

Powder Sugaring Bees – Does it work?

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A study shows that dusting bees with powdered sugar does not reduce varroa levels but others claim that it helps to control the mites

USING POWDERED sugar (PS) for varroa mite control has been recommended as an IPM tool – both to knock mites off workers captured in a jar to monitor mite levels and also in entire colonies as a way to slow mite build-up in the colonies themselves.

Monitoring mite numbers with PS is an relatively easy and helpful tool (see the tutorial on the MAAREC web site, www.MAAREC.psu.edu), but a new study suggests adding powdered sugar to a colony to control mites (sometimes called the Dowda method) might not be providing the perceived benefit. A 12-month study of powder-sugaring bees every other week was unable to document an overall mite reduction in bee colonies!

THE STUDY

The new study conducted in Florida by Amanda & James Ellis (University of Florida) with Jerry Hayes of the Florida Department of Apiary Inspection, compared mite numbers, adult bee numbers and brood area of colonies treated with PS for mite control with untreated controls. Colonies were dusted every other week for 11 months with 120 g of powdered sugar.

The study found no differences in adult bee populations or amount of brood between treated and control colonies but, although there was significant initial (24 hour) mite drop following dusting, no differences were seen between

Adding powder sugar to a 300-bee sample in a Mason jar



Shaking bees from the frame into a container to get a sample for mite monitoring

numbers of mites, numbers of mites prorated to adult bee numbers and there were no differences in mite numbers per capped brood cells in treated versus untreated colonies.

THE CONCLUSION

The study concluded: *'Dusting colonies with powdered sugar did not significantly affect colony strength or mite populations ... we did not find this method of dusting colonies with powdered sugar to effectively control varroa mites.'*

Does this mean PS should not be used in whole-colony dustings?

In his monthly Q&A column in the October 2009 *American Bee Journal*, Jerry Hayes, one of the authors of the Florida study, answered a letter from Janet Brisson of California on whether PS works or not as follows:

'Yes, research results showed that varroa was not significantly controlled by dusting with PS. Within the parameters of the research, PS didn't work great. But that does not mean that if the research trial were re-structured to treat more often or in a different way that results would not be different ... research shows it doesn't work long term. But, in real world situations it does. What to do? I'd treat with PS until research catches up with reality.'

A sample of 300 bees with powder sugar added to monitor mite levels



Shaking out the mites for the count



EFFECTIVE CONTROL

Many beekeepers (including Tom Dowda of Florida) who are dusting whole colonies with PS believe, however, that it is an effective control method. In nine years of surveying backyard beekeepers in the mid-Atlantic states, I found a growing number of beekeepers using PS for mite control while over 50% of beekeepers who indicated they were monitoring mite levels prefer to use the PS roll method to determine mite levels versus sticky boards or other methods.

In a recent survey of 100 Oregon backyarders (who filled out a survey form during April local association meetings), 65% of those who had no over-winter losses indicated they used powdered sugar as a control scheme in contrast to 38.5% of beekeepers who did have winter loss (57 of the 100 had a loss; 43 had no loss). Overall colony loss levels were similar for Oregon (25.8%) and Mid-Atlantic beekeepers (24 %).

POWDERED SUGAR SUCCESS

Morris Ostofsky of Eugene, Oregon, is one backyard beekeeper who feels PS is effective. He shared with me his success using PS:

'I have successfully used PS to control mites. To give you an example of the efficacy of the PS treatment here are the results of my treatment of one of my hives, # 9 - 6, this year (see table). This hive has two full-depth brood boxes.

'Please note that I would NOT normally treat this often; however, it was late in the season and I wanted to get the mite count down before fall. I know this was awfully invasive; however, I felt that the alternatives were worse. I have used this strategy to reduce mite loads in other problems hives this year and in previous years. The fact that I did not lose any hives last winter and had used powdered sugar to reduce mite counts in fall is an indication that dusting is effective.'

IMPROVED MITE CONTROL?

Whether targeted, short-time use of PS in spring or fall or using a different method of applying the powdered sugar, such as the newly available powder sugar duster (a converted pesticide applicator from China), modifies the

conditions sufficiently to improve overall mite control is unknown.

The initial report of mite control using powder sugar (by Nick Aliano in his PhD studies with Marion Ellis at the University of Nebraska) utilized the labor-intensive method of shaking adult bees off their comb and powdering them in a shaker box. Up to 35% of mites fall off the adults when the shaking heats the adult bees in the shaker box (and in monitoring a sample mite numbers of 300 adults in a glass jar, it is important that the bees heat up the jar interior to get an accurate mite estimate).

TRIGGER

Certainly an initial count of 200 mites in a 24-hour drop (as Morris found) should trigger a decision to 'do something' (50 or more mites is the widely accepted threshold number from US and European studies). Morris and other beekeepers have demonstrated that PS can, at least in some instances, reduce the number of mites on adults to a more 'reasonable' load.

It would seem reasonable that beekeepers using PS should continue to do so – and continue to document and report PS effectiveness.

FURTHER READING

Read results and parameters of the Florida study in the 2009 *Journal of Apicultural Research & Bee World*,: Vol 48(#1), 72–76 .

The University of Nebraska study is available in: *Journal of Apicultural Research*, Vol 44(#2), 54–57.

Date	Action/Result
8/27	200 mites 24-hour drop using sticky board
8/28	PS dusted
8/31	144 mites on 24-hour sticky board
9/3 & 9/7	PS dusted
9/10	48 mites on 24-hour sticky board
9/11 & 9/15	PS dusted
9/20	4 mites on 24-hour sticky board