Alternatives to Neonicotinoids in New York

In General

- A French National Institute for Agricultural Research review of nearly 3,000 case studies comprising 120 crops and 279 pest insect species found that in 78% of cases a non-chemical alternative can effectively replace neonicotinoid (“neonic”) use. (Jactel et al., 2019).¹ In the limited number of cases where use of an insecticide may be warranted, less harmful substitutes exist—including those approved for organic crops, see 7 C.F.R. § 205.601 et seq., and federally designated “minimum risk” pesticides. See 40 C.F.R. § 152.25(f).

- Practices that build healthy soil, including cover cropping and crop rotation, help plants resist pest pressure. (Rodale Institute, The Farming Systems Trial 30 Year Report and Soil Health (visited Feb. 3, 2020)).²

Seed Treatments

- Neonic seed treatments—where a neonic coating is applied to a crop seed before planting—account for the vast majority of neonic use on field crops and agriculture generally. In New York, corn and soybean seed treatments account for an estimated 73% of all agricultural neonic use. (Mineau, An Assessment of Neonicotinoid Insecticides (2019), p. 49).³ Because these treatments provide little to no yield benefits, they may be eliminated entirely—likely reducing input costs for New York farmers.

- For soybean, an evaluation of 194 field studies from 14 states concluded that blanket neonic seed treatment use provides “little to zero net benefit in most cases” (Moutzinis et al., (2019)).⁴ Likewise, the U.S. Environmental Protection Agency (“EPA”) concluded “neonicotinoid seed treatments likely provide $0 in benefits to growers.” (EPA, Benefits of Neonicotinoid Seed Treatments to Soybean Production (2014)).⁵ In some cases, neonic use may even increase pest pressure by killing beneficial insects that prey on insect pests. (See Douglas et al. (2015)).⁶

- Similarly, for corn, independent field tests have observed “no benefit of [neonic] insecticidal seed treatments for crop yield.” (Krupke et al. (2017)).⁷ The available data suggest that “in most cases, no replacement would be necessary to ensure production of corn and soybean crops if

¹ https://bit.ly/2Sn4LEV.
³ https://on.nrdc.org/36BWdiL.
[neonic seed treatments] were eliminated.” (Testimony of Dr. Christian Krupke, Purdue University (2019)).

**Soybean**

- For *seed corn maggot*, see below under “Corn.”

- For *soybean aphid*, careful scouting and encouragement of beneficial insect predators are generally recommended. Insecticide treatments are often discouraged as they can eliminate beneficial insect populations, which can lead to spider mite infestations that cause even greater yield losses. (Cornell, NRCCA Pest Management Study Guide (2016) p. 60). Where aphids reach economically damaging levels, insecticidal soaps and azadirachtin-based neem products may be used (Cornell University, Resource Guide for Organic Insect Control and Disease Management (2013), p. 40, 151-53).

- Outbreaks of *two-spotted spider mite* have been linked to early-season insecticide application. (Cornell 2016 NRCCA Guide at p. 60). Farmers can protect against outbreaks by avoiding early-season insecticide use and employing beneficial insect biological controls. (UConn, Biological Control of Two-Spotted Spider Mites (visited Jan. 29, 2020)).

**Corn**

- For *seed corn maggot*, farmers can plant seeds in warm, dry soil to promote rapid crop emergence, so that crops become established before damage can occur. Farmers can also employ no-till or minimum-tillage practices, delay planting after incorporation of a green cover crop or other organic matter, and plant during the “fly-free window” between insect generations. (UMass Extension, Seed Corn Maggot (2013), p.3-4).

- To control populations of *seed corn maggot*, *cutworm*, *corn borer*, and *armyworms*, spinosad seed treatments, chemigation, foliar sprays, or bait products may be used. (Cornell Organic Resource Guide at p. 5-6, 27, 163-66), (see also, e.g., Dow, Entrust SC Label).

- For *corn rootworm*, crop rotation with non-host crops as well as early planting can serve as effective controls. (North Dakota State University (2017)). Additionally, farmers can introduce entomopathogenic nematodes that parasitize corn rootworm. (Elson Shields, Cornell University (2019)).

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8 https://on.nrdc.org/2RD3BX2.
13 https://go.aws/2GNT2Kr.
• The booming organic dairy industry in New York relies upon organic corn for animal feed, and organic corn producers cannot use synthetic pesticides such as neonicots or chlorpyrifos. New York is among the top five states in the country for organic corn production. (Agricultural Marketing Resource Center, Organic Corn Profile (2018), p.4).  

Wheat

• Cultural practices like diverse crop rotation and planting “trap crops” at field borders can address pest problems without using chemicals. (National Sustainable Agriculture Information Service, Disease and Insect Management in Organic Small Grains (2011)).

• Spinosad sprays and other products can be used for control of common armyworm and fall armyworm. (Cornell Organic Resource Guide at p. 166).

• Insecticidal soaps and neem-based products can be used to combat aphids. (Id. at 136-41, 151-53).

• The use of insecticides is not recommended for control of Hessian fly. (Cornell, Insects of Small Grains (visited Feb. 6, 2020)). Farmers are advised to plant Hessian-fly-resistant varieties after the “fly-free” date for their area, provided on the Cornell College of Agriculture and Life Sciences website. (Id. at Figure 5.8.1).

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