

Test showing honeybees are secure while controlling wasps with Vespex^R

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Introduced wasps (*Vespula germanica* and *V. vulgaris*) remain a major invertebrate pest species in NZ, with large impacts on local ecology and economy. In particular, wasps eat honeybees (*Apis mellifera*) with potentially devastating results upon hive health and downstream effects on our nationally important agricultural and horticultural industries. Control of these wasps by finding and destroying each nest has been superseded by a wasp bait station method - Vespex^R. Vespex^R contains fipronil insecticide (one tenth of one percent) in a protein matrix and has made significant inroads in controlling wasp populations in a variety of conservation, recreation and farming settings. The potential of off-target effects on native invertebrates has been shown as negligible in a decade of trials and appears very low for bees since the bait has no sugars. In our study we examined the potential for fipronil uptake by bees and hives, including fipronil degradation products produced over time. To do this, a liquid chromatography - mass spectrometry (LCMS) assay was implemented and validated as being able to detect the pesticide at sublethal concentrations. Over the course of two years, 480 different samples of bees, pollen, honey, and brood were tested for the presence of fipronil and its derivatives, with only two returning detectable amounts of pesticide. In each case, upon retesting, these two samples were vindicated as false positives. Our study shows that, as predicted, the use of Vespex^R in the vicinity of bees does not result in its uptake into hives and it can be viewed as safe for use around apiaries and other areas without off-target effects.

