

Sustaining Farming on the Urban Fringe



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How to Know if You Have Enough Native Pollinator Habitat Serving Your Farm

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Globally, there is a call to increase native pollinator habitat ostensibly to provide insurance against the decline of honeybee pollinators in cropping systems. Growers are being urged to alter farming practices to create new native pollinator habitat with the assertion the practices will increase crop yields.

How do you know if you have enough native pollinator habitat within range of your operation? Does this call to create more pollinator habitat apply in our area? *If Jersey urban fringe farmers manage or set aside land for pollinator habitat, are they likely to gain any yield benefits?* Except in a few specific cropping systems (described on the following page) the answer is likely no.

Site-specific Mgt. is Sustainable Farming

It may seem counterintuitive that in our area, while the presence of native pollinators benefits crops, that the *creation of on-farm pollinator habitat is not associated with pollination benefits*. After all, there is an increasing body of research showing native bees significantly contribute to pollination and yields in a variety of crops; sufficiently pollinating a few. One might think that creating more habitat would lead to increased pollinator activity and increased yields.

However, there is no evidence in our region that crop yields (or incomes) increase from managing or setting aside on-farm native pollinator habitat. Studies have documented that native pollinator

abundance and species richness is greater in South Jersey agricultural and suburban areas than in native woodlands. Disturbed habitats, including farms, offer floral resources in seasons when food sources are scarce.

A core tenant of sustainable farming is site-specific application of management practices. As a byproduct of farming our highly fragmented urban fringe landscape (smaller fields with border vegetation, miles of roadsides with floral weed vegetation, sunlit suburban woodland edges, and numerous overgrown fallow abandoned fields) we already have ample native pollinator habitat near most farmers' fields.

Except in specific cropping systems, it is not a sustainable practice to manage or set aside cropland for native pollinator habitat. To promote adoption of unnecessary management practices for ecological, not agricultural, benefits is a disservice to already burdened urban fringe farmers.

Is there Downside to Increasing Urban Fringe Pollinator Habitat?

Native pollinator habitat consists of mixed vegetation patches with flowering weeds. To substantially increase habitat on farms also increases food sources for other less desirable animals, like white-tailed deer. The already excessive edge habitat contributing to crop damage from white-tailed deer overabundance is

similar to pollinator habitat. The negative economic, ecological, and property damage impacts of deer are well known to New Jersey residents ([Maslo, Rutgers FS1202, 2013](#)).



Late August buckwheat, Rutgers Snyder Farm

Specific Crops Benefit from Increased Native and Honeybee Pollination

NJ growers of blueberry, cranberry, cucumber and melon, and tree fruit might benefit by assessing and enhancing the amount of native pollinator habitat available nearby or on their operations. These crops have pollination deficits and studies show yield increases as native and honeybee pollinator activity increases. Large unbroken expanses of blueberry fields are one example. Nonetheless, among cranberry bogs, researchers identified higher native pollinator diversity among the large-scale commercial monoculture production than in the surrounding native Pine Barrens habitat.

If you grow these crops, survey your operation and nearby (under two-thirds mile) roadsides and forest edges looking for mixed flowering weed patches. Recommendations are to:

- Avoid inadvertently killing native pollinators;
- Avoid destruction of native pollinator floral support plants as long as they are not noxious or invasive weed pests; and
- Take some effort to recognize and preserve existing habitat. See [Plants Preferred by Native Pollinators and Bee Habitat Tips Around Farms](#) on the Sustaining Farming on the Urban Fringe website.

In soybean (self-pollinated), a recent pollinator exclusion field trial in Brazil (Milfont et al, 2013) identified a 6% yield increase from pollinators.

This is about a 3-bu/a gain on a 50-bu yield, or \$40/a at May 2013 prices. They added 8 honeybee hives to the 120-acre field and tripled the increase from 6% to 18% (about 9 bushels).

How much of the 6% yield increase was from honeybees vs. wild bees? Should Jersey farmers sacrifice an acre in soybean fields and sow a summer buckwheat cover crop timed to flower prior to soybean to attract honeybees? No one has tested these ideas. There is no convincing partial budget analysis comparing foregoing \$700 from an acre of soybean sales (50-bu/a x \$14), plus time and cost of buckwheat seeding, to unverified yield affects across a larger field.



Bumblebee on fall NJ roadside goldenrod weed

Is the Habitat Roadsides not Farms?

In our region, Rutgers Professor Rachael Winfree (Winfree et al, 2007 and 2008) found there were no detectable associations between the distance to native pollinator natural habitat and the beneficial pollination services provided to watermelon crop fields, as measured by pollen on flowers. Crop visitation by wild bees was not associated with organic farming, nor with natural habitat cover at either local or landscape scale with muskmelon, pepper, tomato, and watermelon.

Greater pollinator eco-system services benefits might occur by others enhancing human-disturbed habitat off-farms, not from farmers managing or setting aside habitat. For example, pollinator conservation might advance more by managing NJ roadside vegetation than from farmer incentives.