

THE BUZZ

THE NEWSLETTER OF THE INVERNESS-SHIRE BEEKEEPERS' ASSOCIATION



Big News – The latest addition the Knocknagael apiary is a huge green storage container. Perfect for storing all of the beekeeping equipment that is currently overflowing from our bee shed. Many thanks to Charlie, Bea, Des, Alan and Joe (the storage container delivery driver) for organising and helping out with the delivery.



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Coronavirus (COVID-19): advice for beekeepers:

Luis Molero Lopez
MRCVS
Lead Bee Inspector
Scottish Government
28th March 2020

As beekeepers, please be aware of the following guidance when looking after your honeybees. Updates to this guidance will be provided where necessary. You should keep up to date with the latest guidance issued by the Government as it is subject to regular change.

Defra, Scottish Government and the Welsh Government ask you as beekeepers to be responsible and to ensure that you continue good beekeeping practices, effective stock management and health checks whilst observing the Government's guidance on COVID-19.

You should follow Public Health guidance on social distancing. Everyone, including beekeepers, should avoid gatherings of more than two people and this includes at your apiary. You should maintain a distance of 2 metres between yourself and others to limit the spread of COVID-19.

General advice for beekeepers is as follows:

- You should continue to work and care for your animals in the normal manner, as far as possible. You should not take measures that compromise the welfare of the animals in your care.
- You should maintain good biosecurity at your apiary.
- You should not share beekeeping equipment with other beekeepers, particularly hive tools and other handheld devices and protective clothing.
- In line with the general advice on COVID-19, you should wash your hands for at least 20 seconds using soap and hot water before and after you come into contact with any animal. Use hand sanitiser if that's all you have access to.
- There are currently no restrictions on movements of bee colonies that you are managing, such as moving bees to fulfil pollination contracts. However, you should observe the public health guidance to prevent the spread of COVID-19 when carrying out these activities, including the guidance on social distancing and essential travel.
- If you are required to visit premises other than your own, you should familiarise yourself with the public health guidance on infection prevention and control and take measures to minimise the risks from contaminated surfaces.

- If you have tested positive for COVID-19 or are displaying symptoms of COVID-19, however mild, you should be self-isolating at home and should not be visiting other premises. Ideally, another beekeeper should take on this duty wherever possible. We are suggesting that local associations consider how they can support those confined or unable to attend their bees at this difficult time for all of us.
- If your bees are due an inspection by a government inspector, you should be aware that this may be subject to a delay depending on available resources within the inspectorate.
- If your bees are due an inspection by a government inspector, and you are in a high-risk group, or are showing symptoms of COVID-19, you must let your inspector know ahead of the inspection. Arrangements will be made that will limit the chance of COVID-19 being spread. This may include the inspection proceeding without the beekeeper being present or delaying the inspection.
- For all inspections, 2 metre social distancing will be considered the minimum and so the beekeeper will not be able to stand at the hive side with the inspector while the inspection takes place.
- Imports of bees are still permitted. There is no evidence to support restrictions to international movement or trade in bees, and the UK has no additional rules for bee imports with respect to COVID-19.
- You should report any suspicion of notifiable diseases or pests to the authorities in the usual way – please see the bee health page on gov.uk for further information.
- You should use husbandry techniques to minimise swarming. If you have to respond to collect a swarm you need to ensure that you use the guidelines on social distancing when collecting the swarm. If that is not possible, then the swarm then should not be collected. Therefore, trying to prevent swarms is the best approach.
- For any questions or further guidance please contact for the Scottish Bee Health Team on bees_mailbox@gov.scot

At the time of releasing this Buzz, this information is up-to-date. However, this advice is being constantly reviewed and may change at any time. For the most recent advice for beekeepers relating to Covid-19, visit:

<https://www.gov.scot/publications/coronavirus-covid-19-advice-for-beekeepers/>

Inverness Beekeepers Association Calendar

Inverness-shire Beekeeping Association Calendar			
Date	Speaker	Talk Title	Location
10/03/2021 – 7.30pm – 8.30pm	Bryce Reynard	AGM and Hive Products Beyond Honey	Presentation via Zoom
13/04/2021 – 7.30pm – 8.30pm	Dr Michael-Thomas Ramsey	Bee Research: An Introduction to the Use of Accelerometer Technology for Monitoring Honeybee Hives	Presentation via Zoom

Honeybee Venom Kills Aggressive Breast Cancer Cells

Written by James Kingsland,
Fact Checked by Zia Sherrell
Medical News Today
September 7th 2020

For thousands of years, humans have used honey, propolis, and venom from the European honeybee *Apis mellifera* as medicines.

More recently, scientists have discovered that honeybee venom and its active component, melittin, are toxic to a wide range of tumors — including melanoma, lung, ovarian, and pancreatic cancers — in laboratory tests.

Melittin is the molecule that creates the painful sensation of a bee's sting and scientists do not fully understand how it kills cancer cells.



Figure 1 - Carefully targeted melittin from honeybee venom may kill aggressive breast cancer cells

For the first time, researchers have investigated the effect of melittin and honeybee venom on a range of breast cancers, including two of the most aggressive and hard-to-treat types.

Breast cancer is the most common cancer in women. The two aggressive types, known as triple-negative breast cancer and HER2-enriched breast cancer, are

associated with the poorest outcomes. They tend to develop resistance to existing treatments.

Scientists at the Harry Perkins Institute of Medical Research in Perth, Australia, and the University of Western Australia, also in Perth, found that melittin and honeybee venom rapidly kill these cancer types, with negligible effects on normal cells.

“The venom was extremely potent,” says Dr. Ciara Duffy, who led the research. “We found that melittin can completely destroy cancer cell membranes within 60 minutes.”

The study also showed that venom from bumblebees, which contains no melittin, did not kill the cancer cells — even at high concentrations.

The scientists report their work in the journal *npj Precision Oncology*.

Blocking Messages:

Melittin can kill cells in less than 1 hour by punching holes in their outer membrane. Additionally, within 20 minutes of administration, it also disrupts the passing of chemical messages that the cells need to grow and divide.

“We looked at how honeybee venom and melittin affect the cancer signalling pathways, the chemical messages that are fundamental for cancer cell growth and reproduction, and we found that very quickly these signalling pathways were shut down,” says Dr. Duffy.

The scientists discovered that melittin does this by preventing the activation of receptors for growth factors in the cells’ membrane. One of the reasons that HER2-enriched cancer cells and some triple-negative breast cancers grow uncontrollably is that they have large numbers of these receptors.

By preventing these growth signals from getting through, melittin halts the cells’ proliferation.

Prof. Peter Klinken, the chief scientist of Western Australia welcomed the findings by saying, “This is an incredibly exciting observation that melittin, a major component of honeybee venom, can suppress the growth of deadly breast cancer cells, particularly triple-negative breast cancer.”

He added:

“Significantly, this study demonstrates how melittin interferes with signalling pathways within breast cancer cells to reduce cell replication. It provides another wonderful example of where compounds in nature can be used to treat human diseases.”

Combination therapy:

Because melittin creates holes in cell membranes, it may also allow existing chemotherapy drugs to penetrate and kill cancer cells.

To test this possibility, the researchers treated a mouse model of triple-negative breast cancer with a combination of melittin and a drug called docetaxel. This proved more effective at shrinking the tumours than either docetaxel or melittin alone.

Doctors could potentially use this strategy to increase the efficacy or reduce the dosage of chemotherapy drugs, thereby reducing harmful side effects.

The study authors note that honeybee venom is relatively cheap and easily obtainable; making it a good option for cancer treatment in countries with poorly resourced health services.

They write:

“Honeybee venom is available globally and offers cost effective and easily accessible treatment options in remote or less developed regions. Further research will be required to assess whether the venom of some genotypes of bees has more potent or specific anticancer activities, which could then be exploited.”

This line of research is in its infancy, with researchers yet to perform clinical trials in humans to assess the safety and efficacy of melittin for treating breast cancer.

Although this particular study found no evidence of harm to noncancerous cells, other studies suggest otherwise. Therefore, healthcare professionals may need to carefully target melittin to tumors to prevent collateral damage to healthy tissue.

Source:

<https://www.medicalnewstoday.com/articles/honeybee-venom-kills-aggressive-breast-cancer-cells>

Honeybees Found Using Tools to Repel Giant Hornet Attacks

**Douglas Main,
December 9th 2020
National Geographic**

IN EAST ASIA, honeybees must contend with never-ending attacks by a formidable foe: giant hornets. These predators pick off individual bees, but also stage group invasions of hives. In a brutal onslaught, these large wasps first decapitate every bee they encounter, then occupy the hive and take their time devouring the bees' larvae.

To defend themselves against hornets, Asian honeybees have evolved various creative tactics, such as swarming invaders with hot “bee balls,” roasting them to death.

But in new research from Vietnam, scientists have discovered an even stranger bee trick: Coating the hive entrance in animal dung.

This “faecal spotting” not only repels giant hornets—it’s the first clear example of tool use in honeybees, says Heather Mattila, an entomologist at Wellesley College in Massachusetts and co-author of the study, published December 9 in the journal PLOS ONE.

Before this study, researchers had not investigated what caused the black marks often seen covering beehive entrances in Vietnam and elsewhere in Southeast Asia. Mattila and colleagues verified that the dark material is actually faeces of various animals, such as chickens and cows. The researchers also documented that the faeces repel a species known as *Vespa soror*, commonly called giant hornets.

To finally figure out what the bees had been doing “was pretty stunning,” says Mattila, whose research was partially funded by the National Geographic Society. It’s “one of the coolest things our [research] group has ever explored.”

The study takes on even more significance because *Vespa soror* is the closest relative to *Vespa mandarinia*, also known as Asian giant hornets, or “murder hornets,” whose recent discovery in the Pacific Northwest has fuelled worldwide intrigue.

Understanding how the Vietnamese bee behaviour repels hornet attacks could have applications for protecting honeybees in other countries, including the United States, Mattila says.

Not to mention, she quips, “the combination of ‘murder hornets’ and poop is pretty appealing.”

Dung deterrent:

Mattila and colleagues, who spent hundreds of hours observing bees at a Vietnamese apiary, found that honeybees began adding faeces to their hive entrances after natural attacks by giant hornets. By analysing more than 300 filmed hornet attacks, the team determined that the hornets were less likely to linger at a hive entrance or initiate an invasion as the hive became more covered in faeces.

The researchers also found that placing a paper soaked in extracts from giant hornet bodies near the hive entrance caused the bees to begin coating it in dung.

It’s unclear yet how exactly the faecal coating repels the hornets. It appears that the insects don’t like the smell, but they also may not want to chew into a nest covered in dung, a behaviour that enlarges the hive opening for easier attack, Mattila says.

The faeces may also function as a kind of olfactory camouflage. “Bee hives normally smell like honey and sweet things,” and hornets can use this scent to find them, says Lars Chittka, who studies bee perception and behaviour at Queen Mary University of London. “It’s possible the faeces has an unpleasant smell and masks [this scent].”

Murder hornet mania:

Since Asian giant hornets were first observed in north-western Washington State in late 2019, entomologists have been furiously working to prevent the species from becoming established, with some success. In October, state biologists discovered and removed the first known live nest of these voracious insects.

One reason the invasion has received so much attention is that Asian giant hornets are known to attack European honeybees which, unlike Asian honeybees, have no defence against the predators. (Learn more: First 'murder hornet' nest found in U.S., a key step in preventing spread.)

European honeybees are the most common honeybee in the U.S., responsible for pollinating many plant species. They also make up most commercial honeybee hives and are more efficient at producing honey than their Asian counterparts.

Mattila says it's possible that once researchers discover what exactly about the dung repels the hornets, beekeepers could potentially use this substance to coat hive entrances to discourage hornet attacks. But much remains unknown.

There are possible downsides to the behaviour, for example. Honeybees are normally quite clean and fastidious—one reason why the finding came as such a shock, Mattila says—so it's possible that using dung as a deterrent could complicate safety standards for producing honey.

The buzz on tools:

This newly discovered use of animal dung qualifies as a form of tool use by bees because the animals are “taking something and manipulating it” to shape their environment. It's a “pretty ground-breaking finding,” says Susan Cobey, a California-based independent honeybee breeder and geneticist not involved in the paper. (Related: The tools animals use.)

The literature on animals' use of tools is complex and at times contentious, depending on what definition of “tool” one uses, Mattila says. Other insects have been shown to use them; for example, some thread-waisted wasps use stones to tamp down soil and protect their nests. Tools needn't be items like sticks or stones, though, they can also be materials like dung.

Some researchers are unsure faecal spotting qualifies, however: “It's a bit of a stretch to say this is [the first demonstration of] tool use,” Stephen Martin, an entomologist at the University of Salford in the United Kingdom, says by email. “The species also uses leaves to stain hive entrances, and nests are built from paper”—behaviours that could also be classified as tool use, he says.

Bob Jeanne, a wasp expert at the University of Wisconsin-Madison, says the authors are “correct in calling this the first example of tool use by a honeybee... I think they're applying a reasonable definition.”

Both Martin and Jeanne agree the behaviour is fascinating. “The ability of social insects to astound us continues,” Martin says. “We still know so little of their behaviour and this is another great example.”

Source:

<https://www.nationalgeographic.com/animals/2020/12/honeybees-use-tools-dung-repels-giant-hornets/>

Notice Board.

AT THE MOMENT OUR PRICES FOR JARS, AMBROSIA AND FONDANT ARE AS FOLLOWS:

Item	Price
Ambrosia (12kg, non-refundable container)	£15.00
Fondant (2.5kg pack)	£4.00
Fondant (full box – 5x 2.5kg packs)	£20.00
Jars (72 x 1lb jars with lids)	£30.00
Jars (96 x ½lb jars with lids)	£35.00
Spare lids (for both sizes of jars)	£2.00 per dozen

Please contact Jed Russell (jed.k.russell@googlemail.com) if you would like to purchase any of these items or would like to borrow equipment from the association.

Please visit our website <https://inverness-shirebeekeepers.org/>

for more exciting information and resources such as:

- The beekeepers blog
- Beekeepers library catalogue
 - Help with swarms
- Details of upcoming events and meetings
 - Helpful beekeeping hints and tips
 - Backdated issues of the Buzz

Don't forget to visit the exclusive **MEMBERS SECTION** for extra goodies!!!

EASY FUNDRAISING SUPPORT

The Inverness-Shire Beekeepers Association needs your help!!!

If you would like to help the association financially,

PLEASE VISIT: <https://www.easyfundraising.org.uk/support-a-good-cause/step-1/?char=208763>

YOUR SUPPORT WILL GO TOWARDS:

- **NEW TRAINING EQUIPMENT – USED TO TRAIN THE NEXT GENERATION OF BEEKEEPERS**
- **APIARY IMPROVMENTS AND REPAIRS – ENSURES ALL OUR FACILITIES ARE SAFE AND PLEASURABLE PLACES**
- **CLUB ADVERTISMENT – SPREADING THE BEEKEEPING WORD**

YOU CAN PUT AN ADVERT IN THE BUZZ!!!

Anyone wishing to advertise the sale of bees or beekeeping equipment can advertise in the Buzz.

The Buzz is distributed to every member of the Inverness Beekeeping Association.

If you are interested in filling this space with your advert contact Jed Russell via:

jed.k.russell@googlemail.com