conditions that favor pest populations, 2) establish an economic threshold of how much damage can be tolerated before pest control must occur, 3) monitor pest populations, and 4) control pests with the most specific pest control option when the pre-established damage threshold is reached.

The NRCS, in collaboration with IPM specialists, can help you identify potential pesticide hazards to honey bees, incorporate honey bee protection into IPM plans, and help you prevent or mitigate identified hazards to honey bees.

Maintain and Improve Healthy Grazing Lands:
Grazing maintains grassland habitat; however, to benefit honey bees, grazing needs to be managed in a manner that encourages honey bee-friendly forage plants.

The NRCS can help develop a grazing system that maintains and/or increases plant health and livestock forage production while also providing abundant flowers for honey bees.

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Bloom Period of Common South Dakota Native Plants

Common Name	Scientific Name	Full Seeding PLS Lb/ac	Bloom Period Start					Bloom Period End	
			April	May	June	July	August	September	October
Shrubs and Subshrubs		**early**				**middle**		**late**	
American plum	Prunus americana								
Chokecherry	Prunus virginiana L.	26.0							
Dwarf indigo	Amorpha nana	6.8							
Golden/Buffalo currant	Ribes aureum	5.5							
Juneberry/Saskatoon serviceberry	Amelanchier alnifolia	16.0							
Leadplant	Amorpha canescens	6.5							
Prairie rose	Rosa arkansana	29.0							
Silver/Russet buffaloberry	Shepherdia agrentea (Pursh) Nutt.	4.2							
Flowering Herbs		**early**				**middle**		**late**	
American licorice	Glycyrrhiza lepidota	18.8							
American vetch	Vicia americana	36.0							
Annual gaillardia / Indian blanket / firewheel	Gaillardia pulchella	7.1							
Black Samson / Narrow leaf purple coneflower	Echinacea angustifolia	9.0							
Blanket flower / common gaillardia	Gaillardia aristata	7.0							
Blue vervain / swamp verbena	Verbena hastata	1.0							
Boneset	Eupatorium perfoliatum	0.4							
Butterfly milkweed	Ascleplas tuberosa	16.2							
Canada tickclover / Showy ticktrefoil	Desmodium candense	12.3							
Canada milkvetch	Astragalus canadenseis	4.0							
Common milkweed	Asclepias syriaca	17.0							
Compass plant	Silphium laciniatum	40.0							
Culvers root	Veronicastrum virginicum	0.2							
Cup plant	Silphium perfoliatum	19.0							
Dotted gayfeather / Dotted blazing star	Liatris punctata	8.0							
Fragrant / lavender / blue giant hyssop	Agastache foeniculum	0.8							
Fuzzytongue penstemon / Crested beardtongue	Penstemon eriantherus	2.0							
Geyer's aster	Symphyotrichum leave var. geyeri	1.5							
Gray goldenrod	Solidago nemoralis	0.4							
Hoary vervain	Verbena stricta	2.4							
Maximilian sunflower	Helianthus maximiliani	4.5							
Meadow / Rocky Mountain blazing star	Liatris ligulistylis	6.8							
Narrowleaf beardtongue / Narrowleaf penstomen	Penstemon angustifolius	3.5							
New England aster	Symphyotrichum novae-angliae	0.8							
Prairie / tall cinquefoil	Potentilla arguta	0.5							
Prairie / upright / yellow coneflower	Ratibida columnifera	1.5							
Prairie ironweed	Vernonia fasciculata	2.8							
Prairie spiderwort	Tradescantia occidentalis	7.0							
Prairie sunflower	Helianthus petrolaris	4.0							
Purple prairie clover	Dalea purpurea	3.8							
Rocky Mountain bee plant	Cleome serrulata	13.5							
Rough / Tall blazing star	Liatris aspera	4.3							
Shell-leaf penstemon / Large beardtongue	Penstemon grandiflorus	4.0							
Showy goldenrod	Solidago speciosa	0.7							
Showy partridgepea	Chamaecrista fasciculata	20.0							
Spotted joe-pyeweed	Eupatoriadelphus maculatus	0.7							
Stiff goldenrod	Oligoneuron rigidum var. humile	1.4							
Stiff sunflower	Helianthus pauciflorus	12.8							
Swamp milkweed	Asclepias incarnata	15.0							
White prairie clover	Dalea candida	3.9							

Bloom Period and Plant Information for Honey Bee Forage Cover Crops in South Dakota

NOTE: Up to 25% of the cover crop mix may contain NON-honey bee forage plants (excluding soybeans and corn).

Common Name	Planting Time	Bloom Period Start	Bloom Period End	Planting Time Comments
Cicer milkvetch	Spring/Fall	April	August	Spring planting - won't bloom until following spring. Fall planting - blooms the following spring.
Hairy vetch	Spring/Fall	April	August	Spring planting - 90 days until bloom. Fall planting - blooms the following spring.
Sainfoin	Spring/Fall	April	August	Spring planting - 90 days until bloom. Fall planting - blooms the following spring.
Alsike clover	Spring/Fall	April	August	Spring planting - 60 days until bloom. Fall planting - blooms the following spring.
Crimson clover (trifolium incarnatum)	Spring/Fall	April	August	Spring planting - 60 days until bloom. Fall planting - blooms the following spring.
Ladino white clover	Spring/Fall	April	August	Spring planting - 60 days until bloom. Fall planting-blooms the following spring.
Red Clover (Trifolium pretense)	Spring/Fall	April	August	Spring planting - 75 days until bloom. Fall planting-blooms the following spring.
White Dutch / New Zealand White Clover (Trifolium repens)	Spring/Fall	April	August	Spring planting - 60 days until bloom. Fall planting-blooms the following spring.
Alfalfa	Spring/Fall	April	August	Spring planting - 60 days until bloom. Fall planting-blooms the following spring.
Buckwheat	Spring/Fall	May	October	Spring planting - 45 days until bloom. Fall planting - blooms 45 days from planting and it will freeze kill.
Canola	Spring/Fall	June	July	Spring planting - 50 days until bloom. Fall planting - blooms the following spring or 50 days from planting.
Cowpea (Vigna unguiculata)	Spring	July	August	Spring planting - 75 days until bloom. Fall planting - it would freeze before bloom.
Radish	Spring	June	August	Spring planting - 75 days until bloom. Fall planting - it would freeze before bloom.
Lacy Phacelia (Phacelia tanacetifolia)	Spring	April	June	Spring planting - 60 days until bloom. Fall planting - it would freeze before bloom.
Flax (linum usitatissimum)	Spring	May	July	Spring planting - 60 days until bloom. Fall planting-it would freeze before bloom.
Brassica juncea (brown mustand)	Spring	July	August	Spring planting - 50 days until bloom. Fall planting - it would freeze before bloom.
Brassica rapa (field mustard and forage turnips)	Spring	July	August	Spring planting - 60 days until bloom. Fall planting - it would freeze before bloom.
Camelina (camelina sativa)	Spring	July	August	Spring planting - 60 days until bloom. Fall planting - it would freeze before bloom.
Rapeseed (Brassica napus)	Spring	July	August	Spring planting - 60 days until bloom. Fall planting - it would freeze before bloom.
Sinapis alba (white mustard)	Spring	July	August	Spring planting - 50 days until bloom. Fall planting - it would freeze before bloom.
Partridge Pea (Chamaecrista fasciculate)	Spring	August	October	Spring planting - 75 days until bloom. Fall planting - it would freeze before bloom.
Safflower	Spring	August	October	Spring planting - 50 days until bloom. Fall planting - it would freeze before bloom.
Sunflower	Spring	August	September	Spring planting - 70 days until bloom. Fall planting - it would freeze before bloom.
Common Vetch (vicia sativa)	Spring	June	July	Spring planting - 60 days until bloom. Fall planting-it would freeze before bloom.

*Please note that species with hard seed coats may require winter scarification in order to bloom the subsequent spring.

Bloom Period & Planting Information for Honey Bee Forage & Biomass (CPS 512) Species in South Dakota

NOTE: Up to 25% of the forage/biomass planting mix may contain NON-honey bee forage plants (e.g. grasses)

Common Name	Planting Time	Bloom Period Start	Bloom Period End	Planting Time Comments
Cicer milkvetch	Spring/Fall	April	August	Spring planting-won't bloom until following spring. Fall planting - blooms the following spring.
Hairy vetch	Spring/Fall	April	August	Spring planting - 90 days until bloom. Fall planting - blooms the following spring.
Sainfoin	Spring/Fall	April	August	Spring planting - 90 days until bloom. Fall planting - blooms the following spring.
Alsike clover	Spring/Fall	April	August	Spring planting - 60 days until bloom. Fall planting - blooms the following spring.
Ladino white clover	Spring/Fall	April	August	Spring planting - 60 days until bloom. Fall planting - blooms the following spring.
Alfalfa	Spring/Fall	April	August	Spring planting - 60 days until bloom. Fall planting - blooms the following spring.
Red Clover (Trifolium pratense)	Spring/Fall	April	August	Spring planting - 75 days until bloom. Fall planting - blooms the following spring.
White Dutch / New Zealand White Clover (Trifolium repens)	Spring/Fall	April	August	Spring planting - 60 days until bloom. Fall planting - blooms the following spring.
Native wildflowers	**See Native Flowering Herb List from the Honey Bee Fact Sheet for species and bloom period**			

Bloom Period & Planting Information for Honey Bee Forage Conservation Crop Rotation Species in South Dakota

**If alfalfa is planted as part of CPS 328 then consultant the state guidance for additional information.

Common Name	Planting Time	Bloom Period Start	Bloom Period End	Planting Time Comments
Safflower	Spring	August	September	Spring planting - 50 days until bloom. Fall planting - it would freeze before bloom.
Sunflower	Spring	August	September	Spring planting - 70 days until bloom. Fall planting - it would freeze before bloom.
Alfalfa**	Spring/Fall	April	August	Spring planting - 60 days until bloom. Fall planting - blooms the following spring.
Buckwheat	Spring/Fall	May	October	Spring planting - 45 days until bloom. Fall planting - blooms 45 days from planting and it will freeze kill.
Canola	Spring/Fall	June	July	Spring planting - 50 days until bloom. Fall planting - blooms the following spring or 50 days from planting.

Early = April, May, June
Middle = July, August
Late = September, October
Fall = after small grains OR after row crops