

*“Intentions always look better on paper than in reality.”*

— Angie Thomas

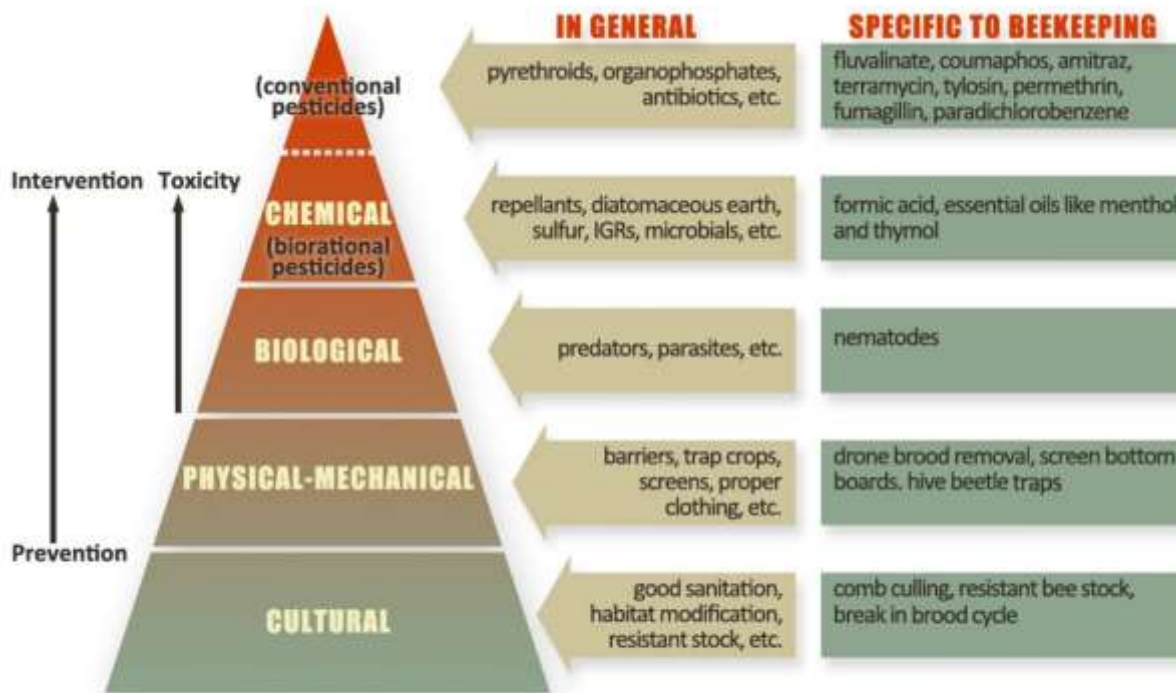
IPM sounds like the kind of thing that the military hopes the other side doesn't have... “Incredibly Pulverizing Missiles”? But for us beekeepers, the initials stand for Integrated Pest Management. The concept is something that our friends at the NCDA&CS Pesticide Division spend a lot of time and energy trying to get people to understand and apply, but in my travels, I find that few people do either.

I love the IPM approach. Fundamentally, it says that to achieve a desired result in the best way, someone should first understand the problem, then assess the severity of it, and then consider all options for dealing with it and choose tactics that are appropriate for the

situation. This is followed by assessing how well the chosen approach worked and responding accordingly. Many issues can be nipped in the bud with simple solutions before they get out of hand. That typically is ideal. But we must not be so naive as to believe that difficult problems, especially ones that fatally escalate when left unattended, can be handled lightly. It comes down to the old adage, don't use an elephant gun to kill a mosquito, but equally important is don't use a flyswatter to try to kill an elephant.

The underlying philosophy can be applied to all sorts of adversarial interactions, including dealing with difficult people. If a waiter snubs us at a restaurant, there are many options. For example:

- we can ignore it
- we can laugh it off
- we can leave a lousy tip



# Pyramid of IPM Tactics

Source: based on <https://honeybeehealthcoalition.org/wp-content/uploads/2017/04/Bee-Club-Tools-for-Varroa-Management-Presentation-May-2019.pptx>, page 21.

- we can yell and scream
- we can try to get the person fired from their job
- we can wait in the parking lot until closing time, then run them over with our car
- we can investigate to see if the waiter suffers from a psychological or physical issue that is making them behave erratically, perhaps something that we can assist with

What is the best course of action? It all depends on the specific situation as well as what kind of person we are. Hopefully, though, we won't react to a trivial infraction with a full-bore counter-assault, nor will we deal with a psycho-maniacal attack by ignoring it and allowing it to continue to damage us to the point of death.

*Does this philosophy sound reasonable?* I believe it does. And if it makes sense with respect to everyday life, why shouldn't we apply it to our beekeeping hobby?

With the basic philosophy in place, IPM categorizes response options in a pyramidal fashion, with the "softest" approaches (for lack of a better word) at the base and the "harshes" approaches at the top. "Soft" and "harsh" are relative and subjective, depending on what aspect of a response is being considered, and aren't the best adjectives to use here. But when we look at the options the idea should become clear.

At the bottom of the IPM pyramid are cultural tactics. These are things that help prevent pests from getting a foothold in the first place. With respect to Varroa mite management, cultural tactics include things like keeping honey bees that are from hygienic stock and introducing a break in the brood cycle. They may be things that we incorporate into our everyday practices as preventive

measures, hopefully with little chance of any unintended adverse effects.

The next step up is physical/mechanical tactics. Examples include screened bottom boards and drone brood removal for Varroa management, and beetle traps for Small Hive Beetle management. These are things that involve intervention with some sort of tool, piece of equipment or manual interaction.

Next are biological controls. We don't have any of these for Varroa mites but an example for Small Hive Beetles would be applying nematodes to the soil to eat their pupae.

*Bacillus thuringiensis* subspecies *aizawai* strain ABTS-1857 (sold as B402 Certan) is a biological control for Wax Moths in stored comb (see "[A New Old Tool to Fight Wax Moths](#)").

Next are chemical treatments, which are usually divided into biorational products (things that are "natural" or naturally-derived), sometimes referred to as "soft chemicals", and synthetic-based substances,<sup>1</sup> sometimes called "hard chemicals". For fighting Varroa mites, the most-used biorationals include formic acid, oxalic acid and thymol compounds. Formic and oxalic acids occur naturally in honey while thymol is the signature substance found in thyme. Formic and oxalic acids are expressly permitted on the USDA Organic Program's [National List of Allowed and Prohibited Substances](#).

There are three synthetic-based products that are commercially available for Varroa mites: Apistan, CheckMite and ApiVar. When initially introduced, each was extremely effective and they represented "the big guns" for wiping out mites. It isn't far-fetched to say that they saved the American beekeeping industry when Varroa mites first showed up in the late 1980s. But especially with the first two products (Apistan and CheckMite), mites develop resistance over time, the product accumulates in the wax and there can be long-

<sup>1</sup> The term "synthetic" is ambiguous and can be extremely misleading. For example, the USDA Organic Program's "National List of Allowed and Prohibited Substances" includes glucose in the

synthetic category. Presumably it means "manufactured" in the context of that list. For the purposes of this article, "synthetic" means any product that doesn't exist as a natural substance.

term adverse impacts on our honey bees. These are some of the reasons that they are at the top of the pyramid, a “last resort” option. We shouldn’t ignore the fact that they exist but we shouldn’t put them into our everyday treatment regimen.

Considered together, the IPM pyramid is the toolbox of options for controlling a particular pest. It is analogous to a toolbox for a woodworker, which may contain a ruler, pocketknife, chisel, saw, hammer, nails, screwdriver, screws, bottle of glue... all effective tools when used in the right way for the right situation. There are tools that we may never use (I have a lathe in my workshop that hasn’t been turned on in 20 years) and tools that we use on every project. And just as we wouldn’t use a bottle of glue to shorten a board, application of the IPM concept requires some degree of knowledge and wisdom about our goals and the capability of our tools. There are great-sounding approaches that unfortunately don’t work and high-impact options that have side effects worse than the original problem. How is a beekeeper to understand all of that and make the right choices?

Step one is to get reputable advice from sources that are expert on these topics. For treatment of Varroa mites, that is easy. The [Honey Bee Health Coalition](#), a consortium of top university researchers, government regulators, conservation groups and others assembles the very best advice on the topic and periodically updates their free, downloadable [guide](#). This is the gold standard to which all advice from your know-it-all buddies, self-proclaimed internet experts, save-the-bees activists and even sane-sounding, helpful folks must be compared. Any “facts” or advice that isn’t basically consistent with what the HBHC publishes isn’t to be relied upon at face value.

Step two is to monitor infestations to determine the extent of a problem that exists. If someone is philosophically averse to applying any sort of treatment for a problem and they don’t have that problem, then hurray! There is no conflict. But refusing to acknowledge that a problem exists, especially with something like

Varroa infestations, is not consistent with the common-sense IPM philosophy.

Based on what we’ve learned about the pest and the options for dealing with it, and discovering the extent of our specific problem, step three is to correctly apply an appropriate remedy that aligns the severity of the threat with the effectiveness of the action.

Next, it is critical to again assess the infestation to determine whether the level of control we are applying is working. If it isn’t, we must step up our game, either by introducing a different method at the same pyramid level (or doubling up on methods) or progressing to the next level. The point is simple: if what we are doing isn’t working, we must try another approach. *Does that sound rational?* The corollary is, if what we are doing is working, hurray! But proceeding blindly with an approach without ever truly knowing the outcome is not a strategy that can lead to success.

Along those same lines, saying, “This is the best approach because it works for somebody else” fails to connect with the IPM philosophy. Saying, “I’ll try this approach because it works for someone else” is one thing, but to interpolate their results onto your situation without monitoring the actual results in your own backyard is a recipe for disaster.

Integrated Pest Management isn’t a specific approach or dogmatic treatment philosophy. It is plain, common sense. It doesn’t dictate any particular pest control products or techniques, only that whatever is employed does in fact control the pest.

It is important to note that if, say, a goldfish keeper refuses to control the pests that afflict their goldfish, that’s a shame but the damage stops within that fish’s bowl. So, it is a personal decision with personal consequences. But honey bees fly. If a beekeeper refuses to control the pests in their colony, those pests get spread to neighboring apiaries (see “[Have You Been Bombed?](#)”). Efforts by neighboring beekeepers to effectively use bottom-level IPM pyramid methods to control pests are thwarted due to the high infestations that result from pest-

overflow from unmanaged or poorly-managed colonies. With that in mind, if someone has philosophical objections preventing them from adequately controlling pests such as Varroa mites, they should consider the advice in “[Maybe We Shouldn’t Keep Honey Bees After All](#)” and “[The Right Bees for You](#)”. Actions have consequences, and so does lack of action.

I haven’t kept honey bees for very long – only since 2005 – but in that time I have tried many of the approaches up and down the Varroa mite, Small Hive Beetle and Wax Moth IPM pyramids. When first starting out, I even took a shot at “letting the bees take care of themselves” (although I did so with Russian bees, which is a tactic on the bottom level of the Varroa pyramid). That little experiment soon led to honey bees with Deformed Wing Virus and Chronic Bee Paralysis Virus (causing Hairless Black Syndrome), both indisputable, visible evidence that my approach was going to quickly result in empty hives. Fortunately, I stepped up my game in time to save those colonies, and I am able to report that I have never had to purchase bees beyond my very first two packages.

Ironically, when I share my experiences with keeping honey bee colonies not only alive but healthy and productive, I am sometimes accused of being close-minded because I don’t embrace a “see-no-evil”, Pollyanna philosophy. If observation, experimentation, collaboration, seeking informed advice and learning from personal experience about what proves effective in my own backyard is close-minded, then I’ll plead guilty and keep on doing it. And for that matter, I’ll keep encouraging you to do the same. We can be close-minded together, for many successful years to come!

*Randall Austin is a NC Master Beekeeper who keeps a few honey bee hives in northern Orange County, NC. He can be reached at [s.randall.austin@gmail.com](mailto:s.randall.austin@gmail.com).*

*Note: All previous articles are archived at [https://baileybeesupply.com/educational\\_resources/](https://baileybeesupply.com/educational_resources/)  
Copyright 2023, no reproduction in whole or in part without permission of the author, except for noncommercial, educational purposes.*



Hear no evil, see no evil, speak no evil may (or may not) be a philosophy for inner peace, but it violates fundamental IPM methodology and it will, without a doubt, result in empty hives.

Photo: <https://stgregorychicago.org/2020/06/03/see-no-evil-hear-no-evil-is-evil>