

Pollinators & Plants — Updates from Recent Research



The green industry doesn't need to be pollinator experts — we just need to be the experts about their food, forage and habitats.



BY LAUREN SNYDER

Research on pollinator interactions with floriculture and nursery crops is ongoing. Until final and conclusive answers are reached (if ever), a grower's primary responsibility is to remain informed and take practical steps to mitigate any potential harm growing practices can have on pollinator health. In this instance, a doctor's "do no harm" promise to patients applies just as much to the relationship between growers and pollinators.

Recent Research and Preliminary Results

The Horticultural Research Institute (HRI) has been at the forefront when it comes to funding research and developing sound science behind pollinator decline and our industry's impact. It — along with AmericanHort — aims to directly fund and leverage "research to refine science-based guidance on horticultural practices and [protect] bee and pollinator health."

"Understanding and enhancing horticulture's unique role in supporting pollinator health remain important to support pollinator populations. This will give growers the information necessary to develop production techniques that reduce harmful pesticides on these specific cultivars that bees prefer most.

Neonicotinoids: Research done to assess the presence of neonicotinoids in nectar and pollen was done by Richard S. Cowles and Brian D. Eitzer from the Connecticut Agricultural Experiment Station. Preliminary data indicates that *foliar sprays* of dinotefuran, imidacloprid and thiamethoxam had residues in pollen that declined more quickly than residues from *drench* applications. They also found that application rates played a significant role in residues; higher drench rates had longer-term residues than moderate and low rates.

Best Management Practices: This research, conducted by David Smitley at Michigan State University, sought to develop scientifically based BMPs for greenhouse-grown crops with the ultimate goal of producing plants that are safe for pollinators after they're purchased and planted. Smitley did this by looking at the impact of imidacloprid residues in flowers from drenches and foliar sprays. Petunia, verbena, geranium, marigold, portulaca, salvia and begonia species underwent the tests, which showed significant variances in residue concentration. Where petunias had high residues, marigold and geranium residues were nonexistent.





One part of the experiment involved caging bumblebees with treated and untreated plants. Bumblebee populations declined faster when they were caged with plants that had been drenched with imidacloprid — as compared to bumblebees caged with untreated plants. The bottom line here is that until more research is done, growers must take significant caution with imidacloprid drenches on pollinator-attractive plants.

However, foliar applications of imidacloprid done more than three weeks in advance of shipping “resulted in very low levels of imidacloprid” in a study done looking at residue levels. In this instance, those levels were unlikely to have an impact on pollinators.

Smitley's next steps are to continue understanding how systemic insecticides move through the plant based on plant variety and application rate. He also hopes to study the amount of imidacloprid found in nectar, pollen, flower sepals and petals.

Landscape Plant Selection & Planning: Where Smitley's research focused on annuals,

Dan Potter and PhD student Bernadette Mach did research on landscape shrubs, their attractiveness to pollinators, and the effects of neonicotinoid insecticides. Potter and Mach certainly wasted no time, having assessed over 70 types of woody ornamentals across 300 sites during three growing seasons. Throughout the course of their research — and their ultimate interaction with 16,000 bees — they have discovered quite a bit about bee preferences.

They found that different types of bees have different (and unique!) plant preferences and that both native and non-native cultivars are preferred. They also confirmed that bees in urban environments are adept at using multiple food sources throughout the growing season, which makes sense considering that shrubs typically bloom for a short window. And, to some relief, bees seem to prefer the shrubs that rarely require pest management, whereas the more pest-prone plants like azaleas, boxwoods and hybrid tea roses don't appear to be attractive to bees.

Their research produced a list of top woody ornamentals for both honeybees and bumblebees. For honeybees, their top three plants of choice are Cornelian cherry (*Cornus mas*), Higan cherry (*Prunus subhirtella* 'Autumnalis'), and Foster's holly (*Ilex x attenuata*). Bumblebees on the other hand have a palate for Red horsechestnut (*Aesculus x carnea*), American yellowwood (*Cladastris kentukea*) and False indigo (*Amorpha fruticosa*).

Take Action

Staying informed of the latest research regarding pollinators and their interaction with plants is crucial and a responsibility not to be taken lightly. The studies summarized above can all be found on the HRI website (<http://hriresearch.org>). HRI's Grow Wise Be Smart (www.growwise.org) campaign is also a valuable resource and has materials such as the recently released “Best Management Practices (BMPs) for Bee Health in the Horticulture Industry” (see sidebar). Other valuable resources are the Pollinator Partnership website (www.pollinator.org) and the USDA Natural

Resources Conservation Service website (www.nrcs.usda.gov).

Taking action on new knowledge and adjusting growing practices is another key component of a grower's responsibility. With knowledge that comes from studies like the ones above, it's easier to be practical in adjusting growing practices and not need to take a shotgun, “guess and see” approach, which can be ineffective and inefficient.

Next, get involved. Donating to organizations like HRI is certainly valuable, but also participating in and promoting programs like the Million Pollinator Garden Challenge (www.millionpollinatorgardens.org) takes things a step further. Its goal is to register a million gardens, both private and public, that support pollinators.

Whether you establish a pollinator garden onsite at your facility, give your employees a starter package of pollinator-friendly plants to establish their own, or sponsor one for your community, this is not only an opportunity to be actively involved, but it's also a great marketing angle for your company.

Finally, *communicate* what you're doing to protect pollinators through your website, in newsletters or on social media. It's both important to market your company as taking an active role in protecting pollinators and also to equip your customers with an awareness of what you've done so that it in turn can reach the end consumer.

When it comes to pollinators, the industry has to equip itself with the scientific knowledge to make smart decisions and communicate those decisions. Growers stand to be the leaders in this and to be the ones that shape our industry's influence on pollinators and their roles in the environment.

To learn more about HRI and its funded research, please visit <http://hriresearch.org> or contact Jennifer Gray at jenniferg@americanhort.org. ■

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LEARN MORE ABOUT POLLINATOR BMPS

The Horticulture Research Institute (HRI) has released a new publication, “Best Management Practices (BMPs) for Bee Health in the Horticultural Industry,” to help provide growers with more information and recommendations on pollinator issues.

The online publication is one of the components of HRI's Grow Wise, Bee Smart initiative. In the publication, growers will find best management practices for their businesses that help promote bee health. HRI will provide updates to the publication as additional research regarding bee and pollinator health is released.

HRI launched its Grow Wise, Bee Smart initiative to fund research to inform best practices, educate and empower horticulture professionals with stewardship practices and communicate with consumers.

You can learn more about the initiative at www.growwise.org.

