

## Cover Cropping to Protect Pollinators

Using inexpensive alternative approaches to cover cropping, Maryland farmers can make an important contribution to protecting bees and other pollinators.

As most farmers know, our bees are under threat – in Maryland, in the Chesapeake Bay region and globally. Wintertime bee colony die-offs as high as 60% have been reported. This is a crisis that threatens some fundamentals of our food supply. Seventy out of the top 100 crops that produce 90% of our food rely on bees and other pollinators. The threat to Maryland’s produce farmers is significant.

### Growing flowering cover crops

There are a number of ways that farmers can help protect our bee populations, especially wild bees. An important method is to grow flowering cover crops during fallow periods of crop rotation. In addition, such cover cropping improves soil health that provides farmers many benefits<sup>1</sup>, including:



- ✓ Cutting fertilizer costs
- ✓ Suppressing weeds
- ✓ Increasing subsequent crop yield
- ✓ Preventing soil erosion
- ✓ Conserving soil moisture
- ✓ Protection of water quality

### What Flowering Cover Crops to Plant

In order to maintain pollinator populations in the area of a farm, a bee-friendly flowering cover crop should be grown each season. While grass cover crops – e.g., oats, sorghum – do not provide nectar or pollen for bees, flowering cover crops – such as buckwheat, clover, alfalfa, borage or mustard – do so.<sup>2</sup>

Experts sometimes recommend that farmers use a “cover crop cocktail” that could include crimson clover with rye.<sup>3</sup> USDA-NRCS provides a more comprehensive list, but other cover crops of high benefit to pollinators include: kale, radish, rape, turnip and vetch.<sup>4</sup>



### When to Plant Flowering Cover Crops

Among the windows of opportunity for planting flowering cover crops is during a summer fallow, or during a small-grain rotation. While conventional cover cropping can involve over-seeding into a standing crop, this may not be effective in protecting bees unless the standing crop is organic. USDA-NRCS

<sup>1</sup> Bees and Cover Crops. Penn State Extension. <http://ento.psu.edu/extension/factsheets/bees-and-cover-crops>

<sup>2</sup> Farming with Pollinators. The Xerces Society for Invertebrate Conservation et al. [https://www.organicconsumers.org/sites/default/files/organic\\_farming\\_for\\_bees.pdf](https://www.organicconsumers.org/sites/default/files/organic_farming_for_bees.pdf)

<sup>3</sup> Cover Crops on Your Farm. SARE. <http://www.sare.org/Learning-Center/Bulletins/Cover-Cropping-for-Pollinators-and-Beneficial-Insects/Text-Version/Cover-Crops-On-Your-Farm>

<sup>4</sup> Using Cover Crops to Benefit Pollinators. NRCS 2014. [http://ccsin.iaswcd.org/wp-content/uploads/2014/04/Technical\\_Note\\_Biology\\_Using\\_Cover\\_Crops\\_to\\_Benefit\\_Pollinators.pdf](http://ccsin.iaswcd.org/wp-content/uploads/2014/04/Technical_Note_Biology_Using_Cover_Crops_to_Benefit_Pollinators.pdf)

emphasizes that farmers planning to plant flowering cover crops should use the cover crop following a rotation of crop seed that has not been treated with any neonicotinoid pesticide. NRCS recommends:<sup>5</sup>

- ✓ Establishing spraying set-backs of at least 30 feet to protect pollinator-friendly habitat.
- ✓ Establishing or planting field borders of pollinator-friendly species that can be used as a refuge by pollinators after the burn-down of cover crops.
- ✓ Planting mixed-species cover crops which will be likely to benefit more pollinator species.
- ✓ Using low-disturbance cropping systems (e.g., continuous no-till, rolling/crimping, mowing) that will involve less disturbance to ground-nesting pollinators.

“If pollinators are to benefit from your cover crop planting, you must give it time to flower,” advises SARE. SARE provides tips on the differing amounts of time necessary in order to allow for a buildup of beneficial insect populations by various cover crops. Planting for green manure – tilled into soil to enrich organic matter – also can be done in a pollinator-friendly manner by having the green manure crop to flower briefly prior to tilling.<sup>6</sup>

### Why All the Concern About Bees & Pollinators?

Neonicotinoid pesticides – “neonics” – have been identified as a significant cause of this crisis in a large



and growing body of scientific research. Neonics are understandably popular with farmers because of their effectiveness against leaf-chewing and sap-sucking insects. While originally thought to be largely harmless, more than 1100 scientific studies – reviewed by 30 scientists around the globe – now indicate that neonics play a significant role in the ongoing die-off by harming bees’ ability to pollinate, reproduce, navigate and maintain general health.

Scientific evidence has mounted so quickly about the harm that in 2015, US EPA effectively declared a moratorium on approving new uses of neonics, while awaiting new research. EPA’s decision did, however, leave 100 existing uses of neonics in place. It also is important to note that the European Union has banned the neonic pesticides considered most harmful to pollinators.

Dependence of crops on honey bees for pollination			
Crop type	Dependence on honey bees <sup>2</sup> PERCENT	Crop type	Dependence on honey bees <sup>2</sup> PERCENT
Almond .....	100	Cauliflower.....	100
Apple.....	90	Celery.....	100
Apricot .....	70	Cherries .....	90
Asparagus .....	90	Cucumber.....	90
Avocado.....	100	Lettuce .....	10
Bean .....	10	Onion.....	100
Blueberry .....	100	Pear .....	50
Broccoli .....	100	Plum and prune .....	70
Brussels sprouts .....	30	Pumpkin.....	90
Cabbage.....	30	Strawberry.....	40
Carrot .....	100	Watermelon.....	70

<sup>2</sup> Dependence on honey bees reports the relationship between crop production and honeybee pollination services. Removal of all honey bees would see pollination and hence product supply decline by the reported figure.

Source: Table 2.1 of Gill (1989) – Rachery Huang

<sup>5</sup> ibid

<sup>6</sup> ibid