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, people 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.

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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

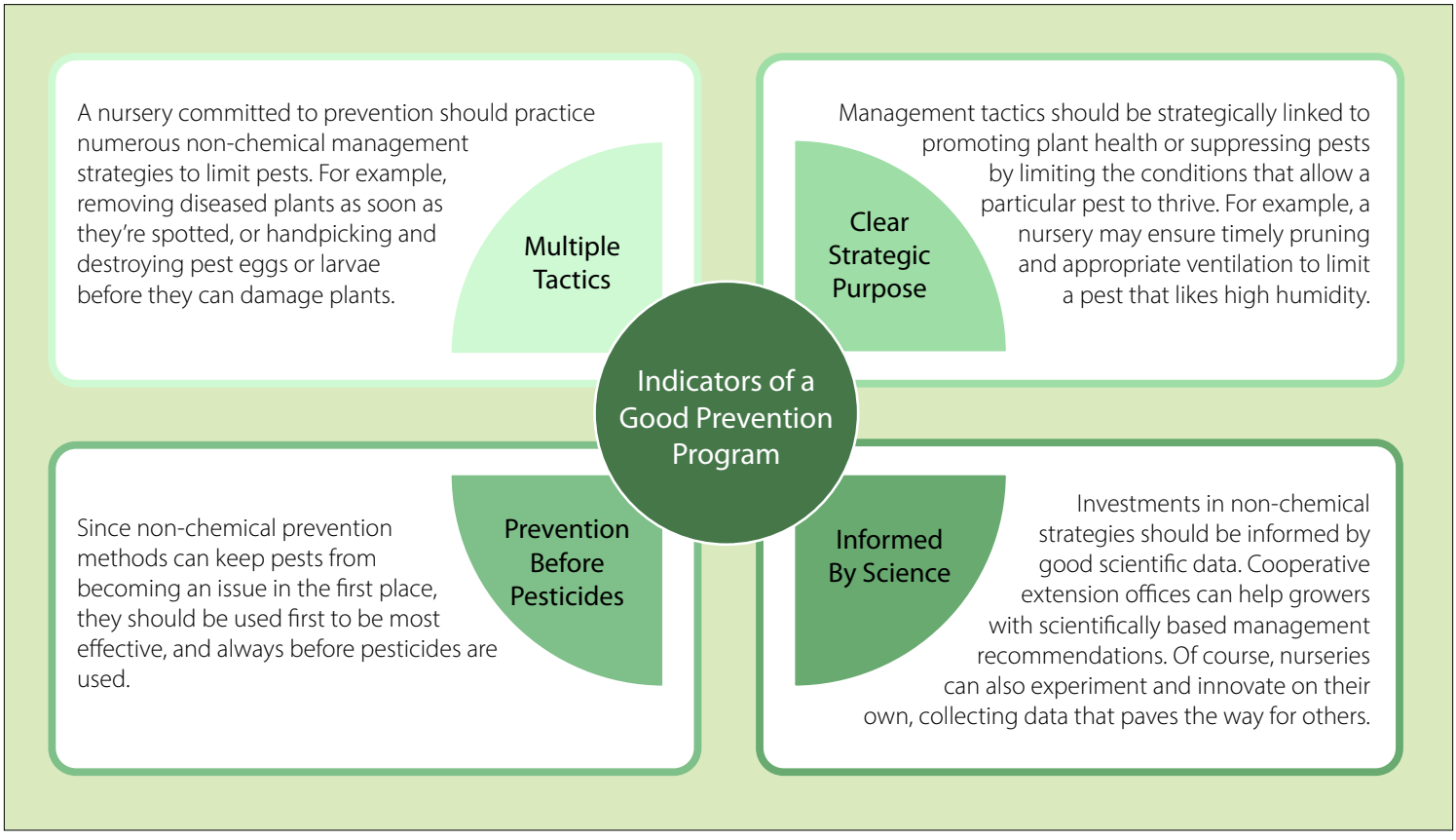
Adhering to time-tested non-chemical prevention methods is an essential first line of defense. Prevention techniques can stop pests before an outbreak occurs. The following are a few common preventative practices, but don't stop here—many more effective non-chemical options are available. Growers should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

- ☐ 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.



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)

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.

INSECTICIDE CLASS	ACTIVE INGREDIENT*
Neonicotinoids	Clothianidin
	Dinotefuran
	Imidacloprid
	Thiamethoxam
Butenolides	Flupyradifurone
Diamides	Cyantraniliprole

NOTES:

* 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).

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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