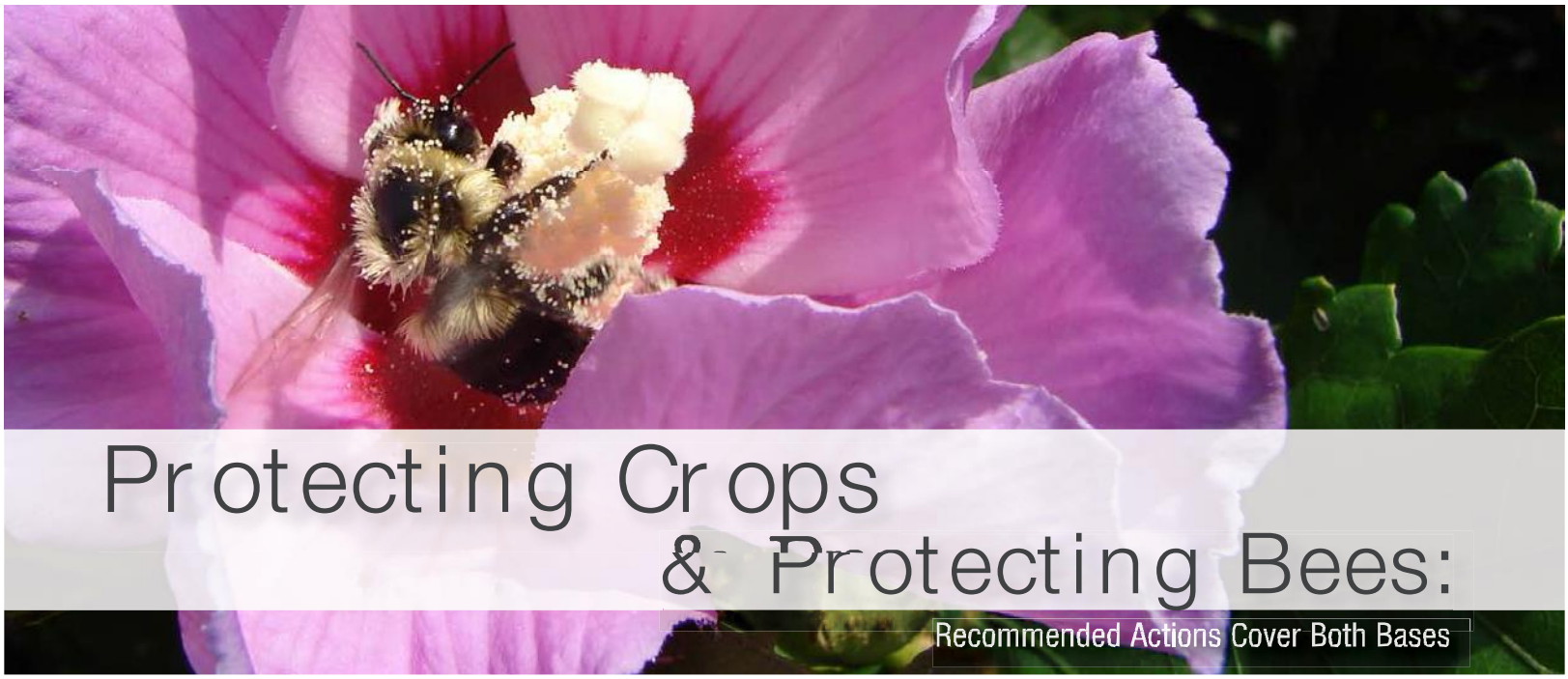

Protecting Crops & Protecting Bees:

Recommended Actions Cover Both Bases

By Tami Van Gaal, GGSPro Technical Specialist

About a year ago, GGSPro initiated work on a Bee Safety project. Our goal was simple: to provide growers with the tools and information needed to make wise pesticide choices and demonstrate good stewardship. Our initial work focused on developing an easy-to-use system indicating products that should be given special attention with respect to bee toxicity and identifying best practices to recommend to growers. The GGSPro Bee Safety Codes were born from this effort. The Codes quickly and clearly indicate toxicity risk and exposure routes, identifying chemicals with special application concerns.

We understood bee safety to be an important issue and recognized that our industry had a role to play. We also expected the growing public interest to impact our industry. However, we could not have predicted what was to come. The issue of bee health has exploded in both traditional and social media outlets, and has become a dominant news story. Science-based experts agree that a complicated interaction of factors impact bee health. These experts also agree that pesticide exposure is not the most important factor driving the worrisome decline in bee health. Within the media, however, the focus quickly turned to pesticide use, specifically the role of neonicotinoids in bee health.

Essentially, the public debate has landed well ahead of the science and tends to ignore other important factors, including parasites (such as Varroa mites, tracheal mites and phorid flies), diseases (such as Nosema and assorted viruses), loss of suitable forage and other hive management issues (such as long-distance transport and hive nutrition). The end result has been a reactive ripple across our industry, reaching from retailers to regulators. Necessary attention has been given to strategies to meet consumer demand, including the decision by some retailers and garden centers to avoid neonic use. Also, significant effort has been focused on influencing the legislative and regulatory communities. The growers find themselves in the middle of the controversy with surprisingly little practical guidance from the most vocal parties.

Most discussions regarding bee health and pesticide use follow the same pattern. First, the economic and environmental importance of both managed and native bees are explained. Without a doubt, pollinators are critically important to both our food supply and ecosystem health. The data speaks for itself on this matter: Bees pollinate more than 130 food crops, contribute to over $15 billion in annual crop value and impact 33% of the food we eat. Pollinators, including bees, also impact ecosystem function at the most basic level, playing a critical role in reproduction of most flowering plants and, therefore, have a profound impact on the foundation of the food web.

Next, changes in pollinator populations are identified and theories are presented to explain the decreases. In a nutshell: Managed hive counts have decreased over recent decades in the U.S. due to changing demographics, managed colony losses in the U.S. appear to be higher than average in recent years and native bee populations have been negatively impacted by human activity. For underlying causes, it's understood that habitat loss and loss of forage have direct impact on both managed and native bee populations. It is also recognized that some pesticides present a toxicity risk to bees and these pesticides must be used judiciously and wisely. Real-world experiences are shared, many questions are posed, many opinions are offered and much discussion occurs. Nearly always absent from these conversations: clear, easy-to-understand action plans for growers wishing to simply do the right thing while they continue producing quality crops for their customers. GGSPro has been actively discussing bee-friendly pesticide use for nearly a year. We continue to watch both the mainstream media and the scientific literature for new information. We research this information, evaluate it and adjust our recommendations as needed. Based on our current understanding of the science and social factors at play, we are recommending the following bee-friendly practices:

1. Avoid use of pesticide sprays on outdoor crops while bees are in flight in and near crops.

Restricting applications of all foliar pesticide applications on blooming plants to early morning or as dusk approaches in the evening greatly reduces direct exposure to bees and demonstrates an awareness and respect for bee health. When weather conditions allow, restricting treatments to times when the temperature is below 50˚F also

reduces the chances of direct contact with bees. These practices are also consistent with existing protocols to reduce the chances of phytotoxicity for most pesticides.

2. Avoid use of pesticides with higher toxicity risk in landscapes.
Unless required for control of highly noxious pests or to protect human health, we strongly discourage landscape-based use of products presenting a moderate or greater risk of residual toxicity to bees (Orange and Red Bee Codes with exposure codes 2 or 3). We also strongly discourage landscape-based use of products with direct toxicity risk during times when bees are active, generally from sunrise to early evening (Orange and Red Bee Codes with exposure codes 1 or 3). Note that native bees tend to be ground dwelling, so applications to the soil may impact bees. Always avoid pesticide application to flowering weeds.

3. Use systemic products with higher toxicity risk in a manner that limits potential exposure to bees.
Systemic products move into plant tissue, and the more water-soluble products may move into pollen and nectar. The degree of exposure via pollen and nectar is not well understood. For this reason, we recommend that application of systemic products with Orange or Red Bee Codes be timed so that the exposure risk period will be exhausted prior to bees having access to flowering plants. Water solubility varies greatly by product, so generalizations should be avoided. GGSPro can help you understand the relative water solubility of systemic products with Orange and Red Bee Codes and help you plan bee-friendly drench and spray applications.

Note: When drenches are applied properly and early in production, we do not expect chemicals to migrate from the potting media into surrounding garden soil or potting media in planters. Chemistry will have either been taken up by the plant or will be tightly bound to the media and unavailable to neighboring plants.

4. Select products with no or limited residual exposure risk for application to maturing and open flowers that may be visited by bees.
To avoid a residual exposure risk, the use of products with moderate to high residual toxicity (Orange and Red Bee Codes with exposure codes 2 or 3) should be avoided on open flowers and buds in outdoor production or on crops that will soon be outside. While specific data regarding the risk periods are not published, GGSPro can recommend bee-friendly application timelines and provide application strategies to greatly reduce exposure risk.

5. Implement strong IPM practices for early and effective control.
Early scouting and quick, effective treatment reduces pesticide use by preventing population explosions and come-from-behind treatments. Several biological control agents (BCAs) provide strong control of insect and mite pests, and can greatly reduce reliance on chemical use. Employ these strategies when appropriate.

6. Employ practices to reduce drift.
Calibrate your equipment and use appropriate nozzles.

7. Provide a 48-hour notification of intent to spray to neighboring beekeepers.

8. Recognize the position of retailers and support their business choices.
Retailers stay in business by providing the products their customers want. If you are asked to avoid products with residual toxicity to bees, respect this request. Contact GGSPro for assistance in selecting alternate products.

9. Use refined marketing strategies and leave your options open.
If you choose to promote your bee-friendly policies, we encourage you to promote your commitment in a positive manner and avoid highlighting a single class of chemicals, such as the neonicotinoids. Remember that neonics differ in their systemic behavior and residual toxicity: not all neonics present the same bee hazards. For example, acetamiprid (TriStar) does not present a systemic or residual toxicity risk. Also, remember that neonics are very important tools for control of some noxious pests and can be used in a manner safe for bees. Avoid feeding the frenzy and demonizing an important chemical class. Do promote wise use of all chemicals that present a hazard to bees.

10. Support AmericanHort and their efforts to position our industry in a more positive light.
AmericanHort and SAF are working to develop a voluntary bee-friendly stewardship program with a national marketing campaign. These organizations are also working to support sound, scientific research to answer the questions most important to our industry. Your support of this effort, both by adoption and promotion of the pending stewardship program and through immediate financial support, will help our industry and your business. Make a donation to support this work at http://americanhort.org/.

The concerns about bee health are legitimate and deserve great attention. By employing some simple strategies, we can continue to produce high-quality crops while promoting strong stewardship and demonstrating our concern for the long-term health of pollinators through action.