



# TUNZA NYUKI

# NEWS

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## ISSUE IV

A publication of Tunza Nyuki Beekeeping Hub



**Nyuki Manager: Technology for Bee Conservation**

**Stingless Bees and the Environment**

**Processing Beeswax**



# CEO'S *Message:*



Dear Readers,

Welcome to the latest edition of our beekeeping community's magazine, where we delve into the dynamic intersection of technology and apiculture. As Chairman, I'm thrilled to showcase the impactful role of technology in enhancing beekeeping practices.

Our exploration begins with "Nyuki Manager," a cutting-edge, web-based beekeeping management system. This technological marvel streamlines operations, providing tools for hive and honey record management, inspections, and data visualization. Nyuki Manager, built on a modern software framework, assures scalability, security, and a user-friendly experience.

In the "Tech Talk" segment, we delve deeper into the functionalities of Nyuki Manager. This smart tool employs technology to monitor beehives, offering valuable insights without disrupting the bees. From hive management to inspection tracking, this system plays a pivotal role in ensuring sustainability and optimal hive health.

The importance of Nyuki Manager is underscored by its key features:

**Disease Assessment:** Track hive inspections to detect health issues early, enabling timely interventions and colony preservation.

**Traceability of Honey Origins:** Record harvest details for transparent honey sourcing, bolstering quality control and consumer trust.

**Understanding Productive Regions:** Aggregate regional data to analyze trends in honey production, hive health, and environmental factors, supporting informed decision-making.

**Data-Driven Decision Making:** Centralize hive management and inspection records, empowering beekeepers and administrators with real-time insights for informed decisions.

Anticipated outcomes include increased hive health, enhanced honey quality, sustainable beekeeping practices, and industry growth through collaborative efforts.

As you flip through these pages, may the technological advancements showcased here inspire a new era of innovation and efficiency in beekeeping.

Warm regards,

Brian Ngetich

# SETTING UP A *Beekeeping Project*

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When you're starting a beekeeping project, it's essential to know what you need and understand your surroundings. Let's look at the basics of setting up a successful beekeeping project.

Firstly, think about what you need. You'll require beehives, some protective gear like suits and veils, and the tools to work with the bees. Make sure to get good-quality equipment to keep your bees and yourself safe.

Consider the environment around you. Bees like calm and quiet places, so choose a location away from too much noise and disturbance. Also, think about the weather - bees like it neither too hot nor too cold. Find a spot with enough flowers nearby for your bees to collect nectar.

You could learn about the plants around your area. Bees need flowers for nectar, so having a variety of flowers helps them make honey. Also, be aware of any pesticides in your area - they can harm your bees.

Understanding the technicalities of beekeeping is crucial. Know the types of bees you want to keep - some are better for honey, while others are good pollinators. Learn about the different parts of a beehive and how to take care of the bees. Knowing when to harvest honey and how to do it without disturbing the bees too much is also important.

Consider talking to experienced beekeepers. They can share their knowledge and give you helpful tips. Joining a local beekeeping club or community can connect you with others who share your interest.

Setting up a beekeeping project is like creating a home for your bees. It's about providing the right environment and understanding the needs of your buzzing friends. Take your time to learn, gather the right tools, and enjoy the sweet journey of beekeeping. With the right knowledge and care, your beekeeping project can become a thriving success.

## *Plants for Bees*

### **1. Bottle Brush (*Callistemon citrinus*)**

This vibrant flowering plant provides a rich source of nectar for bees.



### **2. Acacia**

Known for both its nectar and pollen, Acacia senegal is a valuable resource for bees.



### **3. Sunflower**

A familiar garden favorite, sunflowers are not only aesthetically pleasing but also offer abundant nectar and pollen for bees.



### **4. Cultivated Cucumber/Pumpkin**

Cucumber plants provide a sweet nectar source for bees, contributing to their overall nutrition.

# NYUKI MANAGER

## Tunza Nyuki's Digital Technology to Monitor Hive Health and Performance

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Tunza Nyuki has something super cool for beekeepers – it's called Nyuki Manager (Bee Manager).

This is a web-based beekeeping management system designed to streamline the operations of beekeepers, providing tools for hive and honey record management, inspections, and data visualization. The system is built on a modern software development framework, ensuring scalability, security, and a user-friendly experience.

### Tech Talk

Nyuki Manager is a smart tool that uses technology to check on beehives. It helps beekeepers see how the bees are doing without bothering them too much. is a testament to the marriage of traditional practices with modern technology. By providing a centralized platform for beekeepers, field officers, and administrators, it facilitates efficient hive management, inspection tracking, and data analysis. As the beekeeping industry continues to evolve, such systems play a pivotal role in ensuring sustainability and optimal hive health.

### Importance of Nyuki Manager

#### 1. Disease Assessment:

One of the pivotal features of the system is the ability to record and track hive inspections. Beekeepers can log observations about hive health, behavior, and any signs of diseases. This data becomes invaluable for the early detection of potential issues, allowing for timely intervention and the preservation of bee colonies.

#### 2. Traceability of Honey Origins:

With Nyuki Manager, beekeepers can trace the origin of honey with precision. Each harvest is recorded, including details like date, weight, and hive source. This traceability not only enhances the quality control process but also supports marketing efforts by providing consumers with transparent information about the honey's source.

#### 3. Understanding Productive Regions:

The system allows for the aggregation of data at a regional level. Beekeepers and field officers can analyze trends in honey production, hive health, and environmental factors. This insight aids in understanding which regions are more conducive to productive beekeeping, allowing for informed decision-making and resource allocation.

#### 4. Data-Driven Decision Making:

By centralizing hive management, inspection records, and honey harvest data, the system empowers beekeepers and administrators to make data-driven decisions. From optimizing hive locations to planning harvest schedules, every decision is backed by insights derived from real-time data.

### Anticipated Outcomes

#### 1. Increased Hive Health:

Early detection of diseases and timely interventions contribute to the overall health of bee colonies. The system's alert mechanisms ensure that beekeepers are promptly notified of any anomalies, fostering a proactive approach to hive management.

#### 2. Enhanced Honey Quality:

The traceability feature not only assures consumers of the honey's authenticity but also allows beekeepers to implement best practices based on specific hive performance. This, in turn, contributes to the production of high-quality honey.

#### 3. Sustainable Beekeeping Practices:

By understanding the factors influencing hive productivity and bee health, beekeepers can adopt sustainable practices. This includes optimizing hive locations, implementing effective pest control measures, and promoting biodiversity in apiary surroundings.

#### 4. Industry Growth and Collaboration:

As more beekeepers adopt advanced management systems, the industry as a whole stands to benefit. Collaboration among beekeepers, field officers, and administrators becomes seamless, fostering knowledge sharing and collective efforts towards sustainable beekeeping.

From disease prevention to traceability and data-driven decision-making, the system is poised to revolutionize the 21st Century African beekeeping landscape, ensuring the well-being of bees and the sustainability of this vital industry.

# BEE POLLEN

## Health Benefits and Collection of Bee Pollen

Bee pollen, a powerhouse of nutrition, serves as the main source of healthy fats, proteins, and nourishment for nurse bees, baby bees, and drone bees. Research has uncovered that bee pollen comprises more than 250 biologically active substances, including proteins, carbs, lipids, fatty acids, vitamins, minerals, enzymes, and antioxidants. Impressively, it's about 35% pure protein by composition.

Derived from the powdery substance collected by bees on their legs and bodies from plants and flowers, bee pollen is a vital food source within the hive. Upon returning to the hive, the collected pollen is coated with a small amount of beeswax and honey by other bees, forming what is known as "bee bread." This bee bread serves as the primary protein source for the colony.

### Health Benefits of Bee Pollen

**Nutrient-Rich:** Bee pollen contains essential macro-nutrients like healthy fats, proteins, and carbohydrates. Additionally, it packs trace minerals, vitamins, enzymes, and amino acids.

**Antioxidant Power:** Bee pollen boasts substantial amounts of antioxidant substances, countering harmful free radicals in the body linked to cancer and type 2 diabetes.

**Liver Protection:** Studies have shown the potential of bee pollen in aiding the healing of liver damage under specific research conditions.

**Anti-Inflammatory Properties:** Bee pollen may help mitigate the effects of seasonal allergies and reduce general inflammation, addressing specific genetic mutations.

**Relief for Breast Cancer Patients:** Research indicates that bee pollen can alleviate symptoms such as hot flashes and night sweats experienced by breast cancer patients during treatment.

**Wound Healing:** Scientific studies demonstrate the effectiveness of a bee pollen ointment in promoting healing from burns.



### Collecting Pollen Using a Pollen Trap

#### How Pollen Traps Work:

When foragers return to the hive with pollen, they pass through small openings in the pollen trap. These openings are strategically sized to allow the bee to enter but strip the pollen from its legs. The dislodged pollen falls into a tray below, ready for collection and processing. To conclude the day's pollen collecting, the trap can be easily opened, allowing unimpeded access for foragers and drones.

#### Various Designs, Common Purpose:

While numerous designs are available, the fundamental function of pollen traps remains consistent. The best designs ensure unrestricted access for drones and foragers, maintaining a balanced flow of pollen into the hive. This is achieved by providing an open entrance to the side, accommodating the needs of both foraging bees with pollen and drones.

### Finally.....

#### Collect Responsibly:

Responsible pollen collection is crucial for the long-term health of honeybee colonies. To minimize stress on the colony, limit pollen collection to a few hours each day or on alternate days. It is essential to collect pollen when the hive has sufficient stores, and an abundance of pollen is available. Avoid collecting during periods of pollen scarcity, either within the hive or in the surrounding forage.

# HUMANE BEE REMOVAL

## Preserving Bees and Community Harmony

### Steps in Humane Bee Removal:

#### Assessment:

We evaluate the situation, understanding the bee colony's size, location, and potential risks.

#### Gentle Encouragement:

We use techniques that encourage the bees to move voluntarily. This includes the use of attractants and gentle guiding methods like cutting the combs and nicely placing them in a empty hive which can be hanged a few centimeters from where they lived.

#### Safe Relocation:

Once the bees are coaxed into the new home, we relocate them to a more natural environment where they can thrive without causing disturbances. This can be another beekeeper's farm or Tunza Nyuki's Demonstration Farm.

#### Prevention Measures:

To prevent future occurrences, we provide recommendations for securing spaces and minimizing attractants and other factors to keep bees away from areas of concern.

#### Community Harmony:

Our commitment to humane bee removal extends beyond preserving the bees themselves. We aim to foster harmony within our communities by ensuring that the presence of bees does not lead to fear or harm. By employing humane practices, we contribute to a positive coexistence between people and bees.

#### Educating Communities:

Part of our mission involves educating communities about the importance of bees, dispelling fears, and offering insights into the benefits of having bees in our ecosystems. By understanding and appreciating the role of bees, communities can coexist peacefully with these essential pollinators.

Ensuring the safe relocation of bees is a key concern at Tunza Nyuki. Our approach revolves around kindness and understanding, promoting harmony between bees and our communities.

### Why Humane Bee Removal Matters:

Bees play a vital role in nature, and when they find their way into places where people live, it's crucial to handle their removal with care. Instead of harming the bees, we aim to relocate them, ensuring their continued contribution to the environment.

### The Tunza Nyuki Approach:

At Tunza Nyuki, our method of bee removal focuses on non-lethal techniques. We gently encourage the bees to relocate to more suitable environments, away from areas where they may cause concern to our communities.



*Tunza Nyuki team removing and relocating an aggressive bee colony from a House*

Tunza Nyuki's humane bee removal practices reflect our dedication to both the well-being of bees and the harmony of our communities. Through careful assessment, gentle encouragement, safe relocation, and community education, we strive to create a world where bees and people live together in balance.

# AVOIDING BEE-HUMAN CONFLICT

## Training the Bomet County Emergency Response Department To Handle Bee-Related Accidents And Avoid Bee-Human Conflict.



In Bomet County, where the harmonious coexistence between humans and honey bees is paramount, establishing a robust emergency response system is a crucial step toward ensuring the safety of both residents and pollinators. This initiative aims to train the Bomet County Emergency Response Department to adeptly handle honey bee-related accidents and mitigate potential bee-human conflicts.

### The Dynamics Between Humans and Honey Bees

Honey bees, essential pollinators for agriculture and biodiversity, occasionally find themselves in urban or densely populated areas. While these instances are generally harmless, there's potential for conflicts that could result in stings and panic. Recognizing this, the training program focuses on enhancing the emergency response team's comprehension of honey bee behavior, habitats, and factors triggering defensive actions.

### Key Objectives of the Training Program

#### 1. Identification and Risk Assessment

Equip emergency responders with the ability to identify different species of bees. Conduct risk assessments to determine the level of threat posed by a particular swarm or hive.

#### 2. Communication Strategies

Develop effective communication strategies to relay information to the public during bee-related incidents. Establish communication channels with local beekeeping associations and experts for swift collaboration.

#### 3. Protective Measures:

Provide training on the proper use of protective gear to minimize the risk of stings during emergency responses. Instruct responders on methods to secure the affected area to prevent further incidents.

#### 4. First Aid for Bee Stings:

Educate responders on administering first aid for bee stings, considering potential allergic reactions. Ensure the availability of bee sting first aid kits in emergency response vehicles.

#### 5. Collaboration with Beekeeping Experts:

Foster collaboration with local beekeeping associations and experts to provide real-time guidance during incidents. Establish a protocol for involving beekeepers in safely relocating swarms or hives when necessary.

#### 6. Public Awareness Campaigns:

Develop and implement awareness campaigns to educate the community about honey bee behavior and the importance of conservation. Disseminate information on emergency response protocols to ensure public cooperation.

### Project Rationale

#### 1. Addressing Safety Concerns:

The primary motivation behind this training initiative is to address safety concerns related to honey bee incidents. By arming the emergency response department with knowledge and strategies, the aim is to minimize the risk of bee-related accidents.

#### 2. Fostering Coexistence:

Cultivating an environment where humans and bees can coexist peacefully is at the core of this project. The training program emphasizes the importance of understanding and respecting honey bee behavior.

#### 3. Promoting Sustainable Solutions:

Rather than resorting to extermination in the event of bee-related incidents, the training program promotes sustainable solutions such as safe relocation, highlighting the ecological importance of bees.

### Community Engagement and Feedback

A vital aspect of the training program involves engaging with the local community to gather insights and address concerns. Community feedback will be actively sought to refine and enhance the emergency response strategies continually.

# STINGLESS BEES *and Their Crucial Role in Biodiversity*

## Stingless Bees are Silent Heroes in the Environment

When we think of bees, we often picture the familiar yellow and black stripes, the buzzing sound, and the potential for a painful sting. But did you know that there are bees without a sting? These bees, known as **meliponines** or **stingless bees**, are a fascinating part of the biodiversity that Tunza Nyuki values and works to conserve.

Worldwide, there are over 600 species of stingless bees, although only a fraction of them have been studied. These unique bees are smaller than ordinary honey bees, with reduced wing venation, and most notably, they lack a sting. However, this doesn't make them defenseless, as they are known to bite intruders.

Similar to honey bees, stingless bees are eusocial insects. They form perennial colonies consisting of a single queen, hardworking workers, and temporary males. In their natural habitats, these bees build nests in various locations like tree cavities, holes in the ground, dead wood, cracks in stone or mud walls, and even abandoned termite nests.



Stingless bee Hives at Tunza Nyuki Demonstration Farm



### The Importance of Stingless Bees

Stingless bees play a crucial role in the environment as pollinators of diverse flowering plants. Their diet primarily consists of pollen and nectar, making them valuable contributors to the pollination process. In agricultural systems, some stingless bee species have shown promising results in pollinating crops such as capsicum, leading to increased yields.

Apart from their pollination duties, these remarkable bees also produce honey. The honey from stingless bees is highly prized for its medicinal value, thanks to its antibiotic properties. Additionally, the propolis and wax produced by stingless bees boast antioxidant and anti-inflammatory properties, adding to the overall significance of these tiny but mighty creatures.



### Tunza Nyuki's Contribution

At Tunza Nyuki, we recognize the importance of stingless bees in maintaining biodiversity and supporting ecosystems. As part of our commitment, we have initiated programs to rear and split colonies of stingless bees. This effort aims to promote the well-being of these bees and contribute to the broader ecosystem.

Through our actions, we strive to create awareness about the vital role played by stingless bees in biodiversity. By rearing and splitting colonies, we ensure the preservation of these unique pollinators, allowing them to thrive and continue their essential work in sustaining the environment.

The humble stingless bee, with its lack of a sting but abundance of benefits, stands as a key player in biodiversity. Tunza Nyuki's efforts to rear and split colonies of these bees align with our commitment to preserving nature's wonders and fostering harmony between humans and the environment.

## Empowering SELF-HELP GROUPS through Beekeeping

Tunza Nyuki is Working with a Network of Women Groups in Bomet County

Somewhere in Bomet County, something great is happening - women are becoming powerful through beekeeping! Let's talk about how beekeeping is making a big difference for these self-help groups.

Firstly, they are learning how to be beekeepers. It's like having a new skill that helps them earn money and take care of their families. Beekeeping is not too hard, and the women are doing great at it.

They are forming little teams to work together. Teamwork makes everything easier, and they support each other in beekeeping. It's like having friends who help you when you need it.

Beekeeping is not just about honey; it's about selling it too. These women sell the honey they collect, and the money goes back to their groups. This means more money for everyone, and they can use it for good things like sending their kids to school or getting medicine.

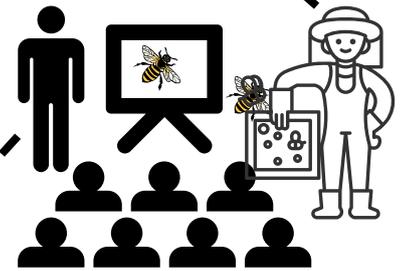
Through beekeeping, these women are becoming leaders. They learn how to make decisions for their groups and talk to other people. It's like they are the bosses of their beekeeping world, and they are doing it with confidence.

These self-help groups are growing because of beekeeping. More women want to join, and they all work together like a big family. It's making their communities stronger and happier.

In the end, beekeeping is changing the lives of rural women. They are not just beekeepers; they are leaders, supporters, and successful earners. The buzz of beekeeping is making these women powerful, and their success story is inspiring others in their communities. Beekeeping is more than just honey - it's a sweet journey of empowerment and success!



Coming Together



Training and Onboarding



Beekeeping



Sales



Empowerment

# Processing BEESWAX

## A Simple Guide to Beeswax Rendering

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Beeswax is a valuable product straight from the beehive, and rendering it doesn't have to be complicated. Follow this step-by-step guide for an easy and effective process.

### Step 1: Boiling the Comb

Start by filling a large pot halfway with water. Add all the sorted squeezed and brood comb. Log hives are great for wax production. Bring the water to a boil and let the comb break down completely, which usually takes about half an hour.

### Step 2: Squeezing the Mixture

Take the boiled contents and pour them into a porous plastic grain bag/mosquito net. Secure the bag to a tree branch using a rope. Employ two sturdy boards to squeeze the mixture, extracting liquids. Water and melted wax will fall into the metal container below.

### Step 3: Cooling, Separating

Let the mixture cool, allowing you to remove the hardened wax from the top, leaving water in the bottom of the container. Take this wax, Scrape off any material stuck to the underside.

### Step 4: Refining

Take the disc/broken wax pieces and melt it, and strain it for pure, clean beeswax.

### Step 4: Finalizing the Wax

Behold the finished product - pure, clean wax! Ensure the container holding the hot wax will release it after hardening. Use a plastic or flexible form, letting the wax cool slightly before pouring. A thin coat of cooking oil aids in easy release.

This simple rendering process makes it accessible for both small and large industries, meeting the demand for this valuable commodity in Africa and beyond.

# ABOUT *Tunza Nyuki Beekeeping Hub*

## Mission, Vision, Objectives, Membership, Core Activities, Future Plans, and Organizational Structure

### What is Tunza Nyuki Beekeeping Hub

Tunza Nyuki is swahili word that means “Take Care of the Bees.” The Tunza Nyuki Beekeeping Hub is an organization that seeks to help people build better lives and take care of the environment through beekeeping.



### Vision

Empowering beekeepers for sustainable livelihoods and environmental stewardship, contributing to the development of climate-resilient landscapes.

### Core Activities

1. Providing training and workshops on beekeeping best practices.
2. Facilitating market linkages for beekeepers.
3. Promoting environmental conservation initiatives, including forest restoration projects.
4. Empowering women and youth in beekeeping entrepreneurship.
5. Developing and implementing technology solutions for beekeeping and environmental monitoring.

### Mission

To empower beekeepers with the knowledge, resources, and support needed to thrive economically while promoting environmental conservation through sustainable beekeeping practices.



### Organizational Structure

The organization operates in a decentralized manner to remain fast, agile, and adaptable. The board of directors rotates every two years to ensure fresh perspectives and effective governance. The management team consists of dedicated individuals with expertise in beekeeping, environmental conservation, marketing, and technology.

### Main Objective

1. Provide training and capacity-building for beekeepers.
2. Facilitate access to markets and resources for beekeeping.
3. Foster environmental awareness and conservation efforts, including reforestation and habitat restoration.
4. Empower women and youth in beekeeping entrepreneurship.
5. Promote the integration of technology for enhanced productivity, traceability, and environmental monitoring in the beekeeping value chain.

### Future Plans

Tunza Nyuki Beekeeping Hub aims to further integrate sustainable practices into beekeeping activities to mitigate environmental impact and promote biodiversity conservation.

### Membership

Tunza Nyuki Beekeeping Hub welcomes members who are passionate beekeepers dedicated to sustainable practices. Membership requires an annual fee of Ksh. 1000. Members come from various counties including Bomet, Nyamira, Kisii, Kericho, and Narok.