

Recent Developments in CCD

Has the Cause of Colony Collapse Disorder Been Discovered?

A recent paper published in the journal *Science* in September, 2007ⁱ has identified a virus that may be involved in Colony Collapse Disorder. The study used molecular techniques to characterise a large number potential disease agents in two groups of honey bee colonies: those exhibiting symptoms of colony collapse disorder (CCD) and colonies without the disease. Of all the disease organisms identified in CCD and “normal” colonies, a virus, called the **Israeli Acute Paralysis Virus of bees (IAPV)**, showed the best correlation with the disease. This virus was first identified in 2004ⁱⁱ and is part of a complex of viruses that are phylogenetically related to Acute Bee Paralysis Virus and Kashmir Bee Virusⁱⁱⁱ.

At this point in time it has not been demonstrated conclusively that IAPV causes CCD. It is possible that the virus may only be a secondary infection that becomes more prevalent when bees are “weakened” by other causes. However, it is thought that the virus may be a good indicator of the presence of the disease syndrome.

The authors of the paper believe it is still considered likely that CCD symptoms are caused by multiple stressors affecting the colony. Further experiments are being carried out by researchers in the United States to clarify the role of IAPV and determine whether it works in combination with other stresses in causing colony collapse syndrome.

Is the Israeli acute paralysis virus present in Canada?

Currently, the presence of IAPV has not been confirmed in Canada. However, it is possible that the virus may already be present in Canadian bees. The IAPV virus has been identified in bees from bees shipped into the United States from Australia and in royal jelly from China. Because Canada has imported queen bees from Australia as early as 1987 and package bees since 1990, it is possible that the virus may already be present here, even though CCD-like symptoms have not been characterised in Canadian bees.

Are scientists in Canada looking for Israeli acute paralysis virus?

Samples of bees are currently being analyzed to determine if IAPV is present in Canada and CAPA is monitoring the situation in Canada carefully to determine if the disease syndrome is present here.

What can be done to protect bees against the virus?

The presence of the IAPV virus in Canada does not necessarily mean that Canadian bees will come down the disease. Since CCD is thought to be caused by multiple stresses on the colony beekeepers are advised to ensure that their bees kept as healthy as possible. Any stresses associated with other diseases, parasites and or poor nutrition should be minimized to the extent possible.

CAPA has assisted the Canadian Honey Council in the production of a pamphlet that indicates the steps beekeepers should follow to ensure that their colonies remain healthy and disease free. Beekeepers should consult with their Provincial Apiarists to determine the recommendations best suited for their particular region.

For more information contact members of the CAPA executive:

Stephen Pernal, President

pernals@agr.gc.ca, T: (780) 354-5135

Rhéal Lafrenière, Vice President

Rheal.Lafreniere@gov.mb.ca, T: (204) 945-4825

Rob Currie, Past President

currier@cc.umanitoba.ca, T: (204) 474-6022

Joanne Moran, Secretary Treasurer

jmoran@gov.ns.ca, T: (902) 679-6044

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ⁱCox-Foster, D.L., S. Conlan, E. Holmes, G. Palacios, J.D. Evans, N.A. Moran, P. Quan, T. Briese, M. Hornig, D.M. Geiser, V. Martinson, D. van Engelsdorp, A. Kalkstein, A. Drysdale, J. Hui, J. Zhai, L. Cui, S.K. Hutchison, J.F. Simons, M. Egholm, J.S. Pettis, W. I. (2007) **A Metagenomic Survey of Microbes in Honey Bee Colony Collapse Disorder**. Scienceexpress 6 September 2007: 1-9.

ⁱⁱMaori, E., E. Tanne, I. Sela (2007) **Reciprocal sequence exchange between non-retro viruses and hosts leading to the appearance of new host phenotypes**. Virology 362: 342-349.

ⁱⁱⁱCameron, C.E., I. Sela, J. de Miranda, B. Yakobson, Y. Slabzeki (2005) **Characterization of Bee Viruses and an Investigation of Their Mode of Spread**. BARD US-3205-01R Final Scientific Report 31 March 2005 pp 1-24.