



MINISTRY OF AGRICULTURE,
LIVESTOCK AND COOPERATIVES

PROMOTING COMMERCIAL BEEKEEPING: THE UNTAPPED POTENTIAL



Showcasing KCSAP Technologies, Innovations and Management Practices in Apiculture

Beekeeping is recognised as one of the enterprises with the greatest promise to turn around the economy of livestock farmers in the arid and semi-arid counties of Kenya

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Apiculture is well established in Kenya and can be successfully carried out in about 80 percent of the country. It is especially suitable in the arid and semi-arid areas where rain-fed agriculture is not feasible.

Beekeeping plays an important role in enhancing food security, economic growth, biodiversity conservation and community livelihoods through provision of honey, beeswax, propolis and pollination. The country's annual potential for apiculture development is estimated at over 100,000 tons of honey and 10,000 tons of beeswax.

Beekeeping is recognised as one of the enterprises with the greatest promise to turn around the economy of livestock farmers in the arid and semi-arid counties of Kenya. The enterprise is practiced in all the livelihood zones in the county, but mostly in the pastoral and agro-pastoral areas, which occupy more than 75 percent of the county land cover.

Despite the huge potential the county has in the beekeeping industry, very little effort has been put in place to make the sector vibrant. There are problems which when addressed, can improve the sector. For example, which beehives are suitable for different areas? Which are the prevalent pests/diseases? Do they contribute to colony absconding? Is bee forage scarcity partly to blame for low bee colony population? Finding answers and responding to these, among others, would be useful.

Average hive production for the Kenya Top Bar Hive (KTBH) is currently 8Kg per harvesting, harvested up to three times a year. The Langstroth performs better, at 12Kg per harvesting, repeated up to four times a year. Proper management of bee colonies and innovations to reduce absconding can increase these levels of productivity to 15kg and 20Kg for KTBH and Langstroth hives respectively.

There are very few processors of honey and products using rudimentary methods. Most of the beekeepers have low access to efficient equipment for production and processing.

The major challenges facing the beekeeping industry in Kenya include destruction of natural habitats, insufficient research in beekeeping technologies, ineffective control of honey bee diseases/pests, inadequate bee management skills and low product quality due to poor harvesting and adulteration.

Floral dearth, coupled with extreme temperature and inadequate infrastructure and knowledge, contribute to low hive products.

Adoption of climate resilient beekeeping technologies, innovations and management practices in beekeeping would enhance honey and hive productivity and profitability along the honey value chain.

Low hive occupancy is attributed to hive designs, specifically the frame hives, whose designs are for temperate regions and need modifications to suit the Kenyan hot and dry climates.

Honey remains the key hive product in Kenya, with beeswax, propolis, and pollen insignificantly produced despite their huge potential as



Processed honey.



The design of the Kapkuikui Super Log Hive.

sources of income.

With climate change, bee colonies are often faced with problems of bee forage scarcity, changes in floral calendar and high temperatures associated with drought. This leads to colony migration, absconding and even mass death.

Despite the fact that beekeeping is practised by thousands of farmers in Kenya and its huge potential for building sustainable livelihoods in rural areas, the apiculture sub-sector is constrained due to lack of necessary financial, technological and extension support. Honey production and marketing is still very much traditional, and beekeepers are extremely dependent on the use of low productive traditional hives, which results in poor quality of honey.

Bee habit degradation remains a big challenge to beekeepers across the country.

One of the key approaches required in minimising both biotic and abiotic stresses that curtail the apiculture sub-sector is employment of climate smart approach. This involves use of climate smart technologies, innovations and management practices (TIMPS) that improve productivity. Following are some of these interventions that may be employed.

KAPKUIKUI SUPER LOG HIVE

The log hive is a traditional production system that uses logs that are cut out by artisans. About 80 percent of all beehives in Kenya are traditional log hives. These types of hives are conducive to bee colonies and experience less absconding, unlike the conventional beehives.

Kapkuikui Super Log Hive is an innovation designed to cut down on mixing of brood and honey during harvesting. For many years, beekeepers harvested all the content of their log hives, resulting in colony losses and mixing of crude honey. But with introduction of queen excluder, the brood chamber has been secured and mixing reduced.

This project was a partnership of Kapkuikui beekeepers in Bogoria region and Kenya Agricultural and Livestock Research Organisation (KALRO) Apiculture Research Institute in Marigat. So far, beekeepers in Lake Bogoria area, West Pokot, Kerio Valley and Tiaty, have benefited from about of these 300 hives.

Success stories

So far, results have shown a reduction in bee colony absconding while crude honey yields can vary between 8-15kgs and up to three to four harvests in a normal season. Farmers who adopted this technology sustained their bee colonies throughout the dry season.

For example, the Kapkuikui beekeeping group in Baringo sells a gallon (4.5kg) of honey at a minimum of Ksh1,500 (\$10.2), helping them pay school fees and buy food for the families. The initiative has transformed their livelihood for better.

IMPROVED KENYA TOP BAR HIVE

While the conventional KTBH continues to perform well in the cool highlands of Kenya, there are reports of bee colony absconding in the arid and semi-arid lands (ASALs) because of high hive temperature, owing to the metallic roofing.

To remedy this problem, a climate smart KTBH was designed with high roof, providing sufficient air circulation, both vertically and horizontally.

The innovation has seen an increase in hive occupancy and enhanced productivity in the ASALs. It has been embraced by beekeepers in Central and Eastern Kenya due to improved honey quality and yields.

IMPROVED SINGLE BOX HIVE

Beekeepers continue to experience bee colony absconding from conventional beehives during dry season in the ASALs. Although the KTBH and box hive are different in design and production levels, both experience poor occupancy in the ASALs due to absconding.

An innovation that modified roof design to allow ventilation and lower hive temperatures to minimise absconding, was developed. Although this innovation has been promoted in Kiambu, Isiolo, Siaya and Kitui, penetration has been low.

The Improved Single Box Hive exhibited has reduced absconding. It is relatively affordable to a majority of beekeepers. It is user friendly to all genders and easy to manage.

One hive produces an average of 12kg of raw honey harvested twice annually, making it 24kg. Therefore, the estimated returns with approximately 100 hive colonies in two acres would be Ksh1.4 million per year. The hive lifespan is four to six years.

This innovation was generally accepted by the community and does not lead to environmental degradation. It produces high quality honey.