

Hopguard® II revisited

By Dr. Elina L. Nino, Extension Apiculturist, UC, Davis, reprinted from the current newsletter

Every time I talk to beekeepers here in CA, I hear, “Boy do I wish we had more options for treating Varroa”. Well, the good news is that this February, California has re-approved Section 18 emergency use of Hopguard® II. Eric Mussen has briefly written about this product in the past, but a couple of papers that came out last year have prompted me to revisit this topic. Hopguard® II is basically an “old” product developed by BetaTec Hop Products Inc (*developed in Washington state - Editor*) but it has an improved delivery system. The active ingredient is the Potassium salt of hop beta acids at 16% and yes, these are the same hops you would use for making beer.

Hopguard® II can be applied to both packages and colonies and since it can't reach the mites on brood, the suggested timing of the treatment is when there is minimal brood in the hive so the mites can't “hide”. It sounds to me like packaged bees might be an ideal time to treat. If your bees are already in a hive try to treat early in the season when the brood is just building up or late in the fall when brood starts tapering off (BUT don't wait too long as you don't want your colonies to succumb to Varroa).

2- or 3-lb packages should be treated by attaching 3 half strips inside a package so they hang from the top and should remain in the package (with bees, of course) for at least 48 hours. Hives need to be treated at a rate of 1 strip per 5 frames covered with bees and the treatment should only be applied in a BROOD CHAMBER. The strips are easy to apply. Just hang them over a frame in the middle of the brood box. If using 2 strips, the other strip should be placed on a neighboring frame but 4 inches away from the first one.

Now just a couple of cautionary notes. Even though the product is safe to use during nectar flow, DO NOT apply it in the honey supers. And please don't be tempted to use honey or wax that is in the brood chamber! If the bees do not remove strips after 30 days, you should remove them from the hives. Hopguard® II can be used up to 3 times per year but it shouldn't exceed a total of 6 strips per year per colony (including package and hive application). You need to wear chemical-resistant gloves when you're working with the strips and since the material is pretty sticky you'd probably want to wear them anyway.

So how do all these recommendations fare in the real world? A study by DeGrandi-Hoffman and colleagues (2014) investigated the effect of Hopguard® on Varroa counts in commercial colonies established from packages or splits. They used a mathematical model to determine the timing of Hopguard® applications and at the end they compared Varroa counts predicted by the model and what they actually found.

To show the timing of the applications I thought it would be best to do this in a table, so here you go:

Tables from/based on DeGrandi-Hoffman et al. 2014

Application times to colonies started from packages or splits

Packages

Group	Package	22-Jun	4-Aug	11-Oct
1	X	X		
2	X	X	X	X
3	X		X	X
4	X			
5 (no-treatment control)				

Splits

Group	April	12-Sep	1 wk post 12-Sept	2 wks post 12-Sept
1A	X	X		
1B	X	X	X	X
2A (control)				
2B (control)		X	X	X

All of the mite counts were done with a sugar-shake method and reported as # mites/100 bees. For packaged bees, the final mite counts were done after the October treatment and significantly lower mite counts were recorded for groups 2 and 3. For colonies made from splits, the lowest mite counts in November were recorded in groups 1B and 2B.

Interestingly, the model predicted a much more effective mite knockdown by the fall than what was actually seen in the field. The authors hypothesize that these difference might have been due to various other factors not taken into account by the model or various model parameters not following what was recorded in the literature, underestimation of initial mite population numbers, and/or a suboptimal mite removal during sugar-shakes.

So it seems that the most effective mite knock-down was in colonies that received 3 or 4 treatments during the year and particularly important were the late season applications. I do want to remind you that the California regulation for Hopguard® II states that no more than 6 strips per colony per year may be used. Because of this you might want to stick with one initial application earlier in the season and two later in the season if starting from packages, or, if you are splitting your colonies, you should be able to get away with 3 consecutive applications towards the tail end of the season, although I would have liked to see the authors take another mite count the following spring and record colony mortality.

The results of this paper also highlight the importance of using the product when there is no or little brood or for 3 consecutive weeks to cover the entire brood cycle. Drift between colonies might play a role in increasing mite numbers in a particular hive. And while you can't control what your neighbor does, you should make sure you treat all of your colonies that need the treatment.

Another word of caution -- you don't want to wait until your mite populations absolutely explode in the hives in order to treat. A possibility would be to follow an IPM approach by applying a different miticide around Hopguard® II or, if you have fewer colonies, try utilizing physical or mechanical control such as use of screened bottom boards, drone comb removal or creating a break in brood cycle by caging the queen or splitting your colonies. Going with Varroa resistant/tolerant honey bee stock is yet another possibility so think about it when you're purchasing your next batch of queens.

The last thing I wanted to mention is a study by Vandervalk and colleagues (2014) that found

Hopguard® II to be ineffective for varroa mite control for hives in western Canada. It is important to note that the studies used a markedly different treatment schedule which could have been an important factor leading to differences in the results. Valdervalk et al. did a single application in the fall and three consecutive applications in the spring. the opposite of DeGrandi-Hoffman et al. They also applied Hopguard® when brood was present in the spring but did do three consecutive treatments at this time. I would be very curious to see what would have happened if the application methods followed those of DeGrandi-Hoffman et al. which would tell us if the differences might have been due to environmental conditions that the hives were exposed to.

If you would like to learn more about this product go to <http://www.betatechoproducts.com/products/varroa-mite-control.php> or if you'd like to see a video of the application process, see <https://www.youtube.com/watch?v=T2y4rndPhlo>