



New innovation aiming to eliminate Varroa from New Zealand beehives

A Kāpiti Coast mechanical engineer is co-investing with the Ministry for Primary Industries' (MPI) Sustainable Food & Fibre Futures (SFF Futures) fund to explore an innovative solution to Varroa mite infestations in beehives.

Mark Keown from Cooling Solutions – who's also an amateur beekeeper – will design, build and test 14 Varroa elimination units (VEUs). These will be modelled on the enclosures his company ordinarily builds to prevent outdoor electronic gear from overheating.

"The product I'm building will be placed in the hive. It will use sensors to measure the amount of miticide (a fumigant used to kill Varroa mites) that circulates around the hive. The miticide will be released automatically, at a level that is non-toxic to bees."

Keown explains that weather can have a major impact on conventional treatments, causing inconsistent or inadequate dosages throughout hives.

"The new product will offer more effective and longer-lasting treatment by compensating for factors like wind, air pressure, humidity, solar radiation, bee activity and temperature."

Landcare Research's 2018 Colony Loss Survey reported an overall loss rate in winter of 10.2 percent amongst beekeepers who participated in the survey.

Of that, 19.5 percent was due to suspected Varroa. According to Keown's calculations, the cost to New Zealand beekeepers in mitigations to combat Varroa and lost honey production is more than \$1.46 million per annum.

Steve Penno, Director Investment Programmes at MPI, says the potential benefits of this new Varroa management method are significant. "If we are able to reduce beehive losses and improve bee health in this country it would be a major boost to the apiculture industry – and would ensure New Zealand continues to produce a premium export product."



The new product will offer more effective and longer-lasting treatment by compensating for factors like wind, air pressure, humidity, solar radiation, bee activity and temperature."

