Fungus Foot Baths Could Save Bees

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One of the biggest world wide threats to honey bees, the varroa mite, could soon be about to meet its nemesis. Researchers at the University of Warwick are examining naturally occurring fungi that kill the varroa mite. They are also exploring a range of ways to deliver the killer fungus throughout the hives from bee fungal foot baths to powder sprays.

It well known that bees world wide are suffering serious declines and one of the causes of that decline is the varroa mite, Varroa destructor. Varroa mites feed on the circulatory fluid of honey bee pupae and adult bees, and in so doing they activate and transmit diseases which reduce the life expectancy of the bees and cause the colony to decline.

Varroa has had a major impact in all countries where it has become established, for example it has caused losses of 30–50% of honey bee colonies when it first arrived in the UK and is now endemic. The loss of honey bees on this scale is affecting the pollination of commercial crops and wild plants. It originates in Asia, but has extended its range world-wide

At present, the management of varroa is based on the use of chemical pesticides, but the mites are developing resistance. Biological control technologies (the use of one organism to control another) could offer a way of moving pest management strategies away from a reliance on these synthetic pesticides but no natural insect or other enemies of varroa species have been identified on the varroa or on their bee hosts.

Now Defra-funded studies by researchers at the University of Warwick's

plant research group Warwick HRI, and Rothamsted Research has found some new natural enemies of varroa from other hosts.

University of Warwick researcher Dr Dave Chandler said:

"We examined 50 different types of fungi that afflict other insects (known as entomopathogenic fungi) to see if they would kill varroa. We needed to find fungi that were effective killers of varroa, had a low impact on the bees, and worked in the warm and dry conditions typically found in bee hives. Of the original 50 fungi we are now focusing on four that best match those three requirements."

The team now hope to secure additional funding to further examine the effectiveness of these four fungi and to begin to consider the best ways of applying this weapon across the hive. A number of approaches are being considered including having fungal footbaths at the main entrances to hives. However the complex environment within bee hives means that more devious means of application may be needed.

Dr Chandler will be hosting the Society for Invertebrate Pathology international conference at the University of Warwick, starting 4th August, where a special session is being held on honey bee health. The session will bring together some the world's leading experts in bee colony collapse disorder to discuss the full range of its possible underlying causes.

Source: University of Warwick