

INTEGRATED PEST MANAGEMENT

# Insights



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## Center Supports Ongoing Development of School IPM Web Resources

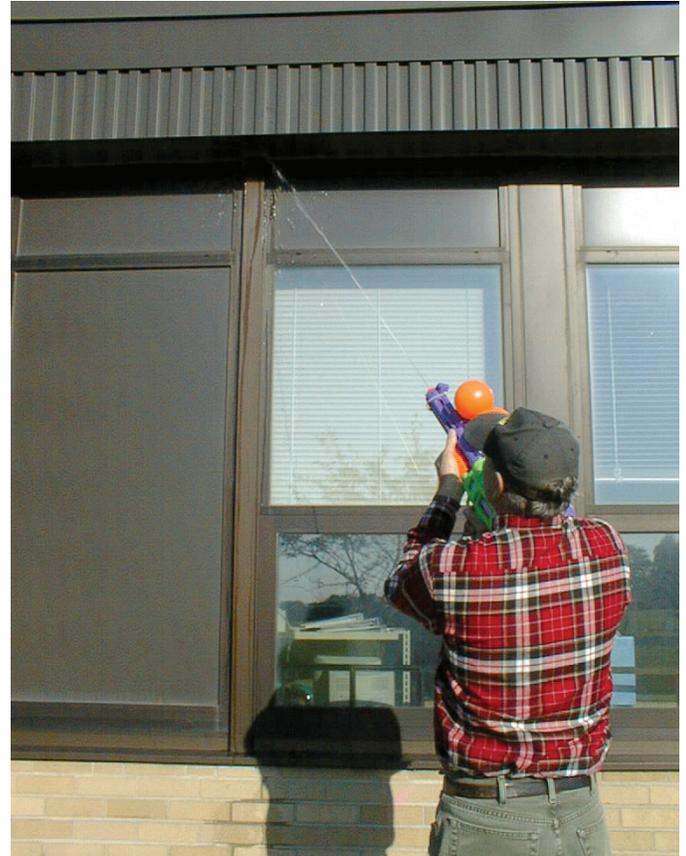
*By Lynn Braband, community IPM educator, New York State IPM Program*

**P**est management in schools has deservedly become an area of focus, not only in the Northeast, but also nationwide.

Reducing pesticide exposure is important for children who, by virtue of their size and developmental stage, are at greater risk of negative effects than adults.

At the same time, pests can be an equally significant health hazard to staff, students, and visitors. Schools are especially challenging to manage because they include such varied and heavily used settings as classrooms, cafeterias, laboratories, auditoriums, theaters, playing fields, playgrounds, and gardens.

Reducing pesticide exposure is important for children who, by virtue of their size and developmental stage, are at greater risk of negative effects than adults.



Removing an early season wasp nest with a stream of water. Photo provided.

### Pioneering School IPM Web Resources

The Northeast School IPM Working Group (NESIWG) received a Northeastern IPM Center Partnership Grant in 2013 to develop a set of best-management practices (BMPs) for safe, effective school IPM, and to build a new website to host them and make them widely available. Focus groups and training workshops were organized in three northeastern states to assess needs, and to create and collect accessible and comprehensive, yet succinct, resources.

Housed on the Northeastern IPM Center’s website, the BMP site sees considerable use and commendation from visitors who recognize its value. Even so, NESIWG

members and their stakeholders recognized that keeping the site current and up to date would be an ongoing effort.

### Five Years On: Time for an Update

Given that the science behind IPM is always evolving and the web is such a dynamic medium, by 2018, NESIWG members were revisiting the site with an eye towards updating the BMPs with new information and refreshing the design to keep it relevant and usable to its audience. They also saw an opportunity to identify

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# Maine Leads Project Using Winter Ecology to Manage Small Ruminant Parasites

This article first appeared in the 2019 Northeast SARE Annual Report and is reprinted with permission. The content is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, through the Northeast Sustainable Agriculture Research and Education program under subaward number LNE14-337.

For many small ruminant operations, grazing is central to farm profitability. However, grazing livestock increases risks of losses due to parasite-infested pastures. *Haemonchus contortus*, barber pole worm, is a particular threat to sheep and goat farms throughout the Northeast region.

## Pest Variation by Climate

Although *H. contortus* (as a subtropical parasite) has adapted to northern climates, Jim Weber of the University of Maine conducted a Northeast SARE Research and Education Grant project ([projects.sare.org/sare\\_project/gne17-150/](http://projects.sare.org/sare_project/gne17-150/)) to determine if northern New England farmers could use winter ecology to better manage this pest.

The team conducted a cold-tolerance study of *H. contortus* and found that parasites originating from sheep living in northern climates were more tolerant of cold conditions than parasites from sheep on farms in the Deep South, indicating that these parasites are indeed adapting to local conditions.

## Testing and Teaching Control Measures

To help producers better manage these parasites, Jim and his team tested a number of control measures, including:

- Adjusting dewormer timing
- Simulating reduced photoperiods
- Increasing parasite monitoring
- Evaluating livestock stocking rates and grazing management



*Haemonchus contortus*, barber pole worm, is a particular threat to sheep and goat farms throughout the Northeast region. Photo by Debra Heleba, Northeast SARE.

More than 400 farmers participated in seminars, workshops, and field days where they learned research results and received hands-on training.

A major emphasis of the project was teaching farmers methods to measure and effectively manage parasite populations on their farms.

More than 400 farmers from Maine, New Hampshire, and Vermont participated in the project's seminars, workshops, and field days where they learned research results and received hands-on microscope training to identify and count parasite species in manure samples from their livestock. They also learned how to use FAMACHA®, a technique to easily identify animals that may have *H. contortus* infestations.



Small ruminant producers learn how to use FAMACHA® and fecal egg counts to determine *H. contortus* parasite loads in their sheep and goats. Photo provided by James Weber, University of Maine.

## Effective Management Without Pesticides

One hundred twenty-two farmers implemented non-chemical methods—improving rotational grazing systems, using springtime determinations of dewormer efficacy, and basing use of dewormers on individual fecal egg counts—to control *H. contortus* infestations in their flocks during the grazing season.

As a result, the project team estimated that over 4,000 lambs on farms in northern New England had reduced exposure to *H. contortus* parasitism, reducing rates of lamb death, and likely increasing weight gain for lambs destined for the meat market.

As a result of newly implemented methods, the project team estimated that over 4,000 lambs in northern New England had reduced exposure to *H. contortus* parasitism.

## About FAMACHA©

According to the American Consortium for Small Ruminant Parasite Control, FAMACHA© is a diagnostic tool used in small ruminants (sheep and goats) to detect internal parasites, namely *Haemonchus contortus*, the most common parasite and pathogenic nematode of ruminants.

Developed in South Africa, FAMACHA© uses a card system containing photos of the inside of the lower eyelid of sheep.

The user is able to compare the photos on the card to the animal to determine anemia levels caused by the parasite, from no anemia (red color) to severely anemic (white color).

This allows farmers and others to more easily identify those animals that require anthelmintic treatment.

Source: [www.wormx.info/famacha](http://www.wormx.info/famacha)

## Schools

Continued from Cover Page

and populate gaps within the content by, for example, developing expanded resources on bed bugs, ticks, brown marmorated stink bugs, and vertebrates.

Gathering stakeholders' perspectives, the NESIWG worked with Kevin Judd, Center web administrator and designer, to upgrade the website. Those efforts yielded key accomplishments, such as highlighting a school nurse outreach project, reorganizing and expanding the species fact sheets, and revising major sections of the site.

The goal was not to replace the site, but rather to update and improve its content. However, since NESIWG members were unable to devote substantial time and energy to this, progress was slow.



School IPM Best Practices website shown on a tablet computer. Photo by J. Engel.

## Renewed Financial Support

Eager to expedite the process, the working group applied for and received a 2019 communications Partnership Grant from the Center. Throughout the year, they systematically worked with Judd and David Lane, Center evaluation specialist, as well as stakeholders in four northeastern states.

Results of these efforts included:

- Reorganization of the pest species list
- Additional information on relevant pesticide use regulations in all northeastern states
- Grouping of resources by stakeholder roles
- The addition of two new pages: “Breakfast in the Classroom” and “Playgrounds”

Additionally, the grant objectives included updating the working group’s homepage and performing a new ranking of regional school IPM priorities, last done in 2012.

Eager to expedite upgrades to the school IPM website, the working group applied for and received a second Partnership Grant from the Northeastern IPM Center.

Much of the homepage’s original content consisted of links to an array of outside school IPM resources. Now, it focuses on projects solely associated with the NESIWG, also featuring a current list of group members and a much-needed index of key school IPM contacts in the Northeast.

## Promotion and Future Plans

With the current changes to the site soon to be complete, the NESIWG welcomes new and returning site visitors and assistance in sharing this helpful resource, since getting the word out is a key factor in the success of this site—and of increased and effective implementation of IPM in schools.

As the group continues its work in 2020, watch for a shareable online brochure and significant use of social media targeted at school IPM stakeholder organizations throughout the Northeast and beyond.

The NESIWG and the Northeastern IPM Center are pleased to offer this outstanding resource, a collaborative undertaking and case study in combining the right tools and grant support with diverse expertise to serve a clear public need.

Visit the school IPM BMP website at:

[www.northeastipm.org/schools/](http://www.northeastipm.org/schools/)

# In Favor of More Biologically Based Options

## Alternatives to conventional pesticides protect crops with reduced impacts on health and environment

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In a new article published in the international journal *Biological Control*, three experts call for increased investment in biologically based approaches to controlling pests in agriculture, citing underutilization.

For instance, despite their many benefits, biopesticides represented less than 4.5 percent of the overall \$75 billion in global pesticide sales for 2017.

### Meeting Consumer Expectations

Biological options are well aligned with consumer, food company, and farmer goals. Advantages over conventional pesticides can include fewer residues, less persistence in the environment, and ability for farmers and workers to get into fields for harvest and other operations immediately after application.

According to Dr. Brian Baker, article co-author and affiliate faculty member at Oregon State University, “Consumers increasingly view any pesticide residues on food products as unacceptable, even when below levels considered safe by regulators.”

Continued Baker, “This sentiment is reflected in sales of organic products, which exceeded \$50 billion in the U.S. alone last year, with organic produce representing more than 15 percent of all produce sold in the U.S.”

### Obstacles to Adoption

Additional investment is needed to overcome obstacles, including lack of biocontrol options for many key pests and insufficient awareness and training on effective use of existing, proven biological options.

“Consumers increasingly view any pesticide residues on food products as unacceptable, even when below levels considered safe by regulators.”

– Co-author Brian Baker, Oregon State University affiliate faculty member

The authors argue that both public-policy and private-sector strategies must be improved to overcome these barriers and increase incentives for research, education, and adoption—including factoring the full cost of conventional pesticide use into decision-making by government agencies, food companies, and farmers.



Adult codling moths caught in a pheromone trap. Photo by Whitney Cranshaw, Cornell University.

### Limitations of Conventional Pesticides

Pesticides are invaluable tools for reducing pest-related crop losses in conventional and organic agriculture. In many cases, however, the costs of using pesticides go well beyond the purchase price paid by farmers. These costs include unintended impacts on the health of humans and beneficial organisms, environmental contamination, and development of resistance, whereby a pesticide ceases to be effective due to overuse.

For example, more than 40 weed species are now resistant to glyphosate, the active ingredient in Roundup. Resistance is of particular concern to organic growers, who have a limited number of allowable pesticide options. Losing any of those options to pesticide resistance is likely to have costly consequences for organic farmers, food companies, and consumers.



Colorado State University, Bugwood.org.

## Biocontrol Examples

Biologicals include natural enemies of pests, such as parasites and predators that feed on pests, and biopesticides—pesticides made with living organisms found in nature, or with the products of living organisms.

“Biologically based strategies include pheromones designed to prevent pests from finding mates,” says co-author Dr. Thomas Green, director of the Sustainable Food Group, a project of the IPM Institute of North America.

“Pheromone mating disruption has been a very successful strategy in a number of crops, including apples to control codling moth,” continued Green. “Release of sterile codling moths is another biocontrol success, supported financially by tax and apple grower dollars in British Columbia, creating a sustainable program that has reduced reliance on conventional pesticides.”



Damage to apple by tunneling codling moth larva. Photo by Whitney Cranshaw, Colorado State University, Bugwood.org.

“Biological approaches to pest management and plant health can meet all of today’s consumers requirements for transparency and sustainability while also improving growers’ bottom line.”

— Pam Marrone, founder & CEO, Marrone Bio Innovations

## Collaboration Is Key

The authors, members of a national organic and IPM working group, contend that greater collaboration between practitioners and researchers who work with organic agriculture and integrated pest management (IPM) can advance biological control as part of the solution to address the many challenges facing agriculture today, including low crop prices, climate change, and increasing market demand for low-impact production practices.

The article includes a review of the history and current state of organic and IPM in relation to adoption of biological control.

“This is an excellent, comprehensive paper calling out the need for more biologically based solutions in agriculture production,” said Pam Marrone, founder and CEO of biopesticide producer Marrone Bio Innovations.

According to Marrone, “There is a growing movement towards regenerative ag systems. Biological approaches to pest management and plant health can meet all of today’s consumers requirements for transparency and sustainability while also improving growers’ bottom line.”

To view the article, *Biological Control and Integrated Pest Management in Organic and Conventional Systems*, visit [www.sciencedirect.com/journal/biological-control/vol/140/suppl/C](http://www.sciencedirect.com/journal/biological-control/vol/140/suppl/C).

*This work is supported by the USDA National Institute of Food and Agriculture, North Central IPM Center projects AG 2012-51120-20252 and AG 2014-70006-22486.*



## Call for Submissions and Photos

Do you have IPM-related news or an IPM story to tell? We value the perspectives of growers, implementers, policymakers, and others on the front lines of pest management, and we welcome guest submissions for future newsletter editions.

Whether you'd like to write something new for us or submit something you've already had published elsewhere—given reprint permission from that publication—we want to hear from you!

Do you have high-quality photos of pests, pest damage, pest-management methods, or people demonstrating IPM practices? Your images could help us tell the story—and promote awareness—of current and emerging pest- and pest-management issues.

If we use your photos, they could appear in any of our channels or collateral, including newsletters, brochures, websites, and social media, and you'll be credited as the photographer.

Please visit [neipmc.org/go/ncfs](https://neipmc.org/go/ncfs) for more information.

Katydid on camera lens. Photo by Judy Gallagher, [flic.kr/p/ooki1q](https://flic.kr/p/ooki1q), CC BY 2.0.

## New Varroa Mite Webinars

In spring of 2019, the Northeastern IPM Center hosted a webinar on varroa mite management for beekeepers as part of our *IPM Toolbox* webinar series. Representing the culmination of a Partnership Grant that the Center had awarded for further study and outreach on the varroa mite threat to honey bees, the webinar proved especially popular.

Given that enthusiastic response, along with ongoing concerns about pollinator health and its implications for food security, the presenters—also the principal investigators on the grant—returned this spring to deliver a four-part webinar series offering a deeper dive on varroa mite IPM.

As with all *IPM Toolbox* webinars, the varroa mite offerings have been delivered live, with opportunities for Q&A, and then made available as recordings on our website. Visit [neipmc.org/go/ipmtoolbox](https://neipmc.org/go/ipmtoolbox) to learn about or register for upcoming webinars or view recordings of those that have already been held this season.

This year's series consisted of the following installments:

- **Varroa Mite Biology and Life History** (March 9)
- **Varroa Mite IPM and Sampling** (March 23)
- **Varroa Mite IPM: Management Tools** (April 6)
- **Varroa Mite IPM: Creating Your Own IPM Plan** (April 20)

The presenters are Jen Lund, apiarist with the Maine Department of Agriculture, Conservation, and Forestry, and Kim Skyrms, apiary program coordinator/apiarist with the Massachusetts Department of Agricultural Resources.

Given that in-person workshops and apiary inspections have been canceled or put on hold in response to the unfolding COVID-19 pandemic, we are exploring options for expanding the series further. Stay tuned for updates.

To peruse recordings of all past *IPM Toolbox* webinars, visit [neipmc.org/go/toolbox-archive](https://neipmc.org/go/toolbox-archive).



Jen Lund (left), apiarist, Maine Department of Agriculture, Conservation, and Forestry, and Kim Skyrms (right), apiary program coordinator/apiarist, Massachusetts Department of Agricultural Resources.



Honey bees in the Northeast are threatened by varroa mites. Photo by Maja Dumat, CC BY 2.0.

## Focusing on Invasive Species Awareness

### National Invasive Species Awareness Week

National Invasive Species Awareness Week (NISAW) is “the largest invasive species awareness effort in the U.S.”—an annual event that aims to improve policy-making and public knowledge about invasive species, the threats they pose to agriculture and local ecology, and how to contain and combat their spread.

NISAW 2020 is actually two weeks, one that occurred February 24–28 and another that’s coming up May 16–23. Part I highlighted advocacy and education while Part II will focus on local events and awareness.

Visit [www.nisaw.org/nisaw-2020/](http://www.nisaw.org/nisaw-2020/) to learn more about NISAW, view webinars from Part I, and explore strategies for effectively communicating with policymakers. Information on Part II will continue to be added as the week approaches. See [www.nisaw.org/resources/](http://www.nisaw.org/resources/) for a collection of free, customizable resources that can be used to help raise awareness and engage with stakeholders.



**NISAW**  
NATIONAL INVASIVE  
SPECIES AWARENESS WEEK

### New York Invasive Species Awareness Week

New York State is conducting its own outreach campaign on invasive species: New York Invasive Species Awareness Week (ISAW), to be held June 7–13.

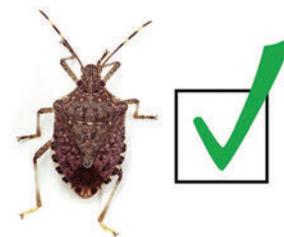
ISAW is a joint venture of the state’s Department of Environmental Conservation and Department of Agriculture and Markets. Those agencies are inviting participating organizations to work with their local Partnership for Regional Invasive Species Management (PRISM) coordinator for guidance, resources, and promotional opportunities.

For more information, visit [nyisaw.org](http://nyisaw.org).

### Other Programs or Events? Let Us Know

The Northeastern IPM Center wants to help get the word out about NISAW and similar events being organized at the state level throughout the region.

If you, your organization, or your state agency are planning any outreach or educational events related to NISAW or ISAW specifically—or to invasive species awareness in general—contact us with any relevant dates and times, links, verbiage, and other details.



### Participate in a BMSB Impact Survey

A nationwide survey currently underway aims to gather information from farmers and growers on the economic impact of the brown marmorated stink bug (BMSB) on agriculture. The ultimate goal is to better provide you with the help you need in managing this pest.

We’d like to find out when BMSB became a problem for you, where you currently get information on how to control them, how much damage you have suffered, your use of and interest in various management practices, and your feelings about biological control methods and their potential for your operation.

Survey results will be used by extension programs across the United States to fine-tune BMSB-management advice and help prioritize research and outreach activities.

The survey should take 20–25 minutes to complete. Your individual responses will be confidential and the data collected will be reported only in summaries. Your participation is voluntary and you can decide not to answer any given question if you choose.

To participate, go to [neipmc.org/go/TWrg](http://neipmc.org/go/TWrg).

For more information, contact Jayson Harper, interim director of the Penn State Fruit Research and Extension Center and professor of agricultural economics, at [jkh4@psu.edu](mailto:jkh4@psu.edu) or 814-863-8638.

## Funding Available for Pest Management Plans, Profiles

The Northeastern IPM Center has announced the availability of funding for updated and new pest management strategy plans (PMSPs) and production/management profiles (PMPs).

Up to \$50,000 in total will be available throughout 2020, with a maximum of \$15,000 per award. We will accept applications until available funds are expended.

This funding initiative aims to encourage plans and profiles that are updated with current research on, and knowledge of, emerging issues.

Proposals must develop a PMSP or PMP that is significant to the Northeast and pertains to one of the following pest-management applications: crop, livestock enterprise, pest, forestry, aquatic systems, turf/playing fields/golf courses/parks, medical practices, and schools/buildings.

Visit [neipmc.org/go/pmsp-rfa](http://neipmc.org/go/pmsp-rfa) to learn more or apply.

### Program Highlights

<b>Available Funds</b>	Approximately \$50,000 total; maximum \$15,000 per project
<b>Application Deadline</b>	Accepted on a rolling basis until funds are exhausted
<b>Project Length</b>	Up to 18 months from date of approval
<b>Narrative Length</b>	1–4 pages plus budget, references, and required forms
<b>For More Information</b>	Visit <a href="http://neipmc.org/go/pmsp-rfa">neipmc.org/go/pmsp-rfa</a>

# Center Awards 2020 Partnership Grants

The Northeastern IPM Center has announced the recipients of its IPM Partnership Grants for 2020.

Projects funded through the IPM Partnership Grants Program must further the mission of the Northeastern IPM Center, address or identify IPM priorities for the Northeast, and benefit the region at large.

Each project falls under one of three categories as follows. Included are each project's name, principle investigator (PI), and PI's host institution.

## Applied Research

**Early detection of potato leafhopper damage using unmanned aerial systems** (*Chandi Witharana, University of Connecticut*)

**Necessity is the mother of invention: innovative approaches to north-eastern hemp disease management** (*Heather Darby, University of Vermont and State Agricultural College*)

**Slug and natural enemy phenology in Mid-Atlantic field crops** (*David Owens, University of Delaware*)

## Communications

**Developing multimedia materials to educate health care providers on bed bug IPM** (*Changlu Wang, Rutgers University*)

**Knowing is half the battle: Increasing awareness of biocontrol as part of IPM through digital outreach** (*Amara Dunn, Cornell University*)

## Working Groups

**A working group on tarping and soil solarization** (*Sonja Birthisel, University of Maine*)

For more information on the IPM Partnership Grants Program, visit [neipmc.org/go/bfgs](http://neipmc.org/go/bfgs).

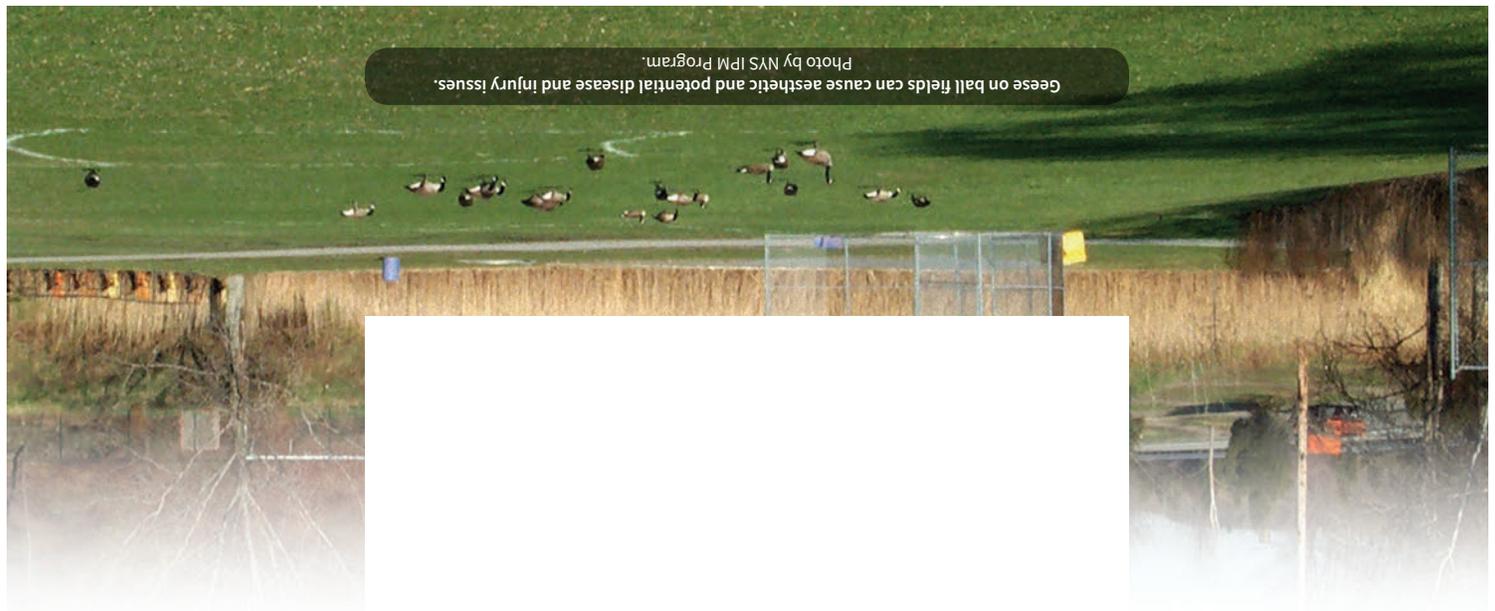
For those interested in seeking funding through this program, the Center will release an RFA for the 2021 round of grants sometime this fall. Keep an eye on this newsletter or visit [www.northeastipm.org/about-us/contact/](http://www.northeastipm.org/about-us/contact/) for other ways to follow us.

## Credits

**IPM Insights:** Deborah G. Grantham, Director; Mike Webb, Editor; Kevin Judd, Designer. **Northeastern IPM Center:** Nancy Cusumano, Deborah G. Grantham, Jana Hexter, Kevin Judd, David Lane, Susannah Reese, Mike Webb.



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