APICULTURE AND AQUACULTURE WEEK 7: HONEY HARVESTING AND PROCESSING AND POLLINATION – HONEY PRODUCTION- EXTRACTION AND PROCESSING

BY

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Harvesting equipment or gear

You can't start extracting without the right equipment, so make sure you have everything to hand before you begin.

Here is a list of equipment require during honey harvesting:

- Uncapping knife, or hot knife, to scrape the wax from the cells.
- Fine mesh strainer to remove dirt and debris from the honey.
- Food-safe tanks or buckets to store the honey before it's jarred

Harvesting equipment or gear

- Tray to catch wax cappings once they're removed – use a capping tray or a clean baking tray.
- Honey jars – food-safe jars with tight-fitting lids for honey storage. Choose glass or plastic, and buy more than you think you need.
- Measuring jug with spout, to pour honey into jars.
- It is possible to extract honey by hand, but an extractor makes it much easier. If you're not quite ready to invest in your own extractor, you may be able to borrow or rent one from your local bee club.

Procedure of honey harvesting

- **Step one: Check honey stores**

First, check that your honey is ready to harvest. All the frames in your hives should be full, and the honey should be completely covered with a white cap of wax.

- **Step two: Remove frames**

Lift full frames from each hive and lay them on a clean, stable surface. Remember to leave enough stored honey to feed your bees.

Procedure of honey harvesting

Step three: Set up your space

- If you're using an extractor, set it up in the middle of the room so you can move around it easily. Hook your mesh strainer to the top edge of your collection bucket and place it under the spout of the extractor.

- Place your capping trays on a bench or table. Plug in your uncapping knife and make sure to leave it on a stable surface – you don't want to step on a hot blade in the middle of extraction.

Procedure of honey harvesting

Step four: Removing the wax

- When you use an extractor, you need to uncap your frames first. Check the inside of the extractor tank to work out how many frames it holds – some smaller models will only take one frame at a time, while others hold up to 12. Uncap the number of frames you need to fill your extractor, and leave the others capped for now.
- Use the heated knife to scrape the white wax cappings from both sides of each frame. Stand over a capping tray, so wax and honey don't get all over the floor. If you haven't done it before, it might take a while to get the depth right – go for a lighter touch at first, so you don't lose too much honey.

Procedure of honey harvesting

Step five: Extraction

- Inside the body of your extractor, there should be a sleeve or bracket for frames to fit into. Fill these brackets with scraped frames, then switch the extractor on – or turn the handle if you're using a manual model.
- As the tank of the extractor spins, honey is sucked out of the frames by centrifugal force – it needs to spin very quickly to get all the honey out. From there, honey drips down the sides of the tank, then out through the opening at the bottom.
- When you've spun your tank for a while, check the visible side of the frame for honey. If you're satisfied that it's empty, turn the frame – or frames – around and repeat for the other side.
- When the second sides are empty, uncap more frames, refill the extractor, and spin again. Repeat until all your frames are empty.

Procedure of honey harvesting

Step six: Drip and strain

- Honey will start to drip down the walls of the extractor as soon as it starts spinning, but it won't necessarily reach your collection bucket straight away. Eventually, you'll see the first drops flowing from the tap and into the strainer on top of your collection bucket.

- The honey will sit in the strainer for a while at first, then slowly drip through the fine mesh and into your bucket.

- Depending on the heat in your extraction room and the number of frames you're processing, honey can take an hour or more to finish flowing. If you're dealing with many frames, you may even need a second collection bucket.

Procedure of honey harvesting

❑ Step seven: Filling the jars

- While the honey is flowing, sterilise and set up your jars and lids. When it finally stops dripping from the extractor tap, remove the bucket – but replace with a smaller bowl to catch any extra droplets.
- Take the strainer off the top of the bucket and set aside, then use your measuring jug to scoop and pour honey into your jars. Start with larger jars, then use the last of the honey to fill any smaller jars. Cap each jar tightly, and label with stickers or a pen. Store your honey harvest in a cool, dark cupboard or pantry until you're ready to eat it, sell it, or give it away.

Procedure of honey harvesting

Step eight: Storing beeswax

- When extraction is finished, you'll be left with a pile of wax, which can be used to make candles, lip balm, and other useful products. Before using it you'll need to separate the wax from the honey.

Procedure of honey harvesting

Step nine: Clean up

- Although harvesting honey can get messy, clean-up is pretty straightforward. Honey is water-soluble, so wash out your extractor, trays, and other equipment with hot water and a mild detergent. Wipe down surfaces with hot water and a cleaning cloth.

Steps involved in processing of honey

1.Prepare for Harvesting:
Choose a warm, dry day to collect honey-filled frames to minimize moisture in the honey.
2.Harvest Honeycombs:
Carefully remove honey-filled frames from the beehive, using tools to avoid damaging the comb.
3.Transport to Processing Area:
Place the frames in secure, clean container and transport them to a sanitized processing area to avoid contamination.

Steps involved in processing of honey

4.Uncap Honeycombs:
Use an uncapping knife or fork to gently remove wax caps from the honeycomb cells, exposing the honey inside.

5.Extract Honey:
Load the uncapped frames into a honey extractor (centrifuge) to spin the honey out of the comb, ensuring efficient extraction.

6.Strain Honey:
Pour the extracted honey through a fine strainer or cheesecloth to remove wax particles, bee fragments, and impurities.

Steps involved in processing of honey

7.Settle and Remove Air Bubbles:
Allow the strained honey to sit in a settling tank, letting any air bubbles and finer particles rise to the top.
8.Defoam as Needed:
Skim off any foam or scum that forms on the surface to ensure a clear, high-quality honey product.
9.Bottle and Seal:
Transfer the settled honey into sterilized jars or bottles, seal tightly to maintain freshness, and label for sale or storage.
10.Store Properly:
Store sealed honey jars in a cool, dry place to prevent crystallization and preserve the honey's quality.

FACTORS AFFECTING QUALITY OF HONEY

1. Method of extraction, e.g. direct heating of the honey combs discolours the combs lowering its quality.
2. Type of flowers from which the nectar was collected.
3. Season of the year, honey formed in dry seasons are usually of low quality.
4. Stage of honey maturity, mature honey is of better quality.
5. Equipment used.

FACTORS AFFECTING QUALITY OF HONEY CONTINUES ….

6.Method of processing.

7.Skills of the honey harvester.

8.Adulteration of the honey.

9.Keeping conditions/quality.

Ways of improving the quality of honey in Uganda

1. Use of Modern Beehives: Advanced hive designs like **Langstroth and Kenyan Top-Bar hives** help prevent contamination and improve honey quality by keeping honeycombs off the ground. These hives are easier to inspect and harvest, which reduces handling that can introduce impurities.

Example: Farmers in Bushenyi District using Langstroth hives report higher quality honey, with fewer contaminants, which is more marketable due to its purity.

2. Improved Bee Forage: Providing bees with diverse and quality forage from nectar-rich plants enhances honey flavor, aroma, and nutritional profile. Planting bee-friendly flowers and trees, such as acacia and eucalyptus, in and around apiaries improves honey quality.

Example: Beekeepers in Kabale who planted a variety of flowering plants noted that their honey had a distinctive taste and attracted higher prices at local markets.

Ways of improving the quality of honey in Uganda

3. Good Hive Management Practices: Regular hive inspections to check for pests, diseases, and overall colony health are critical. Reducing hive disturbance and maintaining hive cleanliness prevents the bees from becoming stressed, which can affect honey production and quality.
Example: Beekeepers trained by the National Agricultural Advisory Services (NAADS) in maintaining clean hives observed less disease prevalence and produced honey with a cleaner taste.

4. Proper Harvesting Techniques: Harvesting honey at the right time—when it is mature and capped—reduces moisture content, which improves quality and shelf life. Unripe honey with high moisture levels is prone to fermentation and spoilage.
Example: Farmers in Mbale trained in harvesting only capped honey noted a reduction in spoilage and increased the market value of their honey.

Ways of improving the quality of honey in Uganda

5. Minimizing Smoke Exposure: Excessive smoke during harvesting can alter honey's flavor. Using minimal smoke or alternative harvesting techniques reduces contamination and preserves the natural taste of honey.
Example: Beekeepers in Lira who switched to minimal smoking reported that their honey retained a more natural taste, which customers preferred.

6. Proper Honey Extraction Methods Using clean, food-grade equipment for honey extraction prevents contamination. Manual extraction methods should also be hygienic to avoid foreign materials into honey.

Example: In Gulu, a cooperative invested in stainless steel extractors, leading to a noticeable improvement in honey purity, which allowed them to sell at premium prices.

Ways of improving the quality of honey in Uganda

7. Adequate Filtering and Straining

Filtering honey to remove bee parts, wax, and other impurities is essential for clarity and purity. Fine mesh or filters suitable for honey ensure a cleaner product.

Example: Beekeepers in Fort Portal who implemented fine straining techniques received positive feedback on their honey's clarity and quality, increasing demand.

8. Controlled Processing Temperatures

Heating honey at high temperatures can degrade its enzymes and natural flavors. Gentle processing at low temperatures preserves honey's beneficial properties and quality.

Example: In Mbarara, a processing unit that avoided high temperatures produced honey with better taste and nutritional value, enhancing its appeal in health-conscious markets.

Ways of improving the quality of honey in Uganda

9. Proper Storage Practices

Storing honey in cool, dry places in air-tight, food-grade containers preserves its quality by preventing fermentation and moisture absorption.

Example: Farmers in Hoima who stored honey in sealed containers observed that their honey maintained a longer shelf life and consistent quality.

10. Quality Control Standards and Certification

Adopting quality control standards like grading and certification ensures honey meets local and international market requirements. Certification assures consumers of quality and increases trust in Ugandan honey.

Example: Certified honey from beekeepers in Arua has seen increased demand, especially from export markets, due to the assurance of quality.

Ways of improving the quality of honey in Uganda

11. Reducing Adulteration and Maintaining Purity: Honey adulteration with sugar syrup or other additives reduces quality and market trust. Strict measures and community awareness to discourage adulteration preserve the purity of Ugandan honey.
Example: A cooperative in Kampala launched a purity campaign, educating members on the value of maintaining unadulterated honey, which led to higher prices and repeat customers.

12. Implementing Traceability Systems: Traceability ensures honey quality by tracking production from hive to sale, allowing for accountability and quality assurance at every stage.
Example: Beekeepers in Jinja who implemented QR code labeling for traceability attracted attention from retailers who value transparency, resulting in greater market access and better prices.

USES OF HONEY

1. Food for humans as a sweetener or eaten directly.
2. Health benefits are derived from feeding on honey e.g. for ulcers, skin and wound healing.
3. Recovery from alcohol intoxication.
4. Raw material for baked products and confectionary.
5. Raw material for cosmetics industry.

Different products from apiculture

- ✓ Honey: A versatile natural sweetener rich in antioxidants, used in foods, cosmetics, and traditional medicine.
- ✓ Beeswax: A byproduct used for candles, cosmetics, and as a base in skincare for its moisturizing properties.
- ✓ Royal Jelly: A creamy secretion that nourishes queen bees, popular in supplements and skincare for its potential anti-aging benefits.

Different products from apiculture

- ✓ Propolis: Known as "bee glue," it has antimicrobial and anti-inflammatory properties, used in health supplements and natural remedies.
- ✓ Bee Pollen: Packed with protein, vitamins, and minerals, it's marketed as a health supplement for boosting energy and immunity.
- ✓ Bee Venom: Used in therapeutic and cosmetic treatments, especially for its purported anti-inflammatory and anti-aging effects.

Different products from apiculture

- ✓ Bee Bread: A fermented mixture of pollen and enzymes, rich in nutrients and used as a dietary supplement for boosting immune health.
- ✓ Apilarnil: A lesser-known product made from drone larvae, reputed for its high protein and potential health benefits in tonics and supplements.
- ✓ Honeycomb: Often eaten as is, the honeycomb contains raw honey and beeswax, offering a unique texture and added health benefits.
- ✓ Mead (Honey Wine): An alcoholic beverage made from fermented honey, enjoyed for its flavor and historical significance across cultures.

Roles of bees as pollinators

- **Enhance Crop Yields:**

Bees increase the productivity of many crops, leading to higher yields and better-quality produce.

- **Support Biodiversity:**

By pollinating various plant species, bees maintain diverse ecosystems and plant populations.

- **Promote Plant Reproduction:**

Bees facilitate sexual reproduction in flowering plants, helping plants produce seeds and fruits.

Roles of bees as pollinators

- **Aid in Food Security:** Bee pollination is essential for many fruits, vegetables, and nuts, supporting a stable food supply.
- **Improve Nutritional Quality:** Bee-pollinated crops tend to be richer in nutrients like vitamins and minerals.
- **Support Wild Flora:** Bees pollinate wild plants, preserving natural habitats and the wildlife that depend on them.

Roles of bees as pollinators

- **Enable Seed Production:**

Bees play a crucial role in seed formation for crops like sunflowers, alfalfa, and clover (Suso et al., 20216).

- **Increase Genetic Diversity:**

Pollination by bees leads to cross-pollination, enhancing genetic diversity in plants.

- **Promote Soil Health:**

Pollinated plants contribute to soil stabilization and fertility through root systems and organic matter.

- **Boost Economy:**

Bee pollination supports agricultural industries and economies worldwide by enhancing crop production value.

Modern Strategies of marketing honey in Uganda

i. Local Markets and Roadside Vendors: Many small-scale beekeepers sell honey directly to consumers at local markets and roadside stalls, allowing for face-to-face interactions and immediate sales.
Example: In Mbarara, roadside vendors near popular travel routes sell honey in labeled jars, attracting travelers who prefer purchasing local honey while passing through.

ii. Supermarkets and Grocery Stores. Honey producers supply supermarkets and grocery stores in urban areas, allowing consumers easy access to branded honey products in clean, labeled packaging.
Example: Bee Natural Uganda sells its branded honey in major supermarkets like Nakumatt and Shoprite, where the product is positioned to appeal to health-conscious and urban consumers.

Modern Strategies of marketing honey in Uganda

iii. Online Marketplaces and E-commerce: Some honey businesses leverage online marketplaces and e-commerce platforms like Jumia and Facebook Marketplace to reach a broader audience, especially urban customers who prefer online shopping.
Example: A honey producer in Kampala uses Jumia to sell directly to customers nationwide, offering delivery options to reach customers who may not have access to local markets.

iv. Agro-Tourism and Honey Tasting Experiences: Agro-tourism sites and honey farms offer honey tasting and sales as part of the visitor experience, educating visitors about honey production while encouraging purchases.
Example: The Golden Bees honey farm in Kasese hosts tourists who learn about beekeeping, sample honey, and buy products directly from the farm.

Modern Strategies of marketing honey in Uganda

v. Community Cooperatives and Associations: Honey cooperatives pool honey from multiple small-scale producers and brand it under one label. This approach improves access to larger markets and reduces individual marketing costs.
Example: The Uganda National Apiculture Development Organization (TUNADO) helps cooperatives market their honey under a unified brand, facilitating sales to supermarkets and larger buyers.

vi. Export Markets: Some Ugandan honey producers have gained access to export markets by meeting quality standards for international buyers, allowing for higher profit margins.
Example: Lweza Clays Ltd. in Uganda exports honey to regional markets in Kenya and Rwanda, positioning Ugandan honey as a premium product abroad.

Modern Strategies of marketing honey in Uganda

vii. Health and Wellness Shops: Honey is marketed as a health product in wellness shops, emphasizing its natural health benefits. This positioning attracts customers seeking organic and natural remedies.
Example: In Kampala, GoodLife Pharmacy stocks Ugandan honey, promoting it as a natural alternative for health-conscious customers interested in organic foods.

viii. Hotel and Restaurant Partnerships: Hotels and restaurants incorporate locally-sourced honey into their menus, such as in breakfast spreads, beverages, or as a cooking ingredient, which also allows for brand promotion.
Example: Honey suppliers in Entebbe collaborate with hotels to provide branded honey jars used in breakfast servings, showcasing the product to both local and international visitors.

Modern Strategies of marketing honey in Uganda

ix. Organic and Farmers' Markets: Farmers' markets provide a platform for small producers to showcase honey as an organic and locally-made product, appealing to customers interested in sustainable sourcing.
Example: The Nakasero Farmers' Market in Kampala hosts beekeepers who display honey in various forms, attracting customers looking for organic produce and locally sourced goods.

x. Bulk Sales to Food Processors and Manufacturers: Honey is marketed in bulk to food processors who use it in products like baked goods, beverages, or beauty products, expanding market reach through industrial use.
Example: Rwenzori Honey Supplies sells bulk honey to a confectionery company in Uganda, which uses it as a sweetener in cookies and granola bars, allowing the brand to reach a different market segment.

Modern Strategies of marketing honey in Uganda

xi. Social Media Marketing and Influencers: Many small and medium honey businesses use social media platforms like Facebook, Instagram, and Twitter to reach younger, urban consumers. Influencers also help promote honey products by sharing their experiences.
Example: A small honey brand in Kampala collaborates with local influencers on Instagram, who post recipes and showcase the honey's benefits, generating interest and online sales.

xii. Packaging Innovations and Value-Added Products: Attractive packaging and the development of value-added products like honey sticks, infused honey, or honey-based skincare items allow producers to diversify and attract new customers. **Example:** In Jinja, a local beekeeper sells honey infused with ginger and lemon in glass jars, marketed as both a culinary and medicinal product, which appeals to customers interested in natural health products.

References

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WE MEET NEXT WEEK - 8