National Honey Bee Day Interview with Elina Niño

Parreira: Each year, honey bees in the USA produce over $300 million worth of the delicious sugary substance called honey, and pollinate an additional $17 billion dollars in fruits, vegetables, and nuts like almonds. This is why we dedicate National Honey Bee Day to appreciating and learning about these important pollinators.

I’m Stephanie Parreira, reporting for the University of California Statewide Integrated Pest Management Program. For this National Honey Bee Day, I set out to learn about honey bee pests, and to learn how beekeepers use integrated pest management to keep them in check. To discuss this topic, I visited Dr. Elina Niño, apiculture extension specialist for the University of California Cooperative Extension.

Parreira: Dr. Niño, how are pests and diseases affecting California honey bees?

Niño: Unfortunately, poorly. There are a lot of pathogens and pests and parasites that bees have to deal with, [and] that means beekeepers have to deal with as well. In fact, when I first started my position here as an extension specialist at UC Davis, I asked beekeepers what is one of the things that they would like me to focus on, and about ninety-nine percent of them said Varroa mites. Varroa mites are a problem because they basically suck honey bee blood, or honey bee hemolymph, they transmit viruses, [and] they can suppress immune genes in developing and adult bees. So they can kill the colony, basically, if they’re not managed properly. We have seen in our own colonies that if we do not treat or manage Varroa mites, we know that we will lose that colony over winter. The cost of a full-strength colony is about one hundred fifty to one hundred eighty dollars, and in addition to the cost of a colony itself, we also have to take into account the cost that goes along with what the beekeepers could have gotten for that colony when they rent it out for pollination services, [and] of course the cost of honey production would have to be taken into account. And just to give you an idea, the cost of colony rental for almond production right now is about one hundred and eighty dollars, so that cost [of] colony loss can amount to a pretty high number.

On top of that, if you add any cost of treatment, for example again for Varroa mites, it can amount to about eight to ten dollars per colony. Some of the beekeepers have thousands of colonies—commercial beekeepers have thousands of colonies—so if you have to treat the colonies once or twice or three times during the year, that can add up very quickly.

Parreira: Is there anything that beekeepers can do to prevent Varroa mites and other pests from getting into their colonies?

Niño: There are some smaller things that beekeepers can do at specific times during the year. For example, during the spring time or fall time, there’s a lot of robbing going on, especially when there are no resources for the bees out there in “nature,” so to speak. [If the bees] need
food and they can’t find it in flowers, [they] will go take food resources from other weaker colonies. So one thing that beekeepers can do is first of all make sure that they’re keeping their colonies strong and healthy. They can also put robbing screens up so the robbing bees are not able to enter their colonies, or they can simply put entrance reducers on their colonies, which will allow the guards to be a little bit more efficient and more effective in preventing the robbing bees from coming in. Another thing that beekeepers can do is to keep their colonies isolated, as much as they can, from other colonies. That is less likely to be a possibility, because bees can travel three miles or even further, and they can pass that pest with them once they enter the new colonies. So that’s a little bit less likely to be an option for the beekeepers. But in terms of some other pests, such as small hive beetle, which also can be devastating and can devastate particularly honey frames, in that case [we advise beekeepers] always to keep their honey houses clean, to keep their apiaries clean, so not to leave frames out sitting in the open. Small hive beetles can smell the smell of colonies, the smell of honey, the smell of pollen, and they will actually come and infest a colony because they are attracted to the smell.

Parreira: And if beekeepers take all of these preventive measures, does that mean they won’t get any of these pests?

Niño: That is certainly not the case. We can give it our best shot to prevent [the] wide spread of pests, but it’s probably not going to [completely prevent] the spread of pests. So we do definitely advise beekeepers to first of all educate themselves, especially since there’s a lot of interest in beekeeping now that [we find] the bees—honey bees and other bees—to be in trouble [that] their populations are declining. There’s a lot of interest in beekeeping, so we always advise the novice beekeepers to educate themselves so they know how to deal with the pests properly.

We of course advise integrated pest management. One of the things we highly recommend is that the beekeepers regularly monitor their colonies for various pests. For example, for Varroa mites, there are monitoring options that the beekeepers can do to see what the level of infestation is in their colonies. Of course, if they do find Varroa mites, they should take immediate action to manage that Varroa mite population so it doesn’t get out of hand, [because] as we mentioned earlier, it can actually kill a colony.

We [also] recommend use of resistant bee stock, or hygienic bee stock. Those hygienic bees will remove Varroa mites and infested developing brood as well, thereby reducing the Varroa mite infestation and reducing the ability of Varroa mites to reproduce.

Another cultural method that’s easier to do for those who don’t have a lot of colonies is drone brood trapping. The Varroa mites prefer to reproduce on drones, which are the [male] honey bees, because they take a little bit longer to develop—a couple of days longer than the worker bees. So the Varroa will go into the developing drone brood frames, and once the honey bee adults—the workers—actually cap over or put that wax capping on the developing drones, they essentially trap the Varroa mites in there with them. So the beekeeper can then remove that
frame, freeze it for 24 to 48 hours [to kill] the Varroa mites, and then those frames can be
placed back in the colonies to repeat the cycle.

Parreira: And, what other options are available for beekeepers to manage Varroa?

Niño: Of course, we’re talking about integrated pest management, so in addition to some of
these cultural methods, we also have some of the chemical options—so, miticides that can be
used inside the colonies. And of course we always recommend rotating these miticides if you
do decide that you have to go that route.

Parreira: It sounds like honey bee pest management takes a lot of time and a lot of resources. Is
there anything that everyone can do to help with this problem, even if they don’t keep bees?

Niño: We definitely do have recommendations for those who are not necessarily wanting to be
beekeepers. The top recommendation we make for the general public is to plant pollinator-
supportive plants—so, those plants that will provide either protein or carbohydrate sources for
the bees. And not just honey bees, but other bees as well, and other pollinators. And we have a
wonderful resource, we have the Haagen Dazs Honey Bee Haven garden, at UC Davis. The
garden has over 250 pollinator-supportive plant species, and also if you can’t make it to the
garden itself, we have a great web site where you can find the plant species’ names. These
plants are also drought-tolerant, so they’re really wonderfully suited for California.

We also recommend, if you are interested in doing this, is to provide water sources for bees. A
lot of people will use their bird baths as also [a] water source for bees, although we also want
to remind everybody that if you do that, you need to put something in there that floats on top
of the water that the bees can actually land on while they’re drinking water, so they don’t
drown. And of course, the last thing is if you can avoid and reduce the use of pesticides in your
garden, that can greatly help bees. Or if you are applying pesticides, there is a great resource on
the UC IPM web site [called] the Bee Precaution Pesticide Ratings. You can go and look up the
pesticide that you’re interested in using, [and the resource] will tell you if it is bee-safe. And if it
is not, you can potentially look for another pesticide that might be safer for bees.

Parreira: What if we want to learn more? What resources do you recommend other people to
go to for more information about this?

Niño: If you are interested in beekeeping, we certainly offer the extension program here at UC
Davis. We offer classes [for] beginning beekeeping, in fact we have several classes lined up for
the month of August. And if you’re interested in more advanced topics, we also offer those. For
example, we have a full-day course on Varroa management strategies, [and] we have a very
popular queen rearing techniques short course that’s a weekend-long course. We also do
publish a quarterly newsletter, so you can look the newsletter up on the [El Nino Bee Lab] web
site. You can also sign up for the newsletter to actually receive it in your email four times a
year, so it’s not too overwhelming. We also just published, or [rather], will be publishing, a UC
ANR publication, which is Bees and Neighbor Coexistence: Best Management Practices and
Guidelines for Urban and Suburban Beekeeping. So there are obviously a lot of very helpful resources right here, through UC Cooperative Extension, UC ANR, and UC Davis.

**Parreira:** Honey bee pollination is essential to producing the food that we need to live, so let’s do our part to help honey bees better cope with their pests. Check out the resources provided in our National Honey Bee Day blog post to learn more about the actions you can take to keep honey bees healthy. Thank you for listening, and have a sweet National Honey Bee Day.