

'Live and Let Fly project' to find a varroa tolerant bee in West Devon

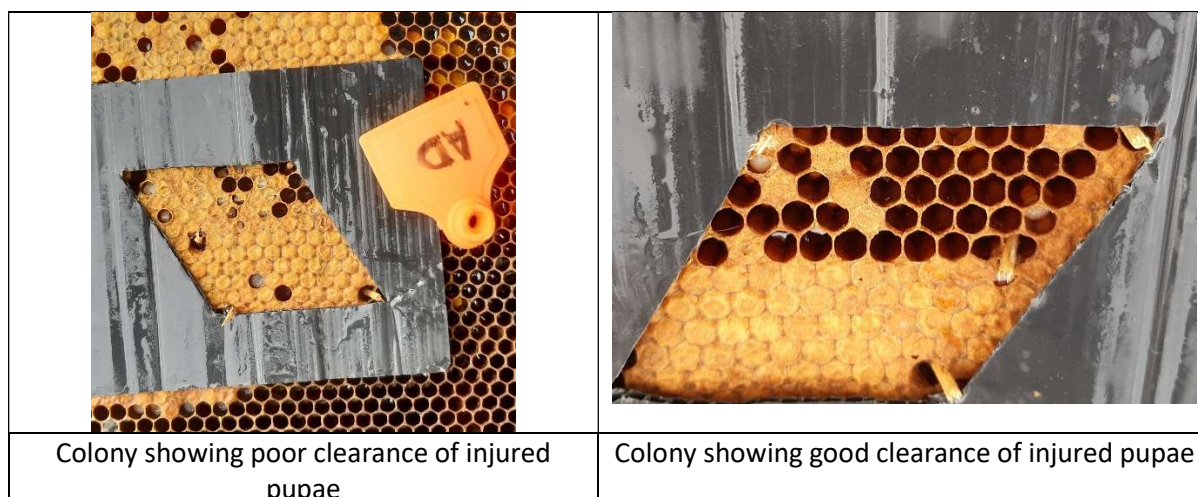
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report 1. 1/4/2021

We have taken full advantage of the recent spell of warm weather and carried out the first screen of our colonies to identify bees that display some degree of hygienic behaviour. We are encouraged to find that out of 33 colonies screened, 6 have scored highly in the first stage test and 10 have scored sufficiently highly to be carried on to the second stage of testing.

To summarise our approach, we have 'injured' 50 sealed larvae/pupae by plunging a #0 entomological needle into the middle of 50 capped cells to a depth of 10mm and looked again 24 hours later to see how many of these cells have been opened. It is amazing how different colonies respond to this insult. Some exhibit very little response while others un-cap and remove the contents of nearly all the pierced cells.

To introduce some standardisation to the test we have mounted size #0 entomological pins in hot-melt glue to provide a convenient handle and to provide a depth-stop at 10mm length. We also have a lozenge-shaped template that covers 100 cells to lay over the capped brood to limit the area we are piercing. The 4 corners of the template are marked by pushing in broken cocktail sticks and we also mark the 51st cell to show the extent of the brood pierced. Any open cells at the time of the test are noted and deducted from the final count of open cells when viewed 24 hours later. (see below for images of good and poor clearance of pierced pupae. Any colony that scores 70% or more cleared cells will be taken on to stage two of the project. Progress reports will be available on our website – <https://tavistock-beekeepers.org.uk/raising-a-varroa-tolerant-bee-in-west-devon/>



It is known that all hygienic bees are good at clearing out damaged pupae but not all colonies that clear damaged pupae are hygienic, so it is likely that many of the colonies that pass stage one testing will fail at stage 2.

So, we need more colonies to ensure a diverse range of desirable genetics to provide breeding material that we can graft from later in the season, so please, either screen your own colonies for hygienic behaviour or **allow us to do it for you**. It entails two trips to your apiary, 24 hours apart. If you want to try it yourself, we will provide both the template and the #0 entomological pin. There is a video on the website that demonstrates how this should be done. (<https://youtu.be/iIF9WC-SJtA>).

Please do get involved at some level – you may have the bees that will provide a way forward in treatment-free beekeeping that we can all benefit from in the future.

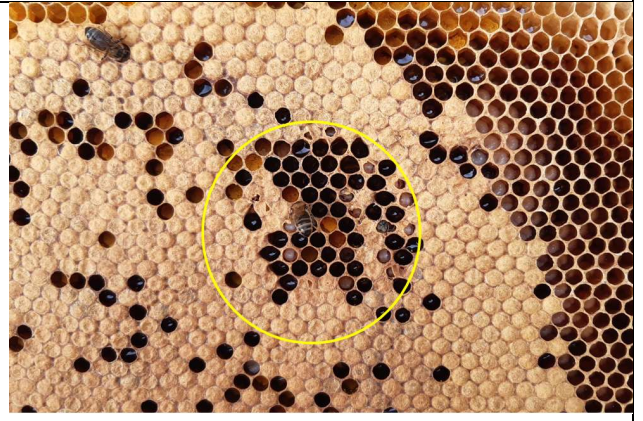
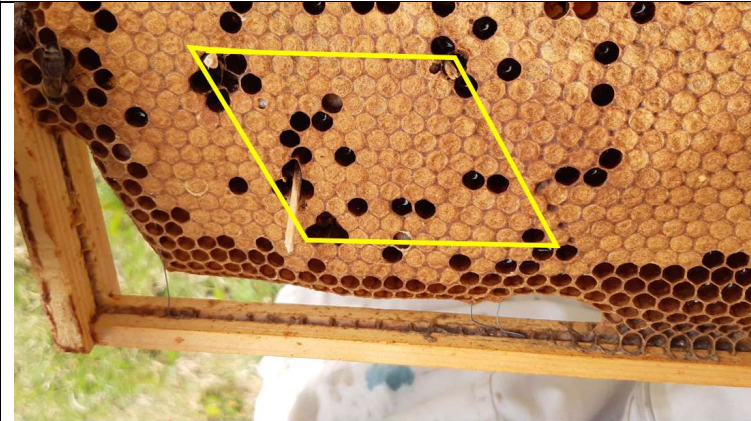
To get involved or offer help or colonies, please contact Helen (helen.tworowski11@gmail.com) or Tony on (web.tbka@gmail.com).

As a control experiment on the first colony we sampled, we used our #0 entomological needle on 50 pupae as described above but we also tested out a commercially available 'varroa tester' which consisted of a tub suitable for performing an alcohol wash (or sugar roll) with 100 pointed cones in an array at either end to allow one to destroy 100 pupae at one go. The results can be seen below.

#0 entomological pin



Varroa tester template



Our conclusion is that the commercial tester is too coarse and the plastic points kill all the pupae they contact whereas the #0 pin is subtle, causing minimal damage to the pupa but allowing it to send out 'distress' pheromones which sensitive worker bees respond to. For standardisation, we are sending the pins to all participants in the project.