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Using Cover Crops to Benefit Pollinators

THE IMPORTANCE OF POLLINATORS

Approximately 75 percent of field crops grown worldwide for food, fiber, beverages, condiments, spices, and medicines rely on pollinators. It is estimated that one out of every four mouthfuls of food we eat and beverages we drink is dependent upon pollinators. Insect pollination is critical for the production of many important crops in the United States including alfalfa, almonds, apples, blackberries, blueberries, canola, cherries, cranberries, pears, plums, squash, sunflowers, tomatoes, and watermelons.

It is estimated that insect-pollinated crops directly contributed \$29 billion to the United States farm economy in the year 2000. If this calculation were to include indirect products, such as milk and beef from cattle fed on alfalfa, the value of pollinators to U.S. agricultural production grows to \$40 billion.



COVER CROPS

Managing for soil health is one of the most effective ways for farmers to increase crop productivity and profitability while improving the environment. Cover crops improve soil health which improves the living habitat for soil microbes and beneficial insects. Cover crops provide cover for birds and wildlife, and some can also provide food for pollinators (pollen and nectar).

Cover crops are primarily annual species that are typically planted in late summer or fall, and are allowed to grow until the spring planting of the next field crop. Cover crops are typically not harvested for grain, seed, or forage. Examples of cover crops include cereal rye, annual ryegrass, wheat, oats, clovers and other legumes, turnips, and radishes.



Cover crops can provide many benefits for soil health including:

- Preventing soil erosion
- Improve nutrient use efficiency
- Increasing soil health and subsequent crop yield
- Conserving soil moisture
- Protecting overall water quality
- Suppressing weeds

Growing flowering cover crops during fallow periods in your crop rotation is a multi-purpose strategy that can potentially benefit crop productivity as well as the local pollinator community. Planting a mixture of cover crop

species can also enhance their soil health and pollinator benefits. But because not all cover crops provide the same benefits, it is important to choose the right species or mixture to meet both management goals and pollinator needs.

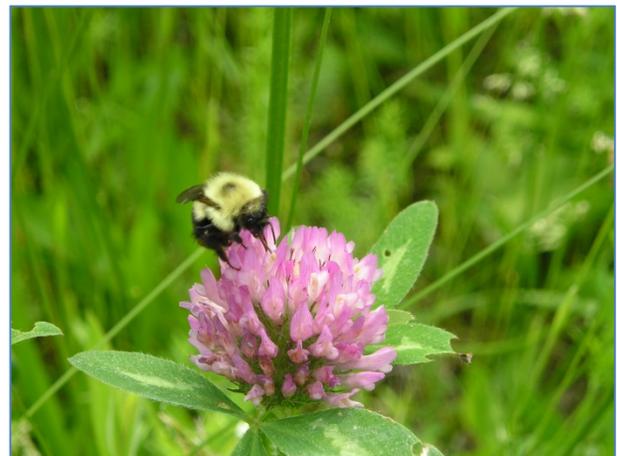
Cover crops that flower can provide nectar and pollen as food for pollinators. Cover crops can also provide structure that other beneficial insects, such as predators and parasitoids need for cover, reproduction, and overwintering. The chart below shows the relative benefit of specific cover crops as a nectar source for pollinators.

| Cover Crop Benefit to Pollinators | | |
|-----------------------------------|--|--|
| Rating | Species | |
| HIGH | Buckwheat (<i>Fagopyrum esculentum</i>) | Radish, Oilseed (<i>Raphanus sativus</i>) |
| | Clover, Crimson (<i>Trifolium ambiguum</i>) | Rape (<i>Brassica napus</i>) |
| | Clover, Red (<i>Trifolium pretense</i>) | Turnip, Forage type (<i>Brassica rapa</i>) |
| | Kale (<i>Brassica oleracea</i>) | Vetch, Hairy (<i>Vicia villosa</i>) |
| | Pea, Cow (<i>Vigna unguiculata</i>) | |
| MEDIUM | Pea, Austrian Winter (<i>Pisum sativum subsp. Arvense</i>) | |
| LOW | Barley (<i>Hordeum vulgare</i>) | Sudangrass (<i>Sorghum bicolor</i>) |
| | Millet, Japanese (<i>Echinochloa spp.</i>) | Triticale (<i>Triticosecale rimpau</i>) |
| | Millet, Pearl (<i>Pennisetum glaucum</i>) | Wheat, Winter (<i>Triticum aestivum</i>) |
| | Oats (<i>Avena sativa</i>) | |
| | Rye, Winter Cereal (<i>Secale cereale</i>) | |
| | Ryegrass, Annual (<i>Lolium multiflorum</i>) | |
| | Sorghum-sudangrass (<i>Sorghum bicolor</i>) | |

POLLINATOR-FRIENDLY MANAGEMENT PRACTICES

The following practices can benefit bees, the most important group of pollinators, including the European honey bee, if incorporated into existing management strategies:

- Minimize or avoid insecticide use to negate impacts to pollinators and beneficial insects.
- Recent research indicates potential issues associated with the use of **neonicotinoid-treated corn or soybean seed**, and the potential residues in pollen or nectar of cover crops that follow treated crops. If a grower is considering using a flowering cover crop, it is recommended that, as a precaution, the cover crop be used following a rotation of untreated crop seed.
- Look for bee toxicity warnings on pesticide labels, read **Extension Publications**, or use the **Windows Pesticide Screening Tool (WIN-PST)** bee toxicity database to determine if the pesticides being used are highly or moderately toxic to bees. See also **Protecting Honey Bees from Pesticides**. See links in REFERENCES below for **bolded** items.
- Establish spraying set-backs of at least 30 ft. to protect pollinator-friendly habitat.
- Establish/plant field borders of pollinator-friendly species which can be used as a refuge by pollinators after the burn-down of cover crops. Avoid removal of fence rows and other natural areas.
- Spray pesticides when pollinators are less active, such as in the early morning, late evening or on overcast days.
- Avoid spraying pesticides when drift is a problem to avoid affecting non-target species.
- Avoid highly-volatile pesticides to avoid impacting non-target plant species.
- Plant mixed-species cover crops to benefit more pollinator species. See the **Midwest Cover Crops Council Cover Crop Decision Tools** link in REFERENCES below.



- Plant appropriate cover crop species and at the proper time to allow flowering prior to termination. See **Seeding Windows for Cover Crops in Indiana** link in REFERENCES below.
- Establish cover crops under primary crops (such as vetch under corn, or rye and clover under orchard trees).
- If you are uncertain that the cover crop will have sufficient time to produce flowers before termination, consider leaving some un-managed cover crop strips in the field a few extra weeks; even a single row at the edge of a field is beneficial.
- Utilize low-disturbance cropping systems (such as continuous no-till, rolling/crimping, and mowing) that incur less disturbance to ground-nesting pollinators.

CROP INSURANCE CONSIDERATIONS

When applicable, cover crops should be managed and be compatible with the client's crop insurance and/or USDA Program criteria. See the **Federal Crop Insurance Corporation (FCIC)** link in REFERENCES below.

REFERENCES

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The Xerces Society for Invertebrate Conservation - <http://www.xerces.org/pollinator-conservation/>

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