



IMIDACLOPRID: Reducing Risks to Groundwater from Agricultural Uses: Fruiting Vegetables

Practical Approaches for Users

Introduction. The pesticide imidacloprid (Admire Pro, Advise, Alias, Couraze, Leverage, etc.), commonly used in agricultural production and landscapes, is showing up in Long Island’s groundwater. This fact sheet was prepared to help fruiting vegetable (tomato, pepper, eggplant) growers use imidacloprid more conservatively while continuing to effectively manage pests and protect Long Island’s groundwater.

This and other factsheets are part of The Long Island Pesticide Pollution Prevention Strategy, which became effective July 2014. The strategy was developed by the NYS Department of Environmental Conservation (DEC) in collaboration with numerous stakeholders. The goal of the strategy is to protect groundwater and surface water from pesticide related contamination while continuing to meet the region’s pest management needs.

Protect Our Drinking Water

The Long Island aquifer is used by nearly three million people as a source of high-quality potable water. The aquifer is an underground water source that yields over 300 million gallons of water every day. The characteristics that allow the aquifer to reliably supply this much water also make it vulnerable to contamination from above ground. This is especially important for materials like imidacloprid that have widespread use and can move easily through soil to the underlying groundwater. For these reasons, the commercial agriculture industry needs to exercise careful environmental stewardship when using imidacloprid.

Modify Practices (Best Management Practices)

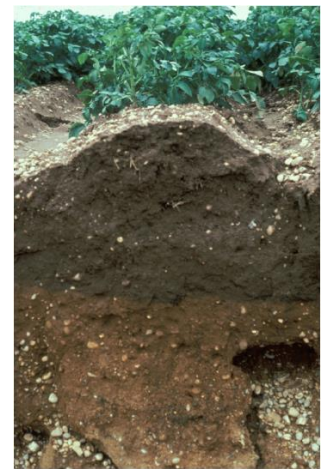
To reduce or eliminate the risk of imidacloprid movement to Long Island’s groundwater, growers should modify day-to-day practices especially where soil applications are used:



Application Rates – When applying imidacloprid as a soil treatment use the lowest label rate when making soil applications. Although residual activity may be reduced, lower rates can still provide acceptable control for fruiting vegetables during early establishment and reduce the amount applied per acre by 33%. Always stay below the maximum allowable use per crop season (soil: 0.38 lb active ingredient/A = 10.5 fl oz/A or foliar: 0.24 lb ai/A = 6.7 fl oz/A for Admire Pro, e.g.).

Application Timing and Methods – Imidacloprid is used on Long Island as a soil or foliar treatment in transplanted fruiting vegetables mainly for aphids and Colorado potato beetle (CPB). For aphids during

early establishment, imidacloprid can be applied to plants in flats within 7 days of transplanting instead of to soil at planting. Avoid overdosing, as some crops are sensitive, and overwatering, which leaches the insecticide from flats. In the field, foliar application will control aphids. For adult CPB protection for transplants, apply in transplant water close to plant roots, rather than as a subsurface side-dress along the entire row. Placement under plastic mulch with careful irrigation may help reduce leaching losses from high rainfall events. Avoid making soil applications when heavy rain is predicted within 24 hr, where soil is frozen or saturated. Take care to avoid runoff and drift to storm drains, and waterways.



A profile of a Long Island's sandy/gravelly subsoil.

KEY POINTS

- Three key practice modifications can be applied to reduce risk of imidacloprid movement to groundwater:
- Use lowest label rates
 - Use other effective insecticides or practices
 - Use foliar sprays instead of soil application to reduce leaching potential

Some Alternative Insecticides

Other insecticides approved for use on Long Island control many of the same pests. Some are summarized below for target species including organic (^), reduced-risk (*) and conventional options. Note imidacloprid is not effective against mites and most caterpillars – use other products or methods if needed for these pests. Use insecticides selectively and as a last resort to help maintain biological controls.

Pest	Insecticide	Active Ingredient	Notes
Green peach & potato aphids	*Assail	acetamiprid	Foliar spray as needed
	*Fulfill	pymetrozine	Foliar spray as needed
	Beleaf	flonicamid	Foliar spray as needed
	*Movento	spirotetramat	Foliar spray as needed
	Orthene, Acephate 97UP	acephate	Peppers only. Foliar spray as needed.
	^SuffOil-X, BioCover UL, #Damoil, Glacial Spray Fluid, #Mite-E-Oil, SunSpray Ultra-Fine, TriTek, Ultra-Pure Oil, #Omni Supreme Spray	Mineral oil (paraffinic horticultural oil)	Foliar spray as needed; good contact essential. Incompatible with some fungicides. #Not labeled for eggplant
	BotaniGard, ^Mycotrol ESO	<i>Beauveria bassiana</i> spores	Foliar spray for adults and larvae
	^M-Pede	Insecticidal soap (potassium salts of fatty acids)	Foliar spray as needed; good contact essential. Labels advise use for aphids in tank mix only.
Colorado potato beetle	*Assail	acetamiprid	Foliar spray as needed; target small larvae shortly after hatch
	Agri-Mek or other	abamectin	Applied to seed by supplier, up to 21 days control
	*Radiant	spinetoram	Foliar spray; target small larvae shortly after hatch
	*^Entrust	spinosad	Foliar spray; target small larvae shortly after hatch
	BotaniGard, ^Mycotrol ESO	<i>Beauveria bassiana</i> spores	Foliar spray for adults and larvae
	Prokil Cryolite 96	sodium aluminofluoride	Peppers; verify label use on other crops. Foliar spray for adults and larvae
	^Azera, Azatin O, Azasol, AzaGuard, Ecozin Plus, Molt-X, Neemix 4.5	azadirachtin (plus pyrethrins in Azera)	Foliar spray; target small larvae shortly after hatch

Integrated Pest Management Practices

The following non-pesticide practices can be utilized as part of an IPM program to manage pests targeted by imidacloprid. If not sure of the pest or cause of a plant problem submit samples to a diagnostic laboratory for identification.

Aphids: Check leaves below highest open flower on 30 random plants. Suggested threshold is $\geq 50\%$ with aphids at 6 – 8 weeks before harvest. Natural enemies may also help reduce populations.

Colorado potato beetles

- 1 - 2 trap crop (e.g. potatoes, treated & planted 20-30 days ahead) rows between hedgerows and transplants can prevent damage from overwintering CPB.
- Rotate fields $\frac{1}{4}$ - $\frac{1}{2}$ mile from previous host crops.
- Scout fields regularly especially along borders for adult beetles, larvae and egg masses checking at least 30 plants.
- In smaller plantings, hand-remove beetles where practical.

Suggested treatment thresholds for CPB

Tomatoes		Eggplant/peppers	
newly planted	established	$\leq 6''$ tall	$> 6''$ tall
> 1 adult, larva or egg mass/plant	<i>Early:</i> ≥ 15 adults/10 plants <i>After egg hatch:</i> ≥ 20 larvae + adults/10 plants	≥ 2 small larvae/plant, or ≥ 1 large larva/plant, or ≥ 1 adult/plant	≥ 4 small larvae/plant, or ≥ 2 large larvae/plant, or ≥ 2 adults/plant

Trade names used in this publication are for convenience only. No endorsement of products is intended, nor is criticism of unnamed products implied.

CONTACT INFORMATION

Daniel Gilrein, Extension Entomologist, Cornell Cooperative Extension of Suffolk County
Long Island Horticultural Research & Extension Center, 3059 Sound Avenue, Riverhead, NY 11901
P: 631-727-3595 • F: 631-727-3611 • dog1@cornell.edu • <http://www.longislandhort.cornell.edu/>

For more information or electronic copies of this factsheet go to <http://ccesuffolk.org>

For more information about the Long Island Pesticide Pollution Prevention Strategy go to <http://www.dec.ny.gov/chemical/87125.html>