



From flower to toast... and honey beer

Bees fly 2.2 times around the world to make a single jar of honey. Sophie Butcher, chair of Wiltshire Beekeepers Association explains how.

HONEY ON hot buttered toast. Surely, here is nothing tastier. But how is honey made?

Right now, beekeepers across Wiltshire are harvesting their summer honey. A journey that started with a bee visiting a flower ends with a golden liquid drizzled over toast, or ice cream, or being made into a delicious honey beer by Wadworth Brewery.

Last year I sent off some of my honey to be analysed as part of a national study to see what nectars make up UK honey. My summer honey is 50% blackberry and 15% clover. These combine, with other local nectars including sweet chestnut, gourd, turnip and marrow, to give it a delicious lemony flavour. Now, my bees have been bobbling around all over my

garden this year, despite the cold spring. While they enjoy the nectars of lavenders, thyme and oregano, here in Chippenham, it is not until the blackberries come into flower that honey starts pouring into my hives.

Botanicals have it

The transformation from nectar to honey begins with a bee settling on a flower and following the bloom's nectar guides, visible to bees because their eyes are sensitive to light on the ultraviolet spectrum, to the nectaries at the flower's heart. There they sip delicately on the nectar. Many nectars are thin mixtures of water and sugar, but they are also stuffed with aromatic botanicals that give honey its special scent and taste.

Above: Honey on show at the Wiltshire Bee & Honey Day 2019.

Every honey is unique; the botanicals and concentrations of sugar vary hugely from plant to plant. Apple blossom, with an average sugar load of 25%, will be ignored if kale or dandelions grow nearby which offer a whopping 50% sugar load. The pretty hedgerow primroses offer next to nothing (5% sugar) compared to the horse chestnut with an eye-watering 70% sugar load.

No matter what the source, all nectar is treated the same way, and the foraging bee starts processing it straight away. She doesn't eat it. Instead, she stores it in a special honey sac and takes it back to the hive, all the time adding enzymes to break down the sucrose to fructose and glucose.

The hard life of a bee

One bee (always female as the males do not work) will visit between 100-1,000 flowers in a trip. She will complete about 10-15 trips a day, each time bringing back up to one third of her weight in pollen, or nearly half her body weight in nectar. That journey home does not take long. Bees forage up to three miles from their hive and fly at around 20 miles per hour, although at 12 miles per hour fully laden. This is still faster than I can bike, even without carrying half my weight in groceries. To make one pound of honey, bees will visit around two million flowers and fly about 55,000 miles – that is 2.2 times around the world.

Her epithet is 'busy', and she really is, yet in her lifetime the average busy bee will store just 1/12th of a teaspoon of honey. However, that honey is so high in energy that it would take just two tablespoons to fuel a bee's flight around the world.

Back in the hive the bees will finish adding enzymes to the mix and then 'hang' that droplet of ripening honey inside the honey comb, along with thousands and thousands of other droplets. Then for the next three or four days, armies of house bees will fan it continuously to reduce the water content to below 20%. This prevents the yeasts in the honey from fermenting and enables bees to store it long-term to feed on in the coldest months.

Waxing lyrical

Finally, the bees will seal each honey-filled cell with a tiny piece of wax to prevent it absorbing water from the atmosphere, which would lead it to ferment. Honey, however, is only part of the story. To store it in the first place, bees need to build the comb, which is expensive for them. Honey bees consume 800g of honey to produce just 100g of beeswax. They secrete flakes of pure white wax into pockets on their abdomen, and then use their mandibles to fix it in place in the beautiful hexagonal shape we have grown to love.

Honey bees only need about 18-20 kilos of honey to see them through the winter. Some of my hives produce double that amount, and I harvest the excess, spinning it in a special centrifuge called an extractor, which I crank laboriously by hand. Finally, I strain out the bits of wax and then jar and label it.

The final twist

The journey does not end there, however. At the start of September, I took some of my jars of honey over to Wadworth Brewery. There they are turning it into a rich bitter, with a strong malt backbone and bready, biscuity notes, especially for the Wiltshire Bee & Honey Day. Come along and try a pint. It is really good.

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Right top to bottom: A honey bee produces wax flakes which she shapes into comb using her mandibles.

Bees filling a comb with honey.

Honey capped and ready to extract.

Filtering spun honey through a fine mesh.



October event

The Wiltshire Bee & Honey Day takes place at the Devizes Corn Exchange on Saturday 9 October. While you are there, you will have a chance to learn more about bees and beekeeping and can stock up on honey from beekeepers local to you.

- The event is free. Find out more here: www.wiltshirebeekeepers.co.uk