Executive Summary

Enhancement and protection of native Irish breeding stock of *Apis mellifera mellifera* with Varroa tolerance.

The native Irish honey bee along with many other international species is under serious threat from the destructive effects of the Varroa mite. Research work carried out through NIHBS/NUIG/DAFM has enabled the selection of Irish bees with natural heritable traits to combat Varroa mite infestation. Irish honey bees were screened in 5 counties during 2017 for a protective trait called “Hygienic Behaviour” or HB. Results from this work have shown that the selected bees not alone have the capability of controlling the number of Varroa mites in a hive but the HB traits can also control other bacterial and fungal infections. Bees which carry these genetically controlled traits can physically remove infected brood and / or interfere with the reproductive process of the Varroa mite in such a way that the eggs of the mite do not develop or in some cases the mite does not produce eggs. Future studies will examine these interactions in greater detail and incorporate a breeding programme to study the genetic composition required to ensure these traits can remain in future breeding stocks. Recent research at LIT / NUIG has shown that the Irish bee is both pure and genetically diverse and unique among international *Apis mellifera* stocks. It is therefore vital that we protect the Irish bee by ensuring the expression of natural heritable traits to fight disease within the Irish population.

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