

Do You “Know Your 5”?



Cover Crop Insects

There are more than 350 species of wild bees in Vermont and countless more species of other pollinating insects so it can be daunting to understand and recognize them all. This factsheet provides a brief overview of five important pollinators found on farms that can be supported by planting blooming cover crops in sequences throughout the season. Some of these pollinator groups, like lady beetles and hover flies, are also natural enemies of common crop pests. By identifying and understanding the natural history of these insects, you can provide cover crops and adjust other farm practices that will help ensure resilient and abundant pollinator populations.



Photo: Laura Johnson

The domesticated western honey bee (*Apis mellifera*) gets credit for most of the agricultural pollination in North America. However in many cases, wild bee species are more effective pollinators. Unlike honey bees in the Northeast, wild bees do not need human assistance to survive. They just need a safe place to nest and plenty of flowers to eat from.

Cover Crops for Pollinators

Flowering cover crops can add pollen and nectar to the farmscape, with potential benefits for commercially important pollinators. Research in this area is new and there is still much to be understood. To support pollinators with cover crops, allow plants to bloom and plant them in sequences to provide pollen, nectar, and habitat all season long (see “Cover Crop Calendar Example,” chart below).

General Recommendations For Supporting Diverse Pollinators

Provide flowers, especially native ones, for as much of the growing season as possible. Also leave a messy area with leaf litter and dead plant stalks. This structure provides important nesting and overwintering habitat. Be careful and conservative with pesticide applications. Avoid spraying during bloom (when possible) and follow an integrated pest and pollinator management plan.

*Times highlighted in green indicate when plants would be expected to bloom.

Cover Crop Calendar Example	May	June	July	August	September
Buckwheat planted early June					
Field mustard planted mid-July					
Hairy vetch + rye planted early September prior year					
Phacelia planted early June					
Red clover + oats planted mid-August prior year			Mow and regrow		

Bumble Bees (genus *Bombus*)

These large bees are pollinators of most crops. Queens emerge in early spring followed by smaller workers, which are active from early June through late fall. Spring-blooming cover crops, like clovers and vetch, can help provide abundant food to boost colony size mid-summer. Early spring flowering shrubs and trees (willows, maples, etc.) and nesting habitat (hedgerows and woodlots) are important for colony establishment. There are 13 species in Vermont.



Western Honey Bee (*Apis mellifera*)

This bee is a domesticated insect with the majority coming from managed hives. It is a critical pollinator of large monocultures and is valuable for many smaller farms. They are abundant on summer flowering cover crops, like buckwheat, which may help reduce competition for forage and disease spread with native pollinators. (Photo courtesy of Laura Johnson)



Other Bees (multiple genera)

Many of Vermont's 350 bee species are small and non-descript, varying from the size of a grain of rice to a small thumb. Adding cover crop species diversity, such as with late summer phacelia blooms, is important to supply diverse pollen and nectar sources for them all. For crop pollination, exact bee identification is generally not critical, though some species have unique nesting and foraging habits. To distinguish from other insects, look for a large collection of pollen on the legs or belly which is a bee specific behavior. (Photo courtesy of Laura Johnson)



Hover Flies (Family *Syrphidae*)

These are also known as flower flies. This is a diverse family that includes a large number of beneficial species. Summer-flowering mustard cover crop is attractive to these adult flies. Developing hover fly larvae found in cover crops eat pests like aphids, thrips, plant hoppers, and others. They are the most prominent crop flower visitor after bees and there are 115+ species in Vermont.



Lady Beetles (Family *Coccinellidae*)

These colorful beetles are mostly generalist predators. Developing larvae are found in numerous cover crop types and eat pests like aphids, thrips, plant hoppers, and other soft-bodied insects. Adults eat insects, pollen, and nectar and they are likely pollinators of some crops, including strawberries. There are 48 species in Vermont, a number of which are declining.



All photos courtesy of Spencer Hardy unless otherwise noted. For more information about bees, email shardy@vtecosudies.org. For questions about pollinator support practices on farms, email laura.o.johnson@uvm.edu. This is material is based upon work supported by USDA/NIFA under Award Number 2023-70027-40447.