

Colony Collapse Disorder and Israeli Acute Paralysis Virus

A recent publication in Science established a link between a new virus, Israeli Acute Paralysis virus (IAPV), and CCD colonies. Of those colonies that suffered from CCD, all had IAPV present while healthy colonies did not have IAPV. Additionally, the research found that IAPV was present in bees imported from Australia and in royal jelly from China. Operations with CCD and sampled in the study had either imported Australian bees directly or had been closely associated with colonies that had Australian bees. We also know that IAPV has been previously found in Israel, suggesting that this virus maybe more widely spread globally. No one knows where its origins are at this point in time.

Does this prove that IAPV causes CCD? No, what this article and research to date points to is that IAPV could be involved in CCD and more work is needed to prove or disprove this idea. We can conclude, however, IAPV appears to be a very good marker for CCD and its detection may aide in defining CCD.

So where did the IAPV in the U.S. come from? It is not clear at this point but certainly Australian package bees are a likely source. Additional sampling in the U.S. and Australia is needed to be certain. We have begun discussions with Animal Plant Health Inspection Service (APHIS) and Australia with our concerns about package bees. Contacts have been made in Australia for additional samples and we are seeking the help of the Apiary Inspectors of America to gather additional samples here in the U.S. Samples are needed from colonies that appear to be suffering from CCD as well as samples from colonies that were established from Australian packages this past year.

What if I have Australian package bees in my beekeeping operation, what should I do? *The recommendations for dealing with CCD remain the same (see MAAREC website);* 1) keep Varroa under control, 2) treat for Nosema if present, 3) do not re-use equipment from dead hives.

What else can I do now to further protect my bees from decline? We still don't know all the factors involved in CCD but there are no treatments for viruses; your best defense is a healthy well fed colony.

Are we sure if IAPV is causing CCD? No, we believe it is a marker and maybe involved in CCD but may be working in conjunction with other stressors like Varroa, pesticides, or poor nutrition.

Why would IAPV not be causing problems in Australia? At least two explanations are plausible, Australia does not have Varroa to vector and activate IAPV and it may have co-adapted to bees stock in Australia. If the virus has adapted to Australian stock then we may want to look at Australian bees as part of our breeding programs. Along this same line, a research group in Israel believes that some bees in Israel have incorporated part of the DNA of the virus into their bee DNA and this DNA incorporation is offering

resistance to the colony. IAPV has been linked to some colony losses in Israel. While the DNA incorporation idea is novel and somewhat controversial, it does offer hope as a means of combating IAPV or other virus problems. We do believe that breeding bees for increased resistance to varroa and pathogens such as IAPV is an answer.

How can we maintain strong colonies? Do the things you know how to do; reduce Varroa, treat for Nosema if needed, and feed when needed. If IAPV is causing a problem with bees in the U.S. then strong colonies are our best defense

Efforts continue to try and understand the key components involved in CCD. Currently we are initiating experiments to try to determine if indeed IAPV is a causal agent in CCD. We will be exposing healthy, IAPV-free colonies to IAPV in conjunction with other pathogens, pesticides, or nutritional stress to see if we can get the colonies to develop CCD symptoms and collapse. Likewise, we are trying to determine methods that will work for treating equipment from dead out colonies. Others in the working team are asking about many other aspects, such as pesticides, etc. In collaboration with all, we hope to be able to answer many questions concerning CCD and bee health and deliver methods for mediation or prevention of the problems in bee health.