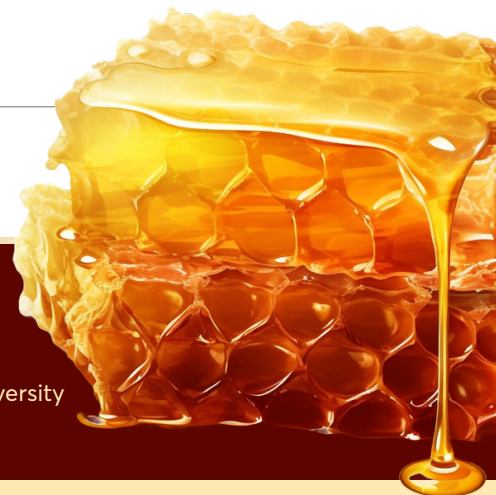


POLICY BRIEF:



Commercialization of Propolis Powder for Improved Health and Incomes in Ugandans (Proven boost)

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Executive Summary

Propolis, a high-value derivative of apiculture, presents a significant economic opportunity for Uganda, with an estimated annual production potential of 325 to 870 tonnes, translating to revenue between USD 1.3 and 3.5 million. Despite this potential, over 99% of Uganda's propolis resources remain underexploited, resulting in substantial economic losses for rural beekeepers. The global market demand for propolis, driven by its therapeutic applications in health supplements, cosmetics, and food preservation, underscores the urgency of developing Uganda's propolis industry.

Recognizing this potential, the Uganda National Council for Science and Technology (UNCST) through the Science Granting Council's Initiative (SGCI) awarded a grant to the RTC Lab team at Makerere University to enhance propolis commercialization through quality and safety standardization, infrastructure development, and capacity building.

Key achievements of the project include quality assessments in collaboration with the Uganda National Bureau of Standards (UNBS), fabrication of essential processing equipment, and capacity building in intellectual property (IP) management and commercialization. To fully leverage this opportunity, it is imperative to expand beekeeper training programs, establish stringent quality protocols, and foster private sector partnerships to meet international market standards and drive sector growth.

1. Introduction

Propolis, a resinous compound produced by bees, holds untapped commercial potential for Uganda's rural economy. Rich in antimicrobial, antioxidant, and anti-inflammatory properties, propolis has extensive applications in health, cosmetic, and food industries globally. Despite Uganda's favourable environment for apiculture, the country utilizes less than 1% of

its estimated annual propolis production capacity of 325 to 870 tonnes, leading to missed revenue of USD 1.3 to 3.5 million. Most Ugandan beekeepers remain focused on honey production, largely unaware of the economic value propolis offers. This missed opportunity for revenue diversification limits potential gains for smallholder farmers, especially in rural areas where economic alternatives are scarce.

To address this gap, the Uganda National Council for Science and Technology (UNCST), with funding from the Science Granting Councils Initiative (SGCI), supported a comprehensive project aimed at enhancing the commercialization of propolis. The project's core objectives included;

- i. developing safety and quality standards for propolis production,
- ii. fabricating key processing equipment, and
- iii. building awareness among beekeepers on the economic viability of propolis.

By establishing a structured approach to propolis production and processing, this initiative aligns with Uganda's National Development Plan III (NDP III) in supporting agro-industrialization, rural employment, and sustainable income generation. Ultimately, this project aims to establish Uganda as a competitive player in the global propolis market while empowering rural communities through improved economic resilience.

2. Methodology

The project utilized a structured, multi-phase, and participatory approach to develop a sustainable propolis industry in Uganda. A total of 81 propolis samples were strategically collected from four agro-ecological zones, each chosen to represent varying contamination risk levels due to differing levels of agricultural activity and proximity to pollution sources.

These samples were sent to the Uganda National Bureau of Standards (UNBS) for comprehensive analysis, assessing the presence of heavy metals and agrochemical residues. This testing was crucial for establishing baseline safety data, ensuring the samples met national and international health standards, and guiding subsequent production protocols.

To improve processing capacity and efficiency, four specialized pieces of equipment were designed and fabricated, including a propolis crashing machine, soaking tank, and packaging stations.

3. Results and Findings

The commercialization of propolis in Uganda has shown promising results in enhancing product quality, establishing infrastructure, and creating pathways for economic empowerment within rural communities. Findings reveal substantial progress toward achieving project goals in quality standardization, processing capacity, and stakeholder training.

Quality and Safety Standards:

Through collaboration with the Uganda National Bureau of Standards (UNBS), 81 samples of propolis collected from four ecological zones underwent testing for heavy metal and agrochemical contamination. Preliminary results indicate compliance with acceptable contamination levels, demonstrating that Ugandan propolis can meet international safety standards. This foundational quality assessment is crucial for market acceptance and consumer trust, establishing the groundwork for positioning Ugandan propolis as a reliable, high-quality product.

Infrastructure and Processing Capacity:

The project's infrastructure development focused on overcoming significant production challenges. Four specialized pieces of equipment were fabricated, including a propolis crashing machine, soaking tank, and packaging tables, aimed at improving efficiency in propolis extraction and powder production. These advancements have increased yields and enhanced

product purity, addressing one of the primary limitations faced by local producers. Furthermore, a mini-cottage processing facility was established to incubate and upscale production. This facility serves as a model for standardized, high-capacity production and represents a significant step toward scalable commercialization.

Intellectual Property and Market Positioning:

With the guidance of UNCST, the project-initiated trademark registration for propolis powder, infused tea bags, and the associated brand, marking a critical advancement in protecting Uganda's market share. Training sessions on intellectual property (IP) were conducted to raise awareness about the importance of branding and IP protection among stakeholders, particularly within the rural beekeeping community. This IP initiative not only safeguards Uganda's competitive advantage but also prepares producers for entry into international markets, where brand recognition and product protection are key differentiators.

Community Engagement and Awareness Building:

To facilitate long-term success, the project included community outreach through radio talk shows, exhibitions, and training. While some outreach activities faced delays due to funding disbursements, several beekeepers have already expressed interest in incorporating propolis harvesting into their operations. The project's engagement efforts have generated increased awareness of the economic potential of propolis, fostering a growing commitment among local beekeepers to expand their product offerings beyond honey.

4. Policy Implications & Recommendations

The successful commercialization of propolis in Uganda presents a transformative opportunity to diversify rural income, enhance food security, and strengthen Uganda's presence in the global health and wellness market. The project's outcomes underscore the need for a comprehensive policy approach to address current barriers and build a sustainable propolis industry. Below are the key policy implications and actionable recommendations.

Policy Implications

i. Rural Economic Empowerment:

Propolis commercialization can substantially increase rural incomes by diversifying revenue streams for beekeepers beyond honey production.

Supporting the industry would contribute directly to poverty alleviation and economic resilience in rural communities, where alternative income sources are often limited.

ii. Agricultural Competitiveness:

Establishing Uganda as a competitive player in the global propolis market aligns with the goals of Uganda's National Development Plan III (NDP III) and the agro-industrialization agenda. By adopting policies to support quality control, safety standards, and branding, Uganda can improve its agricultural exports, making locally produced propolis products more competitive.

iii. Health and Environmental Safety:

Ensuring propolis quality through strict safety standards will protect consumer health, especially given propolis's medicinal applications. Enforcing environmental safety in propolis production will limit agrochemical and heavy metal contamination risks, supporting Uganda's commitment to sustainable agriculture.

iv. Private Sector Involvement:

The interest shown by private partners in scaling up propolis production highlights the importance of fostering public-private partnerships. By involving the private sector, the government can leverage additional resources, expedite commercialization, and enhance innovation in production processes.

Recommendations

i. Develop and Implement Quality and Safety Standards:

The Uganda National Bureau of Standards (UNBS), in collaboration with UNCST, should formalize quality and safety standards specific to propolis. This involves setting contamination thresholds for heavy metals and agrochemicals to ensure compliance with international health regulations. These standards should be regularly reviewed and updated as industry practices evolve.

ii. Expand Training and Extension Services for Beekeepers:

Capacity building is essential to equipping rural beekeepers with skills in hygienic handling, quality control, and efficient processing techniques. UNCST, in collaboration with agricultural extension services and local cooperatives, should deliver targeted training programs on sustainable propolis production practices. Training should focus on reducing contamination risks, enhancing product quality, and implementing IP protections to increase market readiness. Building partnerships

with organizations like TUNADO can also extend the reach of these training initiatives.

iii. Incentivize Public-Private Partnerships for Infrastructure Development:

Propolis commercialization requires robust infrastructure for processing and storage to maintain product quality and meet market demands. Public-private partnerships can accelerate infrastructure development by providing capital and technical expertise. To facilitate these collaborations, the government should offer tax incentives or matching grants to private entities investing in propolis processing infrastructure. Private sector involvement will help bridge existing gaps in resources and technology.

iv. Promote Intellectual Property (IP) Protection:

Trademarking and branding are essential for Uganda's propolis to stand out in competitive international markets. The government, through UNCST, should support the IP registration process for propolis-based products, ensuring brand recognition and market protection. IP training and support programs targeting rural beekeepers can raise awareness of the economic value of IP and improve the sector's resilience against imitation products.

v. Enhance Market Access and Trade Facilitation:

Market access is critical to the success of Uganda's propolis industry. By negotiating favourable trade terms and reducing export barriers, the government can facilitate Ugandan propolis products' entry into international markets. Efforts should also focus on establishing value chains that connect smallholder beekeepers with larger markets. Support for logistics, distribution channels, and marketing will help Ugandan propolis products reach regional and global consumers efficiently.

vi. Support Continuous Research and Development (R&D):

Ongoing research is essential for optimizing propolis processing techniques, improving product quality, and developing new applications for propolis in health and wellness. The government should invest in research institutions and foster collaboration with universities to explore innovative propolis processing technologies and applications. Research findings can provide insights into more sustainable, efficient production methods, positioning Uganda as a leader in propolis innovation.

5. Conclusion

The commercialization of Uganda's propolis industry presents a significant opportunity to advance rural economic development, enhance agricultural competitiveness, and support the goals of Uganda's National Development Plan III (NDP III). Through strategic investments in quality standards, infrastructure, training, and intellectual property protection, Uganda can transform propolis from an underutilized resource into a valuable export commodity. This project has demonstrated that with targeted support, Ugandan beekeepers can produce high-quality propolis that meets international safety standards, opening pathways for expanded income and economic resilience in rural areas. To fully realize this potential, continued government and private sector collaboration is essential in scaling production, ensuring product quality, and facilitating market access. With these efforts, Uganda's propolis industry can emerge as a robust contributor to both local livelihoods and the global health and wellness market.

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