

STAGE I - BEEKEEPING COURSE



Irish Bee Foundation

PROTECTING PRESERVING PROMOTING

Not for distribution – Property of Irish Bee Foundation





MODULE 5 HARVESTING

Not for distribution – Property of Irish Bee Foundation



MODULE 4 – REVISION – SAMPLE QUESTIONS FROM PAST PAPERS

- ❖ Name one notifiable brood disease found in Ireland
- ❖ When testing a suspect brood cell with a matchstick and the contents rope. What disease do you suspect?
- ❖ Name two common adult bee diseases
- ❖ What disease would you suspect if you saw young bees with deformed wings?
- ❖ Where would you send samples of bees or brood if you suspect disease?
- ❖ When adult bee disease is suspected, how many bees approximately should you send for diagnosis?
- ❖ Name two licensed treatments used for the control of varroa in Ireland
- ❖ How would you monitor varroa mite population during the active season?
- ❖ If you see soiling at the hive entrance, what disease would you suspect?



Not for distribution – Property of Irish Bee Foundation

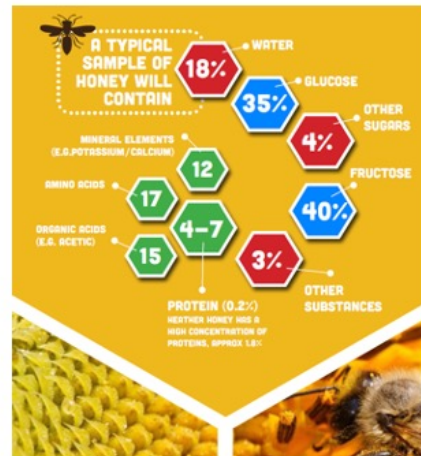
Before beginning Module 5, it's essential to review key disease management concepts. Some critical questions include:

- Identifying Brood Diseases: Recognize symptoms of diseases like American Foul Brood (AFB) and European Foul Brood (EFB).
- Monitoring Varroa: Using open mesh floors and counting mite drops to gauge varroa levels.
- Recognizing Dysentery and Other Issues: Signs such as soiling at the hive entrance can indicate diseases like Nosema.

These foundational questions ensure beekeepers can monitor and address health concerns before harvesting.

CONTENTS OF HONEY

- ❖ Pure Irish Honey is well recognised as a quality product.
- ❖ Its unique flavour and aroma can only be produced by Irish bees collecting the nectar from a wide and diverse source.



Not for distribution – Property of Irish Bee Foundation



Irish honey is renowned for its high quality and unique flavor profile. This richness is due to the diverse sources of nectar collected by Irish bees, which includes plants like clover, heather, blackberry, and various wildflowers. The local flora contributes to the honey's distinct aroma and taste, making it highly valued.

RIPE HONEY

- ❖ When the moisture content has been reduced to 18%, the honey is ripe, and the **honey cells are capped with beeswax**
- ❖ 75% -100% of the cells of each frame should be capped over before removing for extraction
- ❖ If the cells in the comb are not all capped, hold the frame horizontally over the hive and give it a sharp shake. If nectar flies out of the cells, the honey isn't ripe, and should not be extracted.



Not for distribution – Property of Irish Bee Foundation



Honey is “ripe” when its moisture content is reduced to around 18%, at which point bees cap the cells with wax:

- Testing Ripeness: At least 75% of cells on each frame should be capped before extraction. Uncapped cells might contain nectar, which can spoil or ferment.
- Shake Test: Hold the frame horizontally and shake; if nectar spills, it's not yet ready for extraction.

Ensuring only ripe honey is harvested prevents spoilage and maintains quality.

CLEARING SUPERS OF BEES

- ❖ Supers can be cleared of bees by a variety of methods. These include shaking and brushing, using clearer boards or using some kind of blower.
- ❖ The most common clearer board designs use **Porter bee escapes** or '**Canadian**' style clearer boards
- ❖ All of these devices are designed as **one way gates**, allowing the bees to go from the super to the rest of the hive, but not to return
- ❖ Porter bee escapes are often **fitted into two holes cut into a clearer board or crown board** which is then placed underneath the supers. The queen excluder should be removed at this point



Not for distribution – Property of Irish Bee Foundation



Removing bees from honey supers before extraction is critical. There are several methods:

- Clearer Boards: Use one-way exits like Porter bee escapes or Canadian-style boards, allowing bees to exit but not return.
- Timing: Place the clearer board correctly and leave it for only 12-24 hours. Warm weather is ideal, as active bees will clear out faster.

These methods reduce stress on the bees and make the extraction process cleaner.

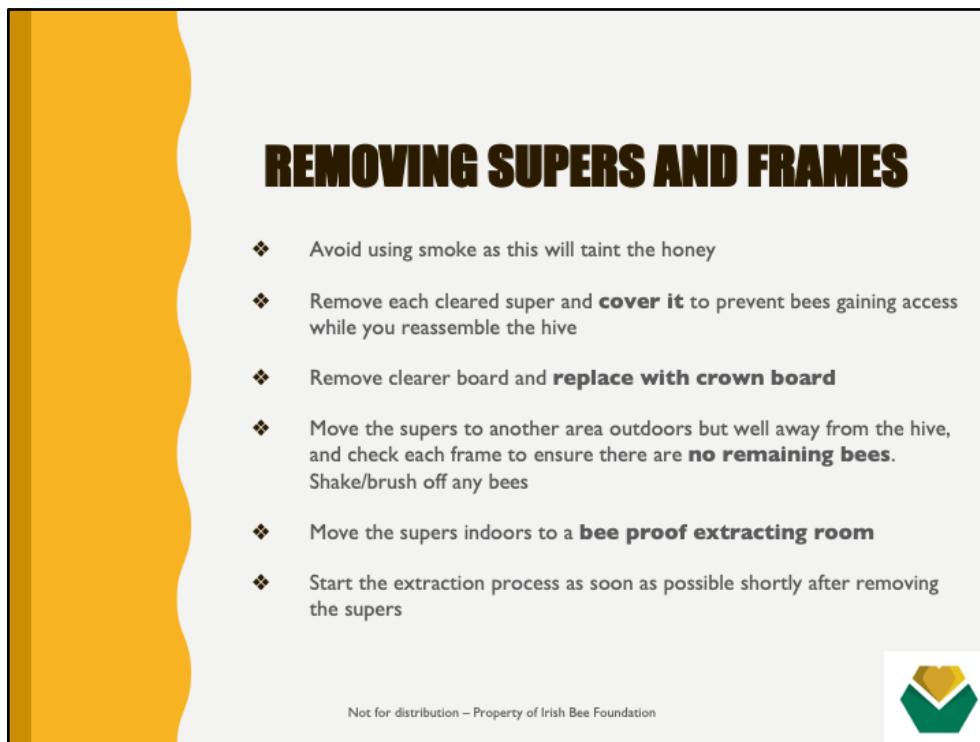
CLEARING SUPERS OF BEES

- ❖ Canadian style clearer boards come in a variety of designs
- ❖ It is essential to ensure that the clearer board is placed **the right way up**, and if using Porter bee escapes to ensure that the springs are functioning correctly
- ❖ Clearer boards should only be **left in place for 12-24 hours**
- ❖ It is easier to clear supers in warm weather when the bees are flying well



Not for distribution – Property of Irish Bee Foundation





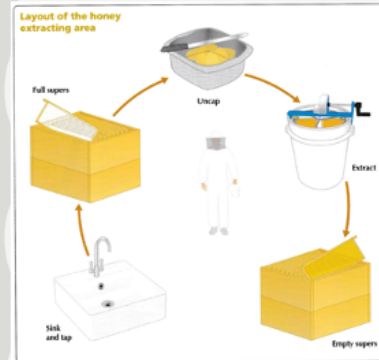
When removing supers, minimal smoke should be used to avoid altering honey flavor:

- Cover Supers: After removal, cover each super to prevent bees from re-entering.
- Bee-Proof Extraction Room: Once cleared, transport supers to an enclosed area to start extraction immediately, as warm honey is easier to work with.

This approach minimizes contamination and preserves honey quality.

EXTRACTING (SMALL SCALE)

- ❖ The room for storage and extraction must be absolutely **bee proof**.
- ❖ There should be **adequate space**.
- ❖ Newspapers should be placed under the supers prior to and after extraction.
- ❖ The honey should be extracted as soon as possible after removing the supers, as warm honey is easier to extract.
- ❖ The extracting room, equipment and personal apparel should be kept **scrupulously clean and hygienic**. Hot and Cold water should be available to wash hands and equipment.



Not for distribution – Property of Irish Bee Foundation



Extracting requires a clean, bee-proof space with proper equipment:

- Room Setup: Use newspapers under the supers and ensure the room has hot and cold water for equipment cleaning.
- Hygiene: Cleanliness is vital to avoid honey contamination, and the extraction should be done promptly while the honey is still warm.

Proper preparation ensures a smooth extraction process and maintains honey purity.

UNCAPPING (SMALL SCALE)

- ❖ Scrape the timber of each frame clean of wax and propolis.
- ❖ Use a **tray** to catch the cappings as they fall from the uncapped comb. Make sure to have a means of holding the bottom of the frame while it is being uncapped (See Hooper Page 248)
- ❖ Hold the frame firmly, leaning forward slightly to allow the cappings to fall into the container as a **serrated knife is moved upward** from the base.
- ❖ Uncapping forks (available from suppliers) can also be used to break or remove the cappings by lifting them off.
- ❖ Drain the cappings for approximately 24 hours. Cappings from newly drawn supers provide excellent wax for the show bench.



Not for distribution – Property of Irish Bee Foundation



Uncapping is the process of removing the wax cappings from the honey cells:

- Tools: Use a serrated knife or uncapping fork, and catch cappings in a tray to prevent mess.
- Method: Hold the frame firmly, slightly tilted forward to allow cappings to fall directly into the container.
- Capping Wax: Drain cappings for about 24 hours. Wax from freshly drawn combs is ideal for quality wax products.

Uncapping properly ensures all honey is accessible for extraction.

EXTRACTION

- ❖ Very small amounts or individual frames can be extracted by **crushing and straining through a muslin cloth**
- ❖ Combs that have been uncapped are put in an extractor which operates using **centrifugal force** to throw honey from the comb
- ❖ A **manual tangential extractor**, taking two frames at a time, is suitable for a small scale beekeeper with just a few hives
- ❖ The major suppliers provide low cost **basic extraction kits** for beginners
- ❖ A **manual radial extractor**, usually taking 8-12 frames, is preferred as scale increases
- ❖ **Motorised versions take even more frames**

Not for distribution – Property of Irish Bee Foundation



Extraction can be done using centrifugal force, with different extractors available:

- Manual Tangential Extractors: Suitable for beginners with a few hives, handling two frames at a time.
- Manual Radial Extractors: Hold more frames (8-12) and are more efficient.
- Motorized Extractors: Preferred for large-scale operations, as they can handle multiple frames and operate quickly.

Balancing frames by weight prevents excess vibration and improves extraction efficiency.

EXTRACTION

- ❖ Choose frames of about **equal weight** for each load
- ❖ If extracting with a hand-operated machine, **operate at a low speed** to avoid a build up of fine air bubbles, which are impossible to eliminate later
- ❖ Draw the honey from the extractor and **strain into the settling tank** through the standard strainer. Leave in settling tank for 24 hours
- ❖ Draw off into suitable containers or jars as 'raw' honey
- ❖ Further processing and strict adherence to regulations beyond the scope of this module is required to prepare liquid honey for sale



Not for distribution – Property of Irish Bee Foundation



STORING COMB

- ❖ After extraction, comb should be stored carefully to prevent damage by pests such as **wax moths** or **mice**
- ❖ Empty supers can be **stored in a stack** by putting a screened board at the bottom, sheets of newspaper between supers, and a second screened board at the top. Cover the stack with a **watertight roof**.
- ❖ Small quantities of individual combs can be stored temporarily in a domestic freezer or deep freeze to kill wax moth larvae. **Acetic acid** (80%) fumes will kill adult moths and their eggs.
- ❖ Wrap combs in plastic and store them in a **deep freeze** or cold place that is inaccessible to mice.
- ❖ Stacks of supers can be fumigated, if necessary, to kill young wax moth larvae using 80% acetic acid.

Not for distribution – Property of Irish Bee Foundation



After extraction, comb must be stored to avoid pest damage:

- **Stacking Supers:** Use screened boards at the top and bottom of each stack with newspaper layers between them. Cover with a watertight roof.
- **Freezing:** Small quantities can be frozen to kill wax moth larvae.
- **Fumigation:** Use 80% acetic acid to fumigate stacks and protect combs from moths and other pests.

Proper storage preserves comb for future use, saving bees the energy of building new comb.

CUT COMB HONEY

- ❖ Cut comb is produced from **unwired, worker based foundation**.
- ❖ When the comb is **fully sealed**, it is removed by cutting around the frame timber. It is then laid on its side, on a suitable drip tray, through which any spilt honey can drip through to a larger tray beneath.
- ❖ **The comb is cut into suitably sized pieces** to fill the presentation container provided by the bee supplier. A sharp pointed knife or a template obtainable from any bee supplier is used for this purpose.
- ❖ The cut comb pieces are left to **drain** before packing.



Not for distribution – Property of Irish Bee Foundation



Cut comb honey is a specialty product that requires unwired foundation:

- Harvesting: Fully sealed frames are removed and laid on a drip tray to collect any residual honey.
- Cutting: Use a sharp knife or template to create neat pieces that fit into containers. Drain pieces before packing.

This delicate handling preserves the natural comb structure for consumers who prefer raw honey in its natural state.

HEATHER HONEY (LING)

- ❖ Ling Heather honey **sets like jelly** and as such it is not possible to extract or strain it in the normal way.
- ❖ It is forced out of the comb by means of a **heather press**.
- ❖ The comb is **cut from the frame** and **wrapped in four layers of muslin cloth** before pressing.
- ❖ Once the heather honey is extracted by pressure it can be bottled right away without further treatment or heating.



Not for distribution – Property of Irish Bee Foundation



Heather honey from ling heather has a unique jelly-like texture that requires special processing:

- Heather Press: Frames are cut, wrapped in muslin, and pressed to release honey, which cannot be extracted normally.
- Bottling: Once pressed, heather honey can be bottled immediately without additional processing.

This labor-intensive method creates a high-value product popular among honey connoisseurs.

GRANULATION

- ❖ Granulation/Crystallisation is a **natural process** occurring in all honeys in normal storage conditions over time.
- ❖ It happens when one of the main sugars in honey, namely glucose, loses water and takes the form of **crystals**.
- ❖ The **rate of granulation** is influenced by a variety of factors including moisture content, ratio of sugars within the honey and temperature. The optimum temperature for rapid granulation is 14 degrees Celsius.
- ❖ Honey does not granulate below 4 degrees Celsius or above 30 degrees Celsius.
- ❖ Finely grained crystallised honey is a popular hive product amongst consumers and at honey shows.

Not for distribution – Property of Irish Bee Foundation



Granulation (or crystallization) is a natural process affecting all honey:

- Process: Glucose in honey crystallizes over time, with optimal crystallization occurring around 14°C.
- Storage: Honey should be stored below 4°C or above 30°C to avoid granulation.

Finely grained crystallized honey is preferred by many consumers, and proper temperature control maintains honey's desired consistency.

FERMENTATION

- ❖ Fermentation is the **production of ethyl alcohol and carbon dioxide by yeast** as it grows and feeds on sugar.
- ❖ Honey with a **moisture content in excess of 20%** is very liable to ferment, while honey with 17-18% moisture will rarely ferment unless it absorbs extra moisture when stored unsealed in a humid atmosphere.
- ❖ Honey sealed by the bees is in perfect condition and will not ferment, and it is for this reason that **great care must be taken not to extract unripe honey**.
- ❖ **Honey should be stored in dry conditions.** After extraction, it should be packed and sealed in airtight containers and stored in cool conditions.
- ❖ There is no way in which fermented honey can be restored as a food product. It should **never be fed back to bees**, as this could cause dysentery.

Not for distribution – Property of Irish Bee Foundation



Fermentation occurs when honey with high moisture (above 20%) is exposed to yeast:

- Prevention: Extract only capped honey and store it in airtight containers to keep moisture out.
- Signs: Fermented honey has a sour taste and smell and should not be fed back to bees, as it could cause dysentery.

Careful handling and storage prevent fermentation and extend honey's shelf life.

BEESWAX

- ❖ Beeswax is a **valuable hive product** and should be recovered from combs as they become too old for use.
- ❖ It can be melted from brace comb, queen cells and any bits of comb removed for manipulations.
- ❖ The main bulk of beeswax is recovered from the **cappings of super combs**.
- ❖ Beeswax can be **exchanged** with suppliers **for foundation** or the self sufficient beekeeper can make his/her own foundation.
- ❖ Beeswax can be used to make **candles, furniture polish, face cream** and many home-made products.
- ❖ The small scale beekeeper can make or buy a **solar wax melter** whilst a steam jacketed wax press is more appropriate for the larger operator

Not for distribution – Property of Irish Bee Foundation



Beeswax is a valuable byproduct of beekeeping, obtained primarily from cappings:

- Wax Melting: Wax can be melted from cappings, old comb, and bits of brace comb.
- Uses: Beeswax can be exchanged for foundation or used in products like candles, polish, and creams.
- Wax Melters: Solar melters suit small-scale beekeepers, while larger operations may use steam wax presses.

Recycling beeswax saves resources and provides additional products for the beekeeper.

OTHER HIVE PRODUCTS

- ❖ From time to time, there is demand for other hive products such as
 - ❖ **propolis**
 - ❖ **pollen**
 - ❖ **royal jelly**
 - ❖ **bee venom**
- ❖ Specialised devices and techniques are supplied and employed for collecting these products but are generally beyond the scope of the amateur beekeeper.

Not for distribution – Property of Irish Bee Foundation



Beyond honey and wax, bees produce other valuable materials:

- Propolis: Resin collected by bees for hive sealing and hygiene.
- Pollen: A high-protein food source for bees, often collected as a supplement.
- Royal Jelly: A nutrient-rich secretion fed to queen larvae.
- Bee Venom: Used for medical applications but requires specialized equipment.

These products require advanced techniques, generally outside the scope of beginner beekeeping, but offer potential for those interested in diversifying hive products.

GO RAIBH MAITH AGAIBH

THANK YOU ALL



Not for distribution – Property of Irish
Bee Foundation

