CAST Meeting April 19 , 2023

Present: Carolyn Hooper (Resilient Hartford 2025), John Reid (Planning Commission) , Laura Simon (Energy Commission 2025), Lee Michaelides (Conservation Commission 2025), Dana Clawson, staff.

Approved the Minutes from March 15, 2023 meeting.

New Tasks: John will look into New Hampshire town efforts to decrease plastic bottles. Lee will contact Jeff Arnold about the Lyman Park project for an update. Lee will reach out to Jesse for the name of the town whose energy commission he thought had a good website.

Action Item: Follow-up communication to the community/ commission group mailing about how they are moving forward on their climate action projects.

Solar Projects in Hartford: Project on Rt 14 has not yet submitted paperwork to the PUC. Norwich Solar will report to the Energy Commission about a solar project for Vermod on April 27.

Climate Related Grants: Hartford will be applying for a $4,000 grant from the state for energy commissions. There is also a grant for funding up to $500,000 to get a municipal building done. West Hartford Library is applying for grant specific to libraries.

Wilder School Project: Project goals, funding sources, planting map and project timeline have been done. Carolyn will send info about jumping worms and pesticides to all of the CAST membership.

Motion made by Laura to endorse the Wilder School Wildscaping project. Approved.

Change of Date for Next CAST Meeting: The May CAST meeting will be held on Wednesday, May 10.

Motion Passes to Adjourn Meeting

Attachments to the minutes

Wilder School "Wildscaping" Project

Meeting notes 3/7/2023

Updated 4/18/2023

Carolyn Hooper; Doug H Heavisides

(Excerpts for CAST, 4/19/2023)

1) Goals:

"Wildscape" the school grounds using intentional eco-gardening design and installation to:

- Expand the therapeutic environment of the school from the inside to the outside.

- Enhance wellbeing of students, staff and community by creating direct “connection to nature” educational and participatory opportunities on the school grounds.

- Create a school and neighborhood community gathering green space (**)

- Recognize and bring forward the indigenous culture, knowledge and wisdom that resides as part of this land; invite the local Abenaki community to collaborate on space design (**)

- Create an ecologically functional landscape by promoting and supporting biodiversity of native plants and native pollinators; connecting the grounds to the CT River ecological corridor (**)

- Enhance, connect and expand existing neighborhood/town-wide ecological corridors (**)

- Promote local food source (**)

- Reduce lawn coverage and lawn care needs (pesticides/herbicides/ fossil fuels/time and financial costs); increase shade and tree coverage (**)

**overlaps with Hartford Climate Action Plan goal(s)

2) Other considerations:

-There is serious concern about the extremely destructive Invasive Jumping Worm, which is now being found in UV gardens and nurseries.

- The worm is considered an ecological threat in VT, capable of altering/destroying leaf litter, soil structure, soil chemistry, and forest and garden ecostructure and habitat.

- The worm is easily passed from garden to garden via plant sharing and potted or ground-dug plants donated/purchased from infected nurseries.

- To control for the worm within the Wilder School Wildscaping Project, it would be best for all plants to be purchased bareroot, grown from seed and/or purchased from sources free of the worm.

- **The window for ordering bareroot plants is typically late fall/ early winter, for spring planting. This may push back the timing of the Wilder School project to Spring 2024, unless clean plant sources can be found that still have items in stock for planting summer/fall 2023.**

-There is serious concern about the use of the extremely destructive pesticides from purchased/donated plants.

- From the Vermont Center for Ecosystems Study (April 2023):

> "Many nurseries use systemic pesticides, including Neonicotinoids (neonics) to prevent unsightly insect damage. These chemicals also end up in the pollen and nectar, potentially for several years after it was treated, and have been shown to be poisonous to bees. Finding untreated plants can be hard – …ask before you buy from an unknown supplier (many garden centers might not know, since they are buying from larger wholesalers).

- **As noted RE the Invasive Jumping Worm, sourcing the plants intentionally and carefully so we protect pollinators, plants and people will be extremely important and may impact the**

implementation timeline for 2023

-The Wilder School Wildscaping Project can be phased in over several years.

- The SE (Section 1) and NE (Sections 2 and 3) installations would be a first phase.

- Depending on success, consider additional plantings implemented over time for the E block (Section 4) and underplanting the Locust Tree (Section 5)

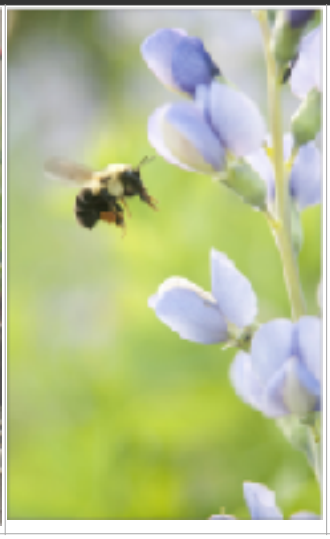
- Consider design/additional plantings for back of the school grounds **after**

    - Playground installation

    - Watch land use/assess needs of students/staff after the playground is installed

PROTECTING POLLINATORS FROM PESTICIDES

Offering Bee-Safe Plants: A Guide for Nurseries



Retail and production nurseries can be important partners in pollinator conservation by supplying perennials, shrubs, trees, and annuals that are free from harmful pesticide residues. Pollinator-friendly nursery production incorporates non-chemical pest prevention, scouting and monitoring, and limiting pesticide harm.

As pollinator gardening grows in popularity, many retail and production nurseries are experiencing a rise in demand for plants that attract bees and butterflies. Around the globe, peo- ple are creating habitat to enjoy these amazing creatures and help restore their dwindling populations. Still, pollinators may encounter risks if the use of harmful pesticides during plant production leaves residues on or in plants.

Plants that attract pollinators should be free from harmful pesticide residues

Nurseries can take pride in being partners in the pollinator movement by supplying pollinator-attractive perennials, shrubs, trees, and annuals that are free from harmful pesticide residues. Pollinator stewardship includes examining pest management practices and instituting production methods that safeguard pollinators.

Pollinator-Friendly Production

Three core elements of pollinator-friendly growing include prevention, monitoring, and limiting pesticide harm. These concepts are rooted in integrated pest management and are familiar to most growers. Incorporating non-chemical pest prevention and monitoring for pests helps nurseries reduce their reliance on pesticides by proactively detecting and managing pest buildup. Techniques to minimize harm if pesticides are used help avoid unintentional negative impacts.

Use the questions in this factsheet to explore, encourage, and implement pollinator-friendly pest management. These questions can provide a starting point for retailers to inquire into the pest management practices of their suppliers, and for growers to assess their own practices. Consumers can also share these questions with their nursery or garden center manager.

Grow Organically

Offering certified organic plants signals pollinator-friendly production. Not only are organic growers required to conserve biodiversity, the organic standards also require pest prevention practices and prohibit the use of most synthetic pesticides. Allowed pesticides are generally lower risk than their non-organic counterparts.

Prevent Pests

Adhering to time-tested non-chemical prevention methods is an essential first line of defense. Prevention techniques can stop pests before an outbreak occurs. The following are a few common preventative practices, but don't stop here—many more effective non-chemical options are available. Growers should use as many preventative practices as feasible.

Does the nursery:

☐ ☐

☐ ☐ ☐

☐ ☐

Maintain soil health?
Remove and properly dispose of diseased or infested plants?
Sanitize pots and tools?
Isolate new incoming stock for 2–3 weeks?
Select pest- and disease-resistant cultivars? (Not appropriate for native plants)
Exclude pests (weeds and/or insects) with appropriate methods?
Ensure plants get the appropriate amount of water, light, nutrients, and space?

Self-draining metal slatted tables ensure that water drains fully from plant stock. This practice, together with disinfectant foot baths for visitors, has helped Hedgerow Farms nursery in

California avoid the destructive *Phytophthora* pathogen. (Photo: Michele Ranieri / Hedgerow Farms, Inc.)

□

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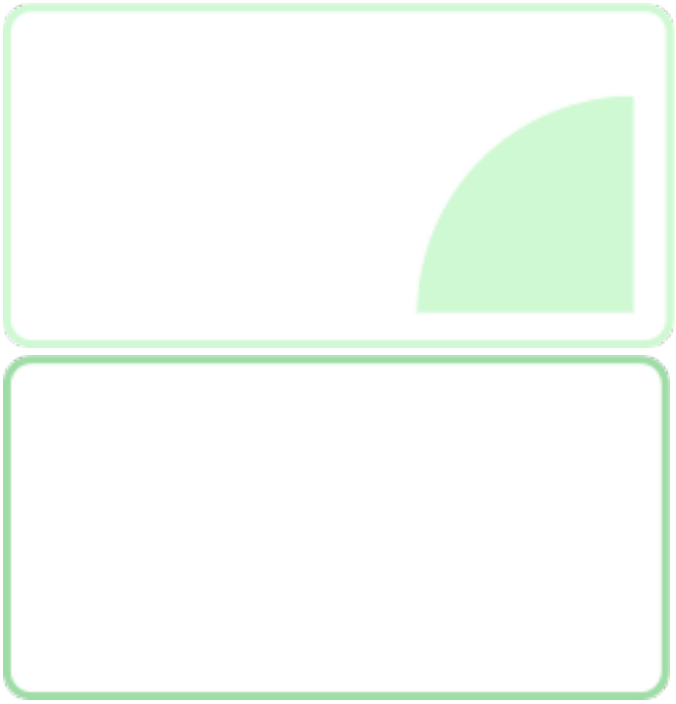
Use “trap plants” to concentrate pests away from the crop or “indicator plants” for early warning signals of pest buildup?
Use habitat or insectary plants to support native beneficial insects that keep pests in check naturally?

Conduct other prevention practices? Ask for details.



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strategies to limit pests. For example,
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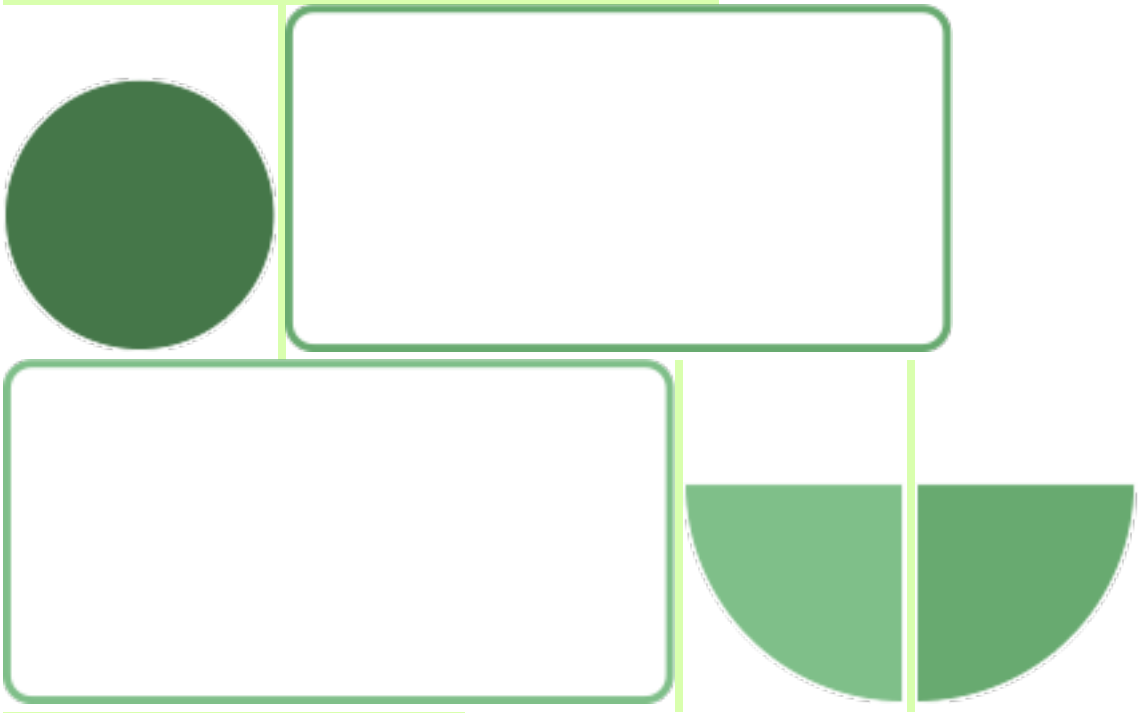
they’re spotted, or handpicking and destroying pest eggs or larvae before they can damage plants.

Since non-chemical prevention methods can keep pests from becoming an issue in the first place, they should be used first to be most effective, and always before pesticides are used.

Clear Strategic Purpose

Multiple Tactics

Indicators of a Good Prevention Program



Prevention Before Pesticides

Informed By Science

Investments in non-chemical strategies should be informed by good scientific data. Cooperative

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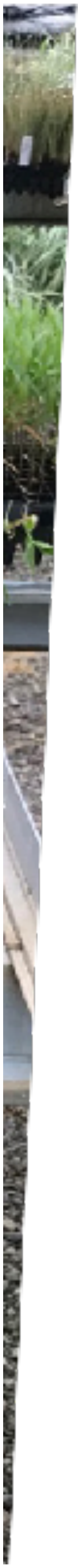
2

Offering Bee-Safe Nursery Plants



Monitor Pest Pressure

Monitoring, also known as scouting, is a deliberate allocation of time to inspect plants for insects and plant diseases. Meticulous attention to scouting allows nurseries to detect signs of an impending pest outbreak and is a critical step, because when detected early, pests can be managed more safely.

Does the nursery:
□ Scout plants at predesignated time intervals (such as

weekly or biweekly) and keep written records of pest

pressure and beneficial species counts?

- □ Use scouting results to inform decisions about interventions, including pesticide treatments?

- □ Train staff to become proficient at pest identification, or contract with trained crop advisers to scout?

- □ Use diagnostic labs for expert help on diseases?

Limit Harm from Pesticides

Ideally, insecticides and fungicides would never be needed. However, when scouting and preventative measures are not enough, many nurseries do resort to pesticides. Harm from pesticides can be limited if the nursery carefully follows principles and guidelines designed to minimize risk to pollinators.

Does the nursery:
□ Avoid routine use of pesticides, applying pesticides only if non-chemical measures have failed to keep pest populations below established thresholds?

- □ Treat only affected plants (i.e., spot-treatment)?

- □ Select organic or least-toxic products?

- □ Avoid systemic insecticides that are highly toxic and persistent? (See Table 1)

- □ Avoid insecticide applications prior to and during plant bloom and when bees are active?

- □ Avoid insecticide applications at least 4 weeks prior to sale?

  "Trap plants" like beans, eggplants, and marigolds are highly attractive to certain pests and can serve as early indicators of growing infestations in nurseries. (Photo: Kathleen Holman / Iwasaki Bros. Nursery)

  NOTES:

Consistent scouting and correct insect and disease identification is critical for tracking pest pressure and making management decisions. Pinelands Nursery in New Jersey shares the scouting services of a skilled university extension entomologist with several nearby nurseries, allowing access to high quality information at low cost. (Photo: Steve Rettke / Rutgers.)

Some nurseries that transitioned away from neonicotinoids simply shifted to other insecticides. Unfortunately, some of these insecticides are nearly as harmful as neonicotinoids (see Table 1).

With hundreds of pesticides available on the market, Table 1 does not include all pesticides that could harm pollinators. Rather, it prioritizes long-lived, highly toxic, systemic insecticides used in nursery production.

Table 1: Systemic Insecticides to Avoid

Systemic insecticides permeate plants and may contaminate nectar and pollen sought by foraging bees long after purchase. Table 1 includes some of the most bee-toxic and persistent of the systemic insecticides currently used in ornamental flowering plant production. Due to their risks, we urge consumers to avoid plants grown with these insecticides, especially when procuring flowering trees and shrubs. Systemic insecticides can reach high concentrations and persist longer in woody plants.

Neonicotinoids

Clothianidin

Dinotefuran

Imidacloprid

Thiamethoxam

Flupyradifurone

Butenolides

Diamides

* Every pesticide product lists its active ingredient(s) on the label. People often use brand or "trade names" instead. Numerous trade names may exist for any particular active ingredient. A useful cross-reference is available at *A Pesticide Decision-Making Guide to Protect Pollinators in Landscape, Ornamental and Turf Management* (van Dyke et al. 2019).

Cyantraniliprole

Are you a retail nursery?

Take the time to find out more about the practices of the production nurseries you buy from. Pledging to seek out and offer bee-safe plants will help you to attract the growing number of customers wanting to ensure their gardens are safe for bees.

Are you a production nursery?

Revisit your pest management efforts to see if you can make changes to become more pollinator- friendly. Prevention, monitoring, and limiting pesticide harm all work together as strategies to achieve pollinator stewardship goals.

Retail and production nurseries can take pride in being partners in pollinator conservation by supplying perennials, shrubs, trees, and annuals that are free from harmful pesticide residues. (Photo: Nancy Kennedy)

Additional Resources

Adamson,N.L.,E.May,A.Code,E.Lee-Mader,S.Morris,andM.Vaughan.2018."Organic Pesticides: Minimizing Risks to Pollinators and Beneficial Insects." The Xerces Society. **https://www.xerces.org/publications/guidelines/organic-pesticides**.

Egan, P. A., L. V. Dicks, H. M. T. Hokkanen, and J. A. Stenberg. 2020. "Delivering Integrated Pest and Pollinator Management (IPPM)." Trends in Plant Science, March. **https:// doi.org/10.1016/j.tplants.2020.01.006**.

Hopwood, J., A. Code, M. Vaughn, D. Biddinger, M. Shepherd, S. H. Black, E. Lee- Mader, and C. Mazzacano. 2016. "How Neonicotinoids Can Kill Bees." 2nd Edition. The Xerces Society. **https://www.xerces.org/publications/scientific-reports/ how-neonicotinoids-can-kill-bees**

Kansas State University. 2016. "How to Effectively Scout for Pests (Revised)." e-GRO Instructional Webinars. **https://www.youtube.com/watch?v=djjsjpgqWbg**

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Radford, R., T. Finck-Haynes, T. Brown, S. Kegley, and L. Archer. 2015. “Growing Bee Friendly Garden Plants: Profiles in Innovation.” Pesticide Research Institute and

Friends of the Earth. **https://foe.org/resources/growing-bee-friendly-garden- plants-profiles-in-innovation/**

Southern SARE (Sustainable Agriculture Research and Education). 2013. Integrated Pest Management (IPM) in the Nursery (video). **https://www.youtube.com/ watch?v=BvELHa5lx_c**

Stoner, K. A., R. S. Cowles, A. Nurse, and B. D. Eitzer. 2019.“Tracking Pesticide Residues to a Plant Genus Using Palynology in Pollen Trapped from Honey Bees (Hymenoptera: Apidae) at Ornamental Plant Nurseries.” Environmental Entomology 48 (2): 351–62. **https://doi.org/10.1093/ee/nvz007**.

Sullivan, C. and M. Skinner. 2013. “Plant-Mediated IPM Systems Explained.” **https:// www.uvm.edu/ ~entlab/Greenhouse%20IPM/Workshops/2014/ PlantMedIIPMSystemsOverviewFinalNov13.pdf**

van Dyke, M., E. Mullen, D. Wixted, and S. McArt. 2019. “A Pesticide Decision-Making Guide to Protect Pollinators in Landscape, Ornamental, and Turf Management.” Cornell College of Agriculture and Life Sciences. **https://pollinator.cals.cornell. edu/resources/grower-resources/**

ACKNOWLEDGMENTS: Funding for this fact sheet was provided by Linda S. Raynolds, the Carroll Petrie Foundation, and Anthropocene Institute. Thank you to Anthony\ LeBude, Marcia Carsten, Julie Serences, and Shannon Westlake for reviewing. **AUTHORS:** Written by Sharon Selvaggio and Aimée Code. Design and layout by Emily May. **PHOTO CREDITS:** Production nursery by Lance Cheung / USDA; *Bombus impatiens* on blue false indigo by Justin Wheeler; seed production field plot at Pinelands Nursery by Xerces Society / Kelly Gill.

Updated February 2021 20-039

April 13, 2023 by Vermont Center for Ecostudies | no responses yet

A Mason Bee. Photo: Nathaniel Sharp

From the tiny corner lot to the hobby farm on the hill, bees are everywhere – and in need of our help. Recent work from VCE and others has shown worrying declines in bumble bee diversity and found more than 60% of all bees in Vermont were recently ranked as vulnerable or worse. Unlike Mountain Lions and Northern Goshawks, many bees can thrive in backyard environments when their habitat requirements are met. Fortunately, there is a lot that homeowners can do to help. Read on to learn about a few specic actions (and sometimes inactions!) that can turn your backyard into a pollinator haven.

The Don'ts

A few things to avoid

Don't buy bees online – Many companies have started selling Mason Bees and other species to gardeners worried about a lack of pollination. The pollination effectiveness of imported bees is questionable, and there is a risk of spreading pathogens and parasites to the native bees already present. Read our recent press release here.

Don't plant invasive plants – Many of the worst invasive plants are illegal to buy or sell in the state. However, many other non-native species also pose risk to the local environment by competing with native plants and providing low-quality resources for pollinators. Familiarize yourself with these plants of concern, avoid adding them to your landscape, and consider removing those that are already present.

Don't spray unnecessary pesticides – Many bee-killing chemicals are readily available at department stores and garden centers for homeowners to use to keep pests at bay. Even organic or plant-based pesticides (e.g., Neem Oil) can have unintentional negative effects on benecial insects. Before applying any spray or other pest control products, make sure you understand what the product is and consider the pros and cons. Most insecticides are likely to have negative impacts on bees/butteries/other benecial insects and may even pose health risks to humans. A diverse, healthy ecosystem full of native plants and insects is likely to be more resilient to pest outbreaks and shouldn't need any chemical intervention. Contact your local extension oce for more advice on using pesticides at home.

Avoid treated nursery plants – Many nurseries use systemic pesticides, including Neonicotinoids to prevent unsightly insect damage. These chemicals also end up in the pollen and nectar, potentially for several years after it was treated, and have been shown to be poisonous to bees. Finding untreated plants can be hard – see our list of nurseries below and ask before you buy from an unknown supplier (many garden centers might not know, since they are buying from larger wholesalers). Pressure from consumers will be necessary to make headway on this issue.

The Do's

From passive to involved, there's something for everyone

Leave the leaves – Leaves and other plant material (e.g., dead stems, woody debris) provide important nesting and overwintering sites for many different invertebrates, including bumble bees. In addition, organic debris feeds all sorts of small invertebrates that in turn are essential prey for other wildlife like songbirds and salamanders. If you must break out the leaf rake, mid-spring is best so overwinter bees have a chance to warm up and emerge. For more information about 'leaving the leaves:

No Mow May – Frequent lawn mowing can reduce the oral availability for bees and other pollinators. Consider the following alternatives. Less frequent mowing (or mowing with a high deck) can turn a sterile lawn into a miniature jungle of violets, strawberries, and other low-growing (or mow-tolerant) plants to thrive. However, many lawn owers (e.g. dandelions) are non-native and not as nutritious for bees. Another alternative is to quit mowing altogether by converting portions of your lawn into a garden or meadow, (or even bare ground for nesting habitat) to provide even more benets for bees. Learn more about No Mow May in Vermont here.

Plant native plants – Vermont's native insects and other wildlife evolved with, and are best adapted to, native plants. Any native plant is likely to have benets for local wildlife, whereas many non-native plants do not provide essential resources for bees and other insects. Based on more than 20,000 interaction data points, we've assembled a list of plants that are important for many common bees and/or support specialists (the picky eaters), as well as native

replacements for common spring owers. If at all possible, look for native alternatives to ornamental non-native owers. Instead of buying tropical Milkweed (*Asclepias curassavica*), look for a VT native Swamp milkweed (*Asclepias incarnata*), or replace Kwanzan cherry (Prunus serrulata) with Chokecherry

(*Prunus virginiana*). Ideally, source your plants from local sources that don't use systemic pesticides (see above). |
Remove invasives – Non-native plants don't provide the same value to native bees, and many invasive shrubs can easily overrun forest understories or riparian areas. Learn a few of the common ones in your area and start removing them. Glossy Buckthorn, Japanese Knotweed, and bush Honeysuckles are notorious examples. Not the easiest endeavor, but an important part of restoring ecosystem function and resiliency.

Connect with your community! In addition to helping the bees at home, you can use your voice to help encourage 'bee-friendly' habitat and behavior in any green space like your neighborhood, a homeowner's association, the library, or the local town hall. Sometimes all it takes is someone to 'speak for the bees'. Local bee lovers in MD recently changed local municipal ordinances by standing up to local mowing laws. Towns in Massachusetts have started passing native plant ordinances to encourage native street tree planting. By speaking up and connecting with your local community, your action can create lasting change to help reverse bee declines.

Native plant sources

Finding appropriate and affordable plants is the rst challenge in a new pollinator planting. Breaking the ground and keeping the weeds at bay is the next big challenge, luckily much has been written on the topic. A few good places to source plants include:
Local Conservation Districts: Many conservation districts organize plant sales, often as fundraisers. Most offer at least some native shrubs and fruit trees,

though the selection might be less extensive and they aren't guaranteed to be pesticide free. Likely the most affordable option.

Northeast Pollinator Plants is a small nursery in Fairfax, Vermont that sells a wide range of owering plants that are native to the region. Available for pick-up or mail order as young plugs. There are also other options throughout the state. As an alternative to buying young plants, several companies offer native seeds that you can grow yourself. Many have specic germination requirements that make them more involved than garden vegetables, but it's a fun challenge and more economical (if you aren't counting your time). A wider variety of seeds are available, many of which want to be planted in the fall, which can spread out the gardening season nicely. A few good seed sources include The Wild Seed Project and Prairie Moon Nursery.

Finally, don't discount fruit and veggies as important oral resources for native bees. Check out our new crop- specic bee guides here.

MORE POSTS FROM VCE

OLDER POSTS: Field Guide to April 2023

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PROTECTING POLLINATORS FROM PESTICIDES

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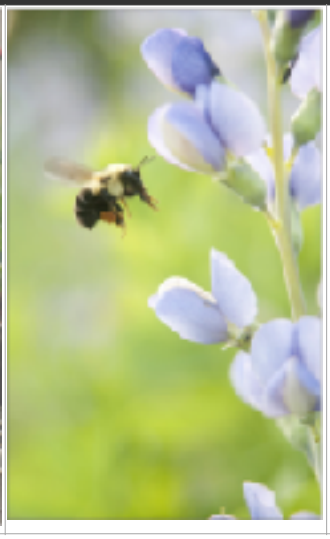

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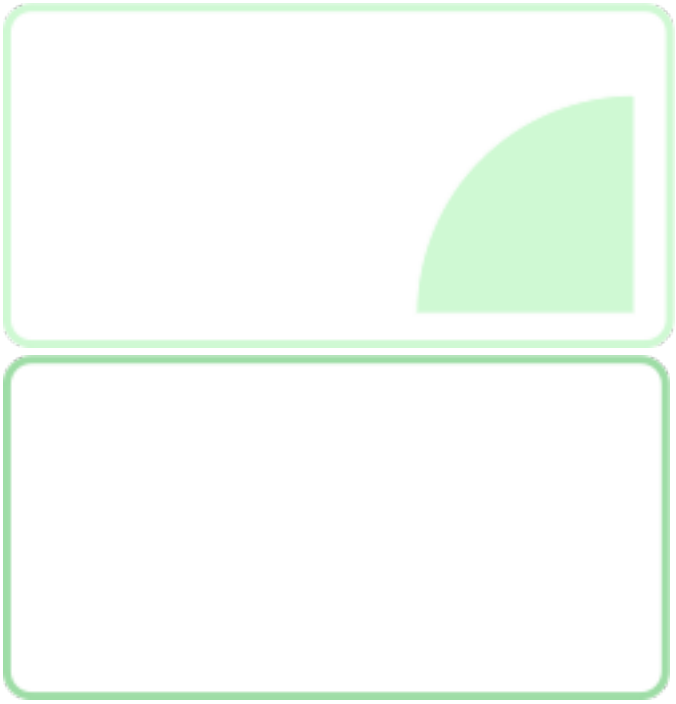

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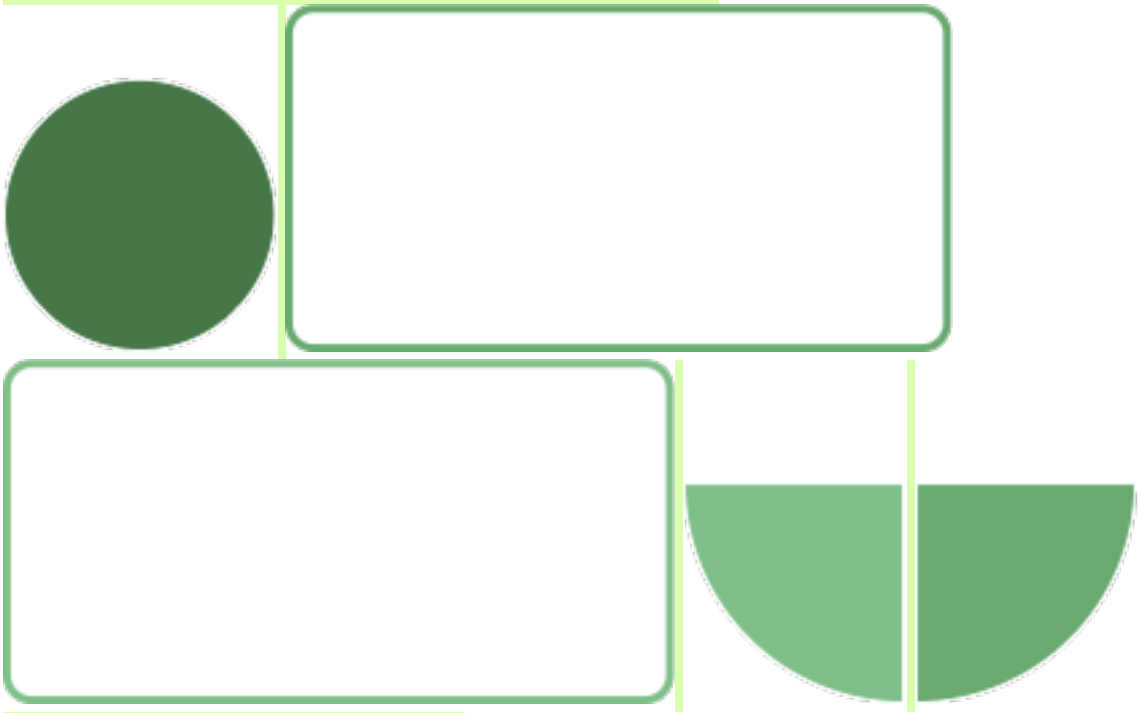

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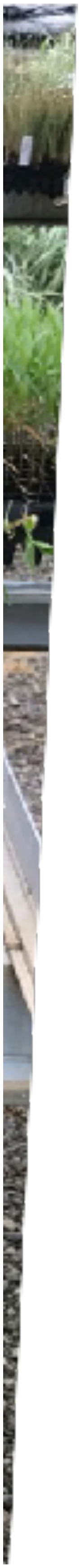

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□ Avoid routine use of pesticides, applying pesticides only if non-chemical measures have failed to keep pest populations below established thresholds?

- □ Treat only affected plants (i.e., spot-treatment)?

- □ Select organic or least-toxic products?

- □ Avoid systemic insecticides that are highly toxic and persistent? (See Table 1)

- □ Avoid insecticide applications prior to and during plant bloom and when bees are active?

- □ Avoid insecticide applications at least 4 weeks prior to sale?

  "Trap plants" like beans, eggplants, and marigolds are highly attractive to certain pests and can serve as early indicators of growing infestations in nurseries. (Photo: Kathleen Holman / Iwasaki Bros. Nursery)

  NOTES:

Consistent scouting and correct insect and disease identification is critical for tracking pest pressure and making management decisions. Pinelands Nursery in New Jersey shares the scouting services of a skilled university extension entomologist with several nearby nurseries, allowing access to high quality information at low cost. (Photo: Steve Rettke / Rutgers.)

Some nurseries that transitioned away from neonicotinoids simply shifted to other insecticides. Unfortunately, some of these insecticides are nearly as harmful as neonicotinoids (see Table 1).

With hundreds of pesticides available on the market, Table 1 does not include all pesticides that could harm pollinators. Rather, it prioritizes long-lived, highly toxic, systemic insecticides used in nursery production.

Table 1: Systemic Insecticides to Avoid

Systemic insecticides permeate plants and may contaminate nectar and pollen sought by foraging bees long after purchase. Table 1 includes some of the most bee-toxic and persistent of the systemic insecticides currently used in ornamental flowering plant production. Due to their risks, we urge consumers to avoid plants grown with these insecticides, especially when procuring flowering trees and shrubs. Systemic insecticides can reach high concentrations and persist longer in woody plants.

Neonicotinoids

Clothianidin

Dinotefuran

Imidacloprid

Thiamethoxam

Flupyradifurone

Butenolides

Diamides

* Every pesticide product lists its active ingredient(s) on the label. People often use brand or "trade names" instead. Numerous trade names may exist for any particular active ingredient. A useful cross-reference is available at *A Pesticide Decision-Making Guide to Protect Pollinators in Landscape, Ornamental and Turf Management* (van Dyke et al. 2019).

Cyantraniliprole

Are you a retail nursery?

Take the time to find out more about the practices of the production nurseries you buy from. Pledging to seek out and offer bee-safe plants will help you to attract the growing number of customers wanting to ensure their gardens are safe for bees.

Are you a production nursery?

Revisit your pest management efforts to see if you can make changes to become more pollinator- friendly. Prevention, monitoring, and limiting pesticide harm all work together as strategies to achieve pollinator stewardship goals.

Retail and production nurseries can take pride in being partners in pollinator conservation by supplying perennials, shrubs, trees, and annuals that are free from harmful pesticide residues. (Photo: Nancy Kennedy)

Additional Resources

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