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Integrating Antimicrobial Resistance Mitigation into Beekeeping Practices in Eastern Africa

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Ministry of Agriculture &
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Biosecurity Measures in Beekeeping (BMB)

Nelly N. Ndungu (PhD)

nndungu@icipe.org

nellymucugu@gmail.com



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Introduction to biosecurity in beekeeping

- ❖ According to the *Regulation (EU) 2016/429*, biosecurity means **the sum of management and physical measures designed to reduce the risk of introduction, development and spread of diseases** to, from and within: (a) an animal population or (b) an establishment, zone, compartment, means of transport or any other facilities, premises or location; or According to *OIE Scientific and Technical review (2021)*, 39 (3), biosecurity' means **all those operational activities that are applied to reduce the risk of introduction and spread of specific honey bee disease agents**.
- ❖ According to *Apimondia and IZSLT (2020)*, these measures can differ between different countries due to differences in climatic conditions, beekeeping technology used, bee genetics, the health legislations and political decisions on prevalence, virulence and economic impact of the honey bee diseases.
- ❖ These measures apply to exotic and/or established pests/diseases, and are mainly related to the responsible use of veterinary medicines and antimicrobials in beekeeping operations



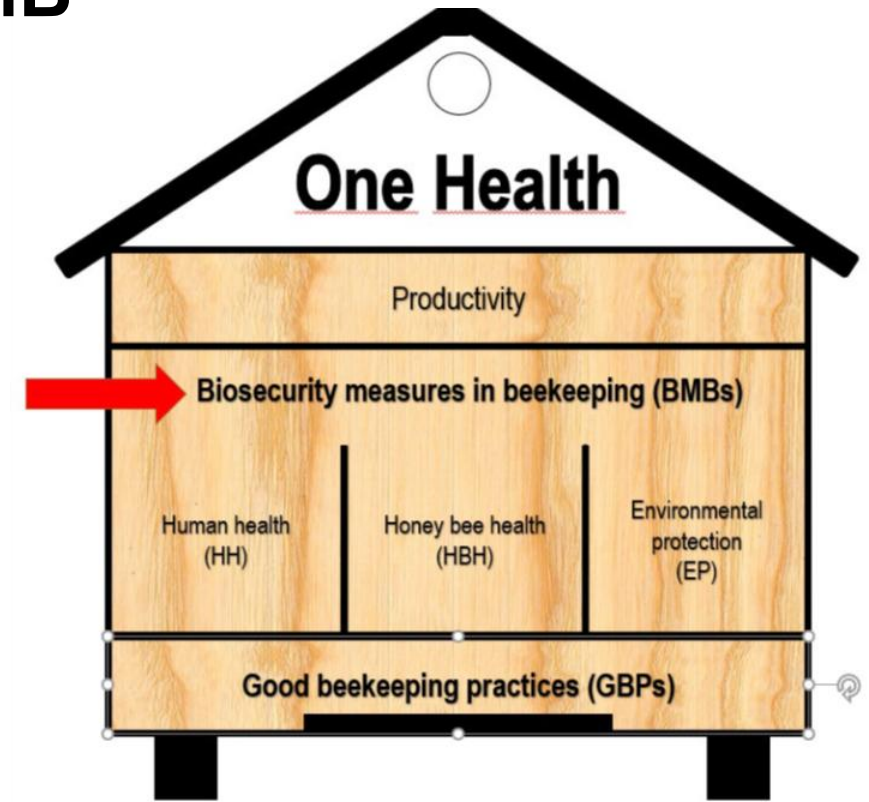
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Significance of BMB

1. Protect honey bee health and productivity mainly against notifiable bee diseases and pests by WOAHA

• *Varroa* mite, AFB, EFB, Nosemosis, SHB, Tracheal mite, Tropilaelaps mites, among others

2. Ensures the adoption of good beekeeping practices (GBPs) to reduce the need for antimicrobials at the apiary level. They represent a prerequisite for the proper implementation of BMBs in day-to-day apiary management



BMB and GBPs in the context of “**One Health Policy**” by Pietropaoli et al (2020).



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140 GBPs grouped into 7 heading exist according to OIE-FAO approach

	N. of GBPs identified
1. General apiary management	63
2. Veterinary medicines	8
3. Disease management (general)	23
4. Hygiene	7
5. Animal feeding and watering	7
6. Record keeping	25
7. Training	7



Available online:

[https://openknowledge.fao.org/server/api/core/bitstreams/285dd834-](https://openknowledge.fao.org/server/api/core/bitstreams/285dd834-945f-4964-8b7d-d2a4c5aab293/content)

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Key Responsible Bodies

Country	Responsible Ministry	Core Operational Focus	
Kenya	Ministry of Agriculture and Livestock Development	Livestock, rural farmer income, and pollination	State Department for Livestock Development
Tanzania	Ministry of Natural Resources and Tourism	Forest preservation, national bee reserves, and honey exports	
Uganda	Ministry of Agriculture, Animal Industry and Fisheries	Agro-industrialization and commercial apiculture extension	
Rwanda	Ministry of Agriculture and Animal Resources	Modernizing value chains and climate-resilient farming	
Burundi	Ministry of the Environment, Agriculture and Livestock (MINEAGRIE)	Integrating honey production into protected park buffer zones	
Somalia	Ministry of Agriculture & Irrigation / Ministry of Livestock	Climate resilience, rural income diversification, and tech training	



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BMB: Kenya

Legal and Regulatory Frameworks

Operational apiary biosecurity measures-

- ❖ The Livestock (Bee Industry) Regulations mandate [apiary registration](#) with local counties, annual licensing, and strict guidelines for bee product handling and sanitation.
- ❖ Importing bees and hive products requires an [import permit](#) and a [health certificate](#) confirming colonies are disease-free.
- ❖ The Livestock Bill penalizes farmers who abandon hives or improperly dispose of diseased honeycombs to prevent pest breeding.
- ❖ Beekeepers must regularly inspect honeybee broods and [report abnormal colony deaths](#) for veterinary intervention and safe disposal.
- ❖ [Protective gear](#) must be used exclusively on [one's own farm](#) or thoroughly sanitized when visiting other apiaries; tools should be new or certified.
- ❖ [Apiaries](#) must be [located](#) away from public areas and pesticide zones, with a clean water source nearby to prevent contamination and ensure biosecurity.



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BMB: Uganda

Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)

Varroa mites, American Foulbrood (AFB) (*Paenibacillus larvae*), and Nosema

- ❖ The National Beekeeping Training and Extension Manual by MAAIF and TUNADO provides [standard procedures](#) for hive hygiene, disease identification, and colony protection.
- ❖ The National Agricultural Strategy (Apiculture Component) guides Uganda's apiculture sector toward commercial competitiveness and mandates improved biological threat monitoring.
- ❖ The "[Save the Bees](#)" Campaign, led by government and Green Cane Innovations, focuses on [mitigating chemical and pesticide risks](#) to protect honeybee health.
- ❖ [Apiary design standards](#) include installing hives on metallic stands and applying pest barriers like used engine oil to prevent pest access.
- ❖ [Operational hygiene](#) requires new or disinfected equipment, prohibits unverified comb transfers, mandates destruction of diseased colonies, and deep burying of dead bees to prevent pathogen spread.
- ❖ [Agro-chemical safety](#) involves [siting apiaries](#) away from pesticide-heavy farms and promoting agroforestry integration to create natural chemical barriers.



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BMB: Ethiopia

- ❖ Apiculture Resources Development and Protection Directive No. 1028/2024: This is the primary national regulatory tool governing honeybee biosecurity. Issued by the [Ethiopian Agricultural Authority](#), it introduces [mandatory registrations](#) for apiary sites and commercial beekeepers.
- ❖ [Import Bans](#) on Live Bees & Equipment (2024 Update): Under Directive No. 1028/2024, commercial operators are explicitly prohibited from importing live bees, used hives, and used beekeeping equipment. This strict border biosecurity measure prevents the introduction of foreign pathogens like *Varroa destructor* mites or American Foulbrood.
- ❖ National Apiculture Development Strategy (2024–2032): This broad policy framework outlines national priorities to counter production constraints. It highlights steps to enforce product traceability, manage bee diseases (like chalkbrood and nosematosis), and curb the widespread adulteration of hive products.
- ❖ Animal Health and Welfare Proclamation No. 1376/2025: This baseline legislation covers general disease surveillance, mandatory reporting of livestock anomalies, and the domestic movement of animal resources, including honeybee colonies.



BMB: Tanzania

Tanzania Forest Services Agency (TFS)

- ❖ The Tanzania Beekeeping Act (Cap. 224) mandates legal reporting of suspected infectious bee diseases, assigns beekeepers responsibility for pest and pathogen control, and empowers inspectors to enter apiaries, quarantine infected areas, and order destruction of diseased colonies. It also [prohibits exposing honey](#) in ways that promote [robbing behavior](#), a key [virus transmission](#) vector.
- ❖ The Beekeeping (General) (Amendment) Regulations enforce strict biosecurity on beekeeping equipment importation, requiring registration fees and official disease-free inspection reports from the country of origin.
- ❖ These regulations also mandate that managed apiaries maintain a minimum [7-kilometer buffer zone](#) from [intensive farmlands and tobacco-growing](#) areas to protect bees from harmful agrochemicals.
- ❖ The [Tanzania National Beekeeping Strategy](#) aims to implement nationwide pest and disease control measures to enhance apiary biosecurity.
- ❖ The strategy also targets the [eradication of adulterated bee products](#) to comply with strict international export standards.



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BMB: Somalia

- ❖ Apiaries should be sited with **buffer distances**: 100 meters from houses and busy roads in forests, and up to 300 meters in open areas; 3 to 4 km away from commercial crop farms to **avoid agrochemical exposure**.
- ❖ Hives must be **elevated** about 1.5 meters on wire-secured stands to prevent access by **pests** such as honey badgers, ants, and termites.
- ❖ **Avoid** introducing **wild swarms** or unverified package bees to prevent mite and foulbrood transmission.
- ❖ **Honey combs** should not be transferred between **colonies** unless both are confirmed healthy to prevent disease spread.
- ❖ Bees must not be fed raw honey from unknown sources; **clean sugar syrup** or candy is recommended to maintain feed biosecurity.
- ❖ Harvesting practices prioritize clean **protective gear and modern smokers**; toxic wood preservatives, unapproved chemicals, and household disinfectants are prohibited inside hives to keep honey chemical-free.



BMB: South Sudan

- ❖ The Plant Protection Policy and Phytosanitary Regulations, under [South Sudan's Ministry of Agriculture and Food Security \(MAFS\)](#), enforce border inspections, import/export permits, and control trans-boundary pests and chemical hazards affecting wildlife and honeybees.
- ❖ The Directorate of Plant Protection manages [quarantine checkpoints](#) at major [borders and Juba Airport](#), enforcing International Plant Protection Convention (IPPC) standards to prevent foreign biological hazards from harming native bee populations.
- ❖ Due to limited statutory enforcement, specialized organizations primarily implement apiary biosecurity measures in South Sudan.
- ❖ The Apiculture Development Agency South Sudan ([ADA](#)) sets quality standards and advocates pest control policies, promoting "nature-based" beekeeping to [enhance climate and biological resilience in local hives](#).
- ❖ The Food and Agriculture Organization ([FAO](#)) SAFER Project introduces [modern hive management](#) techniques to beekeepers in Western Equatoria, including Nzara, Yambio, and Tambura.
- ❖ These [FAO-led trainings](#) encourage farmers to abandon traditional destructive honey harvesting methods, such as open fires and tree felling, which reduce hive disease immunity and cause [colony losses](#).



BMB: Rwanda

- ❖ The Law N 25/2013 governs beekeeping in Rwanda, **mandating strict hygiene** for hives, equipment, and personal handling, and regulates agricultural chemical use near apiaries to prevent colony contamination.
- ❖ The 2015 Ministerial Order details [operational biosecurity protocols](#), including mandatory sanitization of gloves and footwear between colony inspections to prevent cross-contamination.
- ❖ Beekeepers must treat empty hives with approved pest-control agents before introducing new colonies and provide clean, uncontaminated water sources, prohibiting access to stagnant water.
- ❖ Exposing honey or bee products to roaming bees is prohibited to avoid robbing behaviors that facilitate [pathogen spread](#).
- ❖ In [disease outbreak](#) cases, strict containment measures include movement bans on bees, queens, honey, hives, and equipment; mandatory burning of infected dead bees; and establishment of a 3 km protected zone plus a 2 km surveillance buffer.
- ❖ Rwanda enforces a **zero-antibiotic policy** for African honeybees to maintain chemical-free honey, supporting export traceability managed by the Rwanda Inspectorate, Competition and Consumer Protection Authority (RICA).



BMB: Burundi

Legal and Regulatory Frameworks

Operational apiary biosecurity measures-

- Law No. 1/28 of 24 December 2009 (Animal Health Policy) designates bees under national veterinary authority jurisdiction, enabling [movement restrictions and quarantine enforcement to control disease spread](#).
- Authorities have legal power to isolate and quarantine hives and colonies when contagious bee pathogens or infestations are suspected or confirmed.
- Burundi [regulates import and export](#) of biological agents and bee products to prevent introduction of exotic pests and diseases under national biological and plant protection frameworks.
- The Association Burundaise de Biosecurité et de Biosureté (ABUBB) collaborates with the Ministry of Agriculture to monitor biological risks affecting livestock and apiculture.
- Modern beekeeping practices are promoted within protected national reserves like Kibira and Ruvubu through initiatives by the Youth Economic Empowerment and Employment Program (PAEEJ) and the Burundi Office for Environmental Protection (OBPE).
- These frameworks collectively aim to safeguard local apiaries and ecosystems by enforcing biosecurity, disease control, and sustainable beekeeping development within Burundi's protected areas.



Thank You

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