

Honey Extraction

General Information

Honey is a solution of sugars which make up 79% of its weight. The further 21% being made up of water, and other substances such as organic acids, mineral elements, amino acids and proteins.

The approximate composition breakdown is as follows:

18% water

35% glucose (dextrose)

40% fructose (levulose)

4% other sugars

3% other substances

The sugars vary depending on the forage that the bees work and in turn this will determine how quick the honey crystallizes

Most beekeepers as a general rule leave their extracting until the August / September months. However be aware there are early crops such as Oilseed Rape which has a high glucose content and rapidly crystallizes. Therefore it has to be removed as soon as the fields return to a green colour and the flowers fade otherwise this can crystallize in the frames themselves making it too hard to be extracted.

Before extraction the beekeeper requires the honey to have a water content of 20% or below. If the bees have capped the honey then this can be taken off at any time as the honey should be down or below the required water content. However unsealed honey may still be being worked on by the bees and hasn't reached a low enough water content. Or it could be that the honey is up to gravity but the cells are not full and are left uncapped until more honey is brought in. The beekeeper can get a rough idea of when the uncapped honey is ready for extraction by removing the frame of open celled comb and holding it flat over the super give it a sharp jerk downwards. If spots of liquid come out then it is not ripe for extraction and requires more work by the bees. But if no liquid comes out then it can be extracted.

However to be certain that it is ready for extraction the use of a refractometer is required.

Hygiene

When preparing honey for consumption, it is essential to be aware of and to comply with food hygiene regulations. These require that the preparation area is clean and that the surfaces are hygienic, and easily cleaned. There should be hot and cold water and handwashing facilities. Containers should be manufactured from food grade plastic or stainless steel. The most appropriate room for honey production is a kitchen or utility room. Before beginning thought should be given to the production process and areas defined for the various stages from storing unprocessed combs, decapping, extraction, storage of wet comb and capping, and filtering and storage of the honey.

Removing the Cappings (decapping)

Organisation is the key to avoid what can be a very messy experience. Every effort should be made to keep your working area and tools scrupulously clean and tidy.

If the frames of honey are to stand a while prior to extraction then ideally the supers should be stored in a warm dry room to prevent the honey taking in atmospheric moisture and to aid extraction; warm honey is easier to extract.

It is better to have at least two people working on the extraction process, one decapping and the other working the extractor.

Remove the capping via your chosen method ...see examples in this document.

Then transfer the decapped frames directly into the honey extractor for spinning.

Methods of Decapping

Various types of knives can be used either hot or cold and with a sharpened or serrated cutting edge. The common feature is the length of the blade which needs to be approximately twice as wide as that of a super frame.

Heating the knife can be done by placing it in hot water. However the effectiveness of this method is questioned by some beekeepers and it is suggested that having a scraping edge to draw the flat of the knife on is better.

When heating the knife in hot water it is well to have a piece of cloth at hand to dry it off...continual drops of water add to the water content of the honey.

Alternatively a purposely designed knife with a built in heating element can be used. These are better if thermostatically controlled.

Also available are a number of multi-pronged forks/rollers which scrap or pierce the capping.

Heat guns originally designed for paint stripping can be used. The gun is rapidly passed over the cappings, causing them to draw back forming a bead around the edge of the cell.

There is very little waste or mess with this method however care has to be taken not to heat the honey in the cell.

Note: There is no wax removed with this process, which would be normally cleaned and used for making wax products..etc

Processing the Cappings

The cappings or as they are traditionally known combings are of a high quality and need very little treatment to clean them up for use.

They are ideal for use as show wax, making cosmetics (eg cold cream) and for high quality wax blocks for sale.

Decapping:

The cappings are initially separated in the decapping tray or similar device with a mesh basket to allow the honey to drain off.

They can then be placed in a feeder such as a Miller feeder and given back to the bees to clean them up. Or alternatively they can be washed in clean water to make mead with the washings.

Finally the cappings are melted and filtered through lint cloth as a final cleaning process. During this process the wax should not be heated above 150 degrees fahrenheit / 65 degrees celsius to prevent discolouration.

To save the natural colour of the wax, metal containers should also be avoided.

The wet frames of comb which have been extracted can be returned to the supers and placed back on the bees above the crown board, with the porter escape open. This will allow the bees to clean them out ready for winter storage.

The Extractor

The extractor is a spinning machine that is used to remove the honey from the cells. It can be either of a manual type which is spun via a handle or it can be driven by an electric motor.

Both hold a varying number of frames depending on its size and design. Today's extractors are produced using stainless steel or polythene the latter being more expensive but more durable.

Types of standard extractors

Tangential:

The tangential type extractors have a supporting framework which sits in a drum and holds the comb frames at a tangent to the circle of motion. The comb has to be distributed evenly to avoid it being unbalanced and it is necessary to place the frames into the holding frame with the bottom bar as the leading edge going into the spin due to the angle of the cells. Also wired comb is required when using this method of extraction

The honey on the outer side of the comb only is removed when spun. The frames have then to be turned so the inner face becomes the outer and the process repeated to extract this side.

With full frames the first side can only be partially removed at a slow speed because the weight of honey on the inner side could break the comb. The combs are then reversed to extract the other side and then reversed again to finish off the original side.

Most tangential will take a reduced number of brood frames... holding honey only.

Radial:

The radial type extractor also has a cage designed to hold the frames in a radial manner around the drum with the frame top bar running in a vertical plane and parallel to the drum wall.

Generally the radial extractor holds a greater number of frames for a given sized drum compared with the tangential extractor.

Care needs to be taken in distributing the combs of honey evenly around the holding cage to avoid it being unbalanced and the extractor has to be spun slowly at the start of the spin.

Honey is extracted from both sides simultaneously without the need to turn the frames or spin the extractor in the opposite direction after the initial spin.

Straining and Settling

Straining is done to remove solid matter these can include wax, bees and bee parts, propolis, sugar crystals, and other matter. All extracted honey needs to be strained and allowed to settle. The best time for this to be done is immediately after extraction.

Coarse and fine stainless steel strainers are initially used for straining before storing in honey storage buckets. A final straining can be carried out but is not essential before jarring, and for this the honey is best if warmed to a temperature of 95-100 degrees fahrenheit (35/38 degrees celsius) and put through a 80 mesh to inch fine nylon strainer. This removes particles ensuring the honey is not cloudy looking and preventing particles being present that would help promote crystallisation.

Settling tank:

Settling tanks are produced in polythene or stainless steel.

The honey is passed through a fine straining filter as it is poured into the tank. 24 hours standing in the tank at room temperature is usually sufficient to remove air bubbles.

Words

Tangential... relating to or along a tangent... This is a straight line or plane that touches a curve or curved surface at a point, but if extended does not cross it at that point.

Radial...Of or arranged like rays or radii of a circle; diverging in lines from a common center.

Thixotropic...showing temporary reduction in viscosity when shaken or stirred...Ling Honey is thixotropic.

Hygroscopic...readily absorbing moisture from the air....Honey is hygroscopic

NOTES