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**APICULTURE FOR FORESTS ECOSYSTEMS  
CONSERVATION AND RESTORATION AND SUSTAINABLE  
LIVELIHOODS SYMPOSIUM AND WORKSHOP, ESWATINI  
26TH TO 28TH MARCH 2024**

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**THE GEORGE HOTEL, MANZINI – 26TH MARCH 2024 AND THE HAPPY VALLEY HOTEL  
ON THE 27TH – 28TH MARCH 2024**

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## INTRODUCTION

The Government of Eswatini was offered support by CCARDESA to hold a Symposium on Apiculture for Forests Ecosystems Conservation and Restoration and Sustainable Livelihoods on the 26<sup>th</sup> March 2024 at the George Hotel, in Manzini. The symposium was followed by a two (2) days workshop for the apiculture technicians from the Ministry of Agriculture, Ministry of Tourism and Ministry of Natural Resources. The beekeeping interim committee which comprises of experienced beekeepers and honey processors were the resource persons in the workshop who also represented the views of the farmers. The workshop was held on the 27<sup>th</sup> to the 28<sup>th</sup> March 2024 at the Happy Valley Hotel in Ezulwini.

The proceedings of the meeting were as follows:

## THE SYMPOSIUM

### Official opening

Registration of participants was carried out between 0830hrs till 0930hrs and a total of 283 participants registered. The official opening session which was chaired by Dr. Bavukile Kunene started soon after registration and proceeded as follows;

### Opening Prayer

The symposium was opened by a word of prayer by Patrick M. Dlamini at 0930hrs

### The objectives and the outcomes

The objectives and outcomes of the symposium were presented by Mr. Vumelani Dlamini. The presentation was as follows;

The objectives were

- To outline operational structure, frameworks and Sops for apiculture programs and activities
- To determine the role of apiculture in crop production, agroforestry and forests based enterprises.
- To establish market networks for improvements in value chain and value addition for apiculture products.
- To establish the policy and legislation framework for consumer protection and proper operations.

The outcomes of the symposium were

- Legal reforms, improved knowledge and improved extension services as well enhanced value chains and value addition.

## WELCOME REMARKS BY THE REGIONAL ADMINISTRATOR (RA)

The Manzini Regional Administrator (RA), Chief Prince Gija Dlamini welcomed everyone who was in attendance. He briefly outlined the importance of forests and conservation of ecosystems in any country. He went on to emphasize the importance of implementing policy and legislation in order to protect wildlife and forests. In his remarks he mentioned that his dream was educating all communities about the importance of forests in mitigating climate change. He went on to emphasize the importance of apiculture on people livelihoods and in strengthening the economy of the country.

Finally, he thanked CCARDESA and the different ministries who worked hard to ensure that the symposium was a success. He then wished everyone a fruitful day.



**FIGURE 1:** THE HIGH TABLE LISTENING TO CCARDESA'S PROFESSOR CLIFF DLAMINI DURING THE SYMPOSIUM

## Welcome Remarks by CCARDESA

Professor Cliff Dlamini, the Executive Director welcomed everyone to the symposium. He went on to thank the guests from other countries who had come to share their experiences on apiculture and forests conservation. He then gave a brief outline on the objectives of CCARDESA and the different programs that the organization is doing throughout SADC.

He also wished everyone an enjoyable and fruitful day.

## Remarks by The National Apiculture Platform Interim Committee

Mr. Phefeni Vilakati who is the secretary of the Eswatini National Apiculture Platform (ENAP) passed his sincere gratitude to CCARDESA for the support towards the symposium. He further thanked the organizers and everyone who was in attendance.

He then made a few remarks on the purpose and benefits of affiliating to the ENAP. He went on to emphasize the need to protect honey bees, other pollinators and conserve ecosystems. Lastly he requested the legislators to ensure that before their term of office ends, they should have passed a law that will protect honey bees and bee farmers.

## Presentation on Apiculture and Forestry by Mr. Wilfred Nxumalo

Forest Ecosystems was defined as forests and everything in the forest; and the symbiotic relationship between these organisms.

He went on to describe the roles of bees as pollinators in the forests. He stated that pollination was very important in reproduction and was contribution to the biodiversity and health of forest ecosystem. Hives which were placed near and in the forests, near flowering trees and plants were very important since the bees were providing pollination services and in turn the bees get nectar which contributes to the quality of honey.

He then condemned deforestation and forests degradation in Eswatini which was a great threat to the life of bees and forests ecosystems. He then informed those in attendance that there was a Flora Protection Act which is a legal instrument enacted to prevent over-exploitation of indigenous forests. He then urged Emaswati to think of other income generating activities that they can venture into instead of destroying trees for money.

Currently the Forestry Department is involved in some initiatives to curb deforestation and degradation, these included tree planting programs, working with beekeepers to plant trees and collect seeds to the nurseries to propagate and distribute to the beekeepers. Nurseries for trees were planted as a way of motivating communities who live near forests and dry region of the country.

He concluded by urging for collaboration between all apiculture and forestry stakeholders to ensure that honey production increased and poverty is reduced.

## INTRODUCTION OF THE OFFICIATOR BY THE DIRECTOR OF VETERINARY AND LIVESTOCK SERVICES

Before introducing the officiator, Dr. Roland X. Dlamini reminisced that in the past honey hunting was widely practices in the country but because of deforestation and indiscriminate use of herbicides wild bees are in huge decline and now are a rare occurrence. He then stated that his wish was for

everyone to be aware that failure to conserve forests and the ecosystem would mean loss of not only honey bees but also other important animals. He then invited the Principal Secretary in the Ministry of Agriculture who was to officiate the symposium on behalf of the Minister for Agriculture.

## OFFICIAL OPENING SPEECH BY THE MINISTER FOR AGRICULTURE

The Minister for Agriculture was represented by the Principal Secretary (PS) of the Ministry of Agriculture Mr. Sydney Simelane. The PS first apologized for the Minister who could not make it because of other commitments. The PS then read the Minister's speech which highlighted the following;

Thanked and congratulated CCARDESA for graciously sponsoring the Kingdom to address this important topic of bees, nature, trees and human existence. He expressed gratitude that Eswatini's presence in the CCARDESA leadership was significant and the impact made by Professor Cliff Dlamini and Ms. Futhi Magagula in SADC was felt.

He stated that he was aware that this workshop was going to help in the identification of current priority issues that are needed for consideration in the regional research agenda for apiculture and forestry. The symposium was going to assist Eswatini identify policy issues which were going to stimulate development of the apiculture platform and support coordination of programs and activities for growth of the honey bee value chain in Eswatini.

He assured stakeholders that the Ministry of Agriculture will continue to align structures to deliver government support including extension services, to the apiculture industry. He realized that the experts in any industry best come from that industry, so the role of all stakeholders was as important as the role of government in defining goals and setting required standards for reliable and quality product able to access different local and international markets. He invited financiers to support the beekeepers and processors in Eswatini as their produce have potential to contribute towards the improvement of our country's economy and to sustainable livelihoods.

He thanked the participants from other SADC countries for coming to share their experiences with Swazis, he welcomed them into the Kingdom and told them to feel at home.

He then declared that the Swaziland Training on Honey production, safe handling of bee hive products, bee disease control and pollination services was officially opened.



**FIGURE 2:** PART OF ORGANIZING TEAM RECORDING ALL PROCEEDINGS OF SYMPOSIUM

## THE PRESENTATIONS

After the health break, there were presentations as outlined below;

### Eswatini Apiculture Situation – Dr. Thembi Ndlangamandla

Eswatini was described as being landlocked by Mozambique and South Africa. It had an area of 17 365 square meters, temperature ranges of 22-26 Degrees Celsius and a rainfall range of 500 - 1500mm. The country was divided into 4 ecological zones which had different types of forests (both natural and planted forests). These forests were forage areas for honey bees.

Beekeeping has been progressing from honey hunting to commercialization. At present, there were 327 beekeepers, 23 associations and 13 processors which were registered in the country. In total these produces 22 071L of honey of which 66% was sold in the informal market.

The industry is in the process of establishing a National Apiculture Platform, at present an interim committee was elected in May 2023 and is yet to be made permanent. Other achievements include annual disease and pest surveillance which is led by the Department of Veterinary and Livestock Services, regular reporting of diseases of honey bees to regional and international organization.

Challenges include poor coordination of the industry, theft of hives, deforestation and the weak extension service.

## Local Trade in Honey and Honey Products: The industry Perspective – By Mr. Vusi Nkambule

Most honey producers sell their honey to the processors as combed honey. Collection by processors takes place at farm gate. Payment of beekeepers is usually cash on collection but other processors will pay within 7 days of collection. Honey is then processed, packaged and labelled before sending it to the retailers.

Challenges that are faced by the processors in the country include;

- Honey spends a long time in the retail shelves and end up crystalizing. Once crystalized, consumers do not buy it.
- A lot of processors are robbed at the farm gate when they go to collect the honey.
- Locally produced pure honey competes with imported honey syrup from neighboring countries like RSA. Since most consumers are not aware of the local brands, the syrup is preferred to the pure honey because of price.
- Lack of public awareness about the health benefit of honey.
- Poor coordination in the apiculture value chain.

## International Trade in honey and other hive products – by Dr. Courage Mudyavavana

Several international markets have that have shown interest in buying Eswatini honey. Trends have shown that the highest importers of honey were the USA and the EU in order for that trade to happen, the following conditions must be complied with;

- Each country must appoint a regulatory authority. Eswatini has appointed the Ministry of Agriculture, Department of Veterinary and Livestock Services (DVLS).
- The honey producers must be known. These must be registered and the hives be individually identified. This will be to fulfill the Codex Alimentarius Standards of tracing every food from 'Farm to Table'.
- There must be a disease surveillance and monitoring plan which is followed in the country. In Eswatini there is a plan in place and surveillance of pests and diseases of honey bees is done.
- Processing and packaging of honey must take place in an approved processing plant that has follows quality standards such as HACCP and local legislation
- Get a veterinary import permit from the country of destination.
- Get a veterinary health certificate from the DVLS in Eswatini.

## DISCUSSION

A discussion session was held just before lunch. This was based on issues that emanated from the presentations. The discussion is summarized in Table 1 below.

**TABLE 1: DISCUSSION ON ISSUES THAT EMANATED FROM PRESENTATION**

Issue Raised	Discussion	Resolution
Legislation	<ol style="list-style-type: none"> <li>1. There is no clear legislation that regulates honey bees in the country after the Importation of Bees Act was repealed. The legislation must address issues of theft of hives, prosecution of people who start forest fires and cause deforestation by cutting trees firewood.</li> <li>2. Enact legislation that will ensure proper repatriation of homes and other agricultural structure to pave way for development.</li> <li>3. Implement legislation for herbicides and pesticides in the country.</li> </ol>	Engage the newly elected MPs to enact the relevant Acts.
Training/ apiculture syllabus	<ol style="list-style-type: none"> <li>1. Incorporation of apiculture in the schools' agriculture syllabus.</li> <li>2. Training manual for extension officers where all levels of beekeeping will be included – introduction, harvesting and post harvesting management, advanced level.</li> <li>3. Practical training – hive construction, trapping management, harvesting.</li> <li>4. People who are to train farmers must be trained and certified by government.</li> <li>5. Training of stakeholders on honey standards.</li> </ol>	<p>The Ministry of Education and the Eswatini National Curriculum Centre were to be engaged.</p> <p>The Veterinary Public Health unit was going to attend to this issue.</p>
Impact of climate change on apiculture	<ol style="list-style-type: none"> <li>1. Emerging and re-emerging diseases and pests of honey bees as a result of climate change.</li> <li>2. The effects of climate change on honey production</li> </ol>	Eswatini has also been affected by climate change, but more research is yet to be done and climate smart methods of farming be adopted.
Honey Marketing	<ol style="list-style-type: none"> <li>1. Ways in which Eswatini has dealt with poor quality honey were discussed.</li> <li>2. How can other SADC countries be assisted to access the EU and SADC markets</li> </ol>	

PPP	<ol style="list-style-type: none"> <li>1. Interventions by government in order to establish the partnerships/relationships between beekeepers and the foresters.</li> <li>2. Beekeepers and conservation parks</li> <li>3. Beekeepers and traditional leaders</li> </ol>	
Reporting of honey diseases to OIE and SADC	1. How can other countries be assisted with reporting diseases and pests of honey bees to the WOA and SADC since Eswatini has been constantly reporting	appointment of focal person who will work with the epidemiologist and report bee diseases

## EXPERIENCES FROM OTHER COUNTRIES

After lunch, the visiting countries shared experiences from their countries.

### BOTSWANA – M. Mutakela

Botswana was described as a landlocked country, where the climate is arid to semi-arid. The rainfall is low and with high temperatures. The country is divided into 4 ecological regions namely the vegetation savannah, mopane, miombo and open grasslands. These have made it possible for apiculture to be in existence for over 40 years.

Apiculture has been constantly moving from one ministry to another. It has been moved from Ministry of Agriculture, to Tourism, and is now under a recently formed department in Agriculture, the department of Aquaculture and Apiculture.

There are nine policies that regulate apiculture in Botswana, and all those are linked to vision 2036 which is to alleviate poverty.

A study showed that the Savannah veld was the best place for beekeeping and farmers were to keep not more than 12 colonies in moderate areas and not more than 30 colonies in the good areas. Most beekeepers in Botswana are adults and 56% of these are males.

Honey is produced in Tanzanian Top Bard Hives and the Langstroth hives. Honey production fluctuates, depending on the climate. Currently there are 3 processors in the country, but most of the honey is sold in the informal market.

To develop the sector, the following interventions were made;

- Practical training of farmers
- Field days and farm walks for scaling up, processing and marketing
- Livestock subsidy of 30% on all production costs
- Training of farmers in field schools
- Collaboration with FAO, WOA, NGOs, Botswana Bureau of Standards (BOBS), farmer organizations, government, University of Botswana and financial institution.

Challenges - input supply, production, policy

## LESOTHO - Makhosi Lepheana

Lesotho has four ecological regions, these are the lowlands, foothills, Senqu river and the mountains. This country has got dry and cold winters and hot and humid summer.

In Lesotho, the Ministry of Forestry control beekeeping. The beekeeping sector is faced by a lot of challenges which include lack of quality standards, lack of policy and a very weak strategy for implementing beekeeping. Because of the challenges, Lesotho produces contaminated honey which fails to penetrate the formal market. As a result, the country heavily relies on RSA for honey and other hive products.

The country is planning to intervene in the sector as follows;

- Research - research on the modern methods of beekeeping and honey processing. This research will also focus on improving the honey standards.
- Work together with the NGOs in order to access beekeeping information since the NGOs seem to have a lot of beekeeping information than the government.
- Engagement of higher learning institutions to assist with the training of beekeepers.

## TANZANIA - Danstan Kabialo

Tanzania have got 48.1ha of both natural and planted forests. These serve as forage areas for honey bees. Beekeeping is regulated by the National Beekeeping Policy of 1998 and the Beekeeping Act of 2002. Both legislations are enforced by the Ministry of Natural Resources and Tourism and the Tanzania Forest Service.

Tanzania is the second largest producer of honey after Ethiopia in Africa and the 14<sup>th</sup> largest producer in the world. 90% of honey is produced in traditional beehive from tree barks and is exported to Kenya, Rwanda and the European Union.

Major challenges faced by the Tanzania Apiculture Industry are;

- Over reliance in traditional means of honey production.
- Poor handling of honey and other hive products.
- Trade obstacles – cumbersome procedure for export trade and
- Weak National Apiculture Platform which then weakens the other farmer's groups i.e. the cooperatives and associations.
- Climate change and deforestation

Strategies that the private sector and government are putting in place for the development of the apiculture industry are;

- Releasing and enforcing the implementation of the beekeeping policy and strategy of 2021 to 2023.

- Provide inputs to beekeepers
- Partnering with the country's institutions and training beekeepers on standards so that they can comply with international trade.
- Linking compliant beekeepers with markets.
- Formulation of beekeeping zones in forest such that some areas can be reserved only for beekeeping.
- Have a public dialog which will generate information/ data that will inform amendment of some legislation.
- Establishment of a national advisory committee e.g. NABAC AND NAFAC that will advise the minister on beekeeping and forestry

## ZIMBABWE- Mutsa Mahanzu

In Zimbabwe, honey is harvested mainly from traditional hives. This is confirmed in the annual surveys that are carried out in the country.

Legislation that regulates the apiculture industry are

- The Bees Act and the Animal Health Act which detects that movement of bees both locally and internationally require a movement permit.
- Consumer Protection Act and Food and Food Standard Act ensures that honey that is sold to the public is not adulterated.

The following challenges are noted in the apiculture industry;

- Most of the legislation focus on animal health hence there is need for review
- Poor marketing system
- Poor stakeholder coordination.
- Poor communication and information sharing and dissemination within the sector. This has been greatly noted in areas where bees are used for pollination. Pesticides are sprayed at the time of placing the hives. This lead to accumulation of pesticides in the honey.

## MOZAMBIQUE – Heinrich Van Der Merwe

Apiculture is a growing sector in Mozambique. Beekeeping is mainly practiced in the rural communities. Hives are distributed by NGOs to the beekeepers. The role played by government is very negligible.

Challenges seen include lack of education of beekeepers, lack of youth participation and the unavailability of laboratories to diagnose diseases and pests of honeybees.

**Closing remarks:** by PS in the Ministry of Tourism who was represented by Mr. Wilfred Nxumalo, the Senior Forestry Officer at 1553hrs

## THE WORKSHOP

### DAY 1: 27<sup>TH</sup> March 2024

Dr. Bavukile Kunene opened the workshop with a word of prayer at 9000hrs.

Lucky Dlamini who was the program director in his remarks quoted Pavan Sukhdev's words from a report of the united nations which say **“Not a single bee has ever sent you an invoice and that is part of the problem – because most of what comes to us from nature is free, because it is not invoiced, because it is not priced, because it is not traded in markets, we tend to ignore it”**. He then went on to request all the 63 workshop attendees to treasure bees.

Everyone who was in attendance was then asked to introduce themselves and state their role in apiculture and forestry industry. After the introductions, the program for the day then proceeded as follows;

#### Welcome Remarks by Mr. Boy Boy Mamba

Mr. Mamba welcomed everyone to the meeting. He briefly introduced himself as a beekeeper, a husband, a father and a preacher. He went on to read Revelation 3:11 which reads hold on to what you have so that no one takes away your crown. He then said as farmers, they were making a living from the bees therefore it was their duty to take good care of the bees in order to have the honey. Lastly he expressed his sincere gratitude to CCARDESA and all organizers of the workshop and hoped that everyone was not going to regret attending.

## PRESENTATIONS

### Presentation on Forests Ecosystems and beekeeping by Professor Cliff Sibusiso Dlamini

#### *Introduction*

In his presentation, Professor Cliff Dlamini described a forest ecosystem as trees and other associated organisms. This included flowers which serve as food for bees and the trees which are a shelter. He then stated that the integrated approach to forests and bees is lacking in most countries. He gave a brief history on beekeeping, stating that before 1986 beekeeping was informal and this was damaging the environment. Between 1987 and 1995 an improvement and commitment from the Ministry of Agriculture (MOA) to beekeeping was established.

### ***Significance of Apiculture***

Bees are important for livelihoods and ecosystems. Bees serve to manage forests and forest ecosystems (they are food and shelter). Poor management of ecosystems can disrupt the lives of bees. Bees need fewer resources, therefore he encouraged researchers to do some work on bees and invasive plants. In the USA there was a complaint that bees were damaging crops, research was also needed on this area. Apiculture was a gentle and kind industry, he then expressed that his wish was for more people to be involved in the enterprise. The quality of bees in any locality was an indication of whether climate change has taken its toll on the environment.

### ***Potential of beekeeping in Eswatini***

A total amounting to 71% of forests covered the Eswatini land. As a country there was still an opportunity to do reforestation and afforestation in order to increase beekeeping. If done properly, beekeeping could be a solution to forest fires. In Eswatini, most beekeepers were men and the lack of involvement of women could be as a result of poor training.

### ***Sustainable forest management***

It was important for beekeepers and foresters to collaborate in order to maintain forests management. There were good policies in the country which were not enforced and fully implemented. He gave an example of the Forest Policy of 2001 which had criteria of forest management. His plea was that this policy be revised and implemented.

### ***Conclusion***

He concluded by stating that apiculture was another easier way of generating income. There was need for research on this enterprise which was informed by the needs of the farmers. Also trained bee hive managers and extension officers were to provide the necessary service. If done properly, beekeeping could be a solution for deforestation and forest degradation.

## **Presentation on Gender Consideration in Beekeeping by Mr. Andile Dlamini**

### ***Introduction***

Gender is socially learned, it is diverse and can change. Gender is perceived differently between rural and urban area residents. It refers to social attributes that are sanctioned by society. It has expectations which can be good and bad. It talks on how people should behave towards one another.

Gender stereotypes (how one is perceived), duties and chores have been the main inhibitors of people's potentials. These have deprived a lot of people including women from seizing some business opportunities and effectively contributing to society. Social media has worsened this culture leading to gender inequality.

### ***Beekeeping and women***

Beekeeping is one of the enterprises which can improve gender inequality. It has a potential to give people basic human right so that they can live their life to the full. Most women lack the cash income to start the beekeeping projects. This is usually caused by the fact that women are wired

such that all their cash is for feeding their families. Due to the economic factors and family structure, women are expected to be maids, wives or to work so hard such that they do not have time for other projects. This is common especially when there is no man to assist.

### ***Problems Identified***

Problems of lack of women inclusion arise in policy formulation. It has been observed that when policies are crafted, they lack elements of gender consideration which will allow women to do all tasks and improve livelihoods just like man. Most policies portray women as weaker individuals and they tend to be taken advantage of.

### ***Solutions***

For all classes of people to be included in projects, it is important to develop and publicize projects and programs that will improve people's livelihoods, in doing so, the following can be helpful;

- Develop programs that bridge gender gaps. These programs must be publicized.
- Identification of target groups. Programs will differ per group depending on their place of residence (city dwellers and rural dwellers).
- Carry out gender analysis and identify the problems that each gender will have.
- Constant engagements with the communities in every stage of the project.

## Impact of Climate Change on Apiculture – Mr. Kuhle Hlophe

### **Why the need to recognise the implications of climate change?**

- CCARDESA: Thematic Areas  
“Resilience to emerging agricultural risks: environmental, climate change and transboundary pests and diseases”
- Honeybees are vital insects that play a critical role in ecosystems worldwide. They are responsible for pollinating a wide variety of plants, including many food crops. Climate change poses a significant threat to honeybees and the apiculture industry.

### **Climate Change Threats to Apiculture**

- **Rising temperatures:** Can disrupt bee behavior, reduce honey production, and increase the spread of bee diseases.
- **Extreme weather events:** Droughts, floods, and heatwaves can damage beehives, destroy food sources, and make it difficult for bees to forage.
- **Changes in precipitation patterns:** Can affect the availability of flowering plants, which bees rely on for nectar and pollen.
- **Loss of habitat:** Deforestation and land-use changes can reduce the availability of flowering plants and nesting sites for bees.

### **Conclusion**

- Apiculture can be a powerful tool for both adapting to and mitigating climate change.

- By adopting sustainable practices, promoting forest conservation, and fostering collaboration, we can ensure the health of bee populations and the vital role they play in our ecosystems.

## Presentation on Status, Trends and Impacts of pesticides on Apiculture by Mr. Bheki Nzima

**Introduction:** A worldwide decline in honey production has been noted due to excessive use of pesticides. Pesticides are not only affecting honey production, but they are also killing human beings and other animals. There is however under reporting of deaths due to pesticides, and bee farmers are not compensated when their bees die because of pesticide poisoning.

### ***Poisoning of Bees***

Insecticides by their nature are the ones that affect bees. This happens when bees come into contact with insecticides, especially contact with cocktail preparations of the insecticides. Affected bees would normally show incoordination and a large number may be found dead at the entrance of the hives. Generally, an intoxicated colony of bees tends to be very aggressive. The long term effects of poisoning include compromised sperm fertility which will adversely affect reproduction as well as vitality of new offspring. If a queen is poisoned, it may also stop laying eggs thus reducing the colony size and eventually causing colony collapse.

### ***How to protect bees from insecticides?***

Farmers are supposed to observe the withdrawal periods of the pesticides used in the fields before allowing their colonies to forage. This calls for strong relations with the orchards owners or foresters. Foresters are advised to spray pesticides to their plants in the evening since the activity of bees is low during the night.

Implementation of the Pesticide Act of 2017 would be the best solution in Eswatini. This act regulates the pesticides that are to be used in the country. However, there is no department which is taking a leading role in the enforcing implementation of this Act.

## Presentation of Economics of Beekeeping by Mr. Mandla Langwenya

**Introduction:** Honey production is seasonal; therefore, beekeepers do not get money throughout the year. Though it is easy to do beekeeping, it is also very dangerous. People and other livestock can be killed by bees that is why it is important that only trained and properly mentored individuals must venture into a beekeeping enterprise.

**Economics:** In order to break even in the beekeeping enterprise, a farmer must have 10 active bee hives. In addition to the hives, the following beekeeping equipment is essential – bee suit, water boots, gloves, bee hat and veil, smoker, hive tool, bee brush, flash light, note book and buckets for harvesting. The start-up capital for this is E20 015.00 (USD 1200 if 1USD = E16.68).

It is advisable to use hives that are constructed from saligna wood since they have a durability period of up to 10 years. The hives used can either be Swazi Top Bar Hives or the Langstroth hives.

In one season, honey can be harvested 2 -3 times. On average 30kg/hive/harvest is collected in the first year of the project and this increases by 33.3% per year in the following harvests. 1kg of honey is sold for E40 (USD2.4 if 1USD=E16.68).

In a beekeeping enterprise, income can also be from the sale of honey, but the sale of beeswax, propolis, pollen and bee venom. The use of bee colonies for pollination services is another very good business.

**Conclusion:** There is still need to do research in Eswatini so that the demand of honey and other hive products is established. Also the training of bee keepers and other honey processors on value addition of hive products is important.

## Value added products and value chain enhancement by Mr. Vusi Nkambule

Apart from honey, other products can be sold to make more money.

**Wax** – which can be used to make lip balms, hand creams, floor polish, and candles

**Propolis** –It is used as an anti-inflammatory, for wound healing. It is also a blood thinner.

**Pollen** –This can be harvested by putting pollen traps in-front of the hives. Pollen is a very good treatment for asthma and joint pain. Pollen also improves sleep, is a stress reliever, and increases energy levels.

**Royal jelly** –This is an immune system booster

**Bee venom** – for treatment of arthritis

**Mead-Alcohol** – made from honey with a water content that is above 20%. It is an aphrodisiac.

## Presentation on Diseases and Pests of honeybees by Mr. Nhlanhla Hlophe

The importance of honeybee diseases identification and prompt reporting when these are suspected was emphasized in the presentation. Mr. Hlophe went on to mention that several areas were visited to inspect colonies for the different diseases and pests of honey bees. No hives were infected with diseases but the pests that were found include the *Varroa mites*, the *Small* and *Large Hive Beetles*; mammals including the honey badgers and the rats; and the snakes.



**FIGURE 3 AND 4:** SOME WORKSHOP PARTICIPANTS MAKING SUBMISSIONS IN THE WORKSHOP

## DISCUSSIONS

Some issues and questions which arose from the presentations were discussed, the discussion in summarized in table 2 below.

**TABLE 2:** TABLE SUMMARIZING DISCUSSION OF ISSUES FROM DAY 1 OF THE WORKSHOP

Issue Raised	Discussion	Resolution
Legislation and policies	<p>There are a lot of legislation and policies in place that can protect forests and ecosystems, these are not implemented. These include the following;</p> <ul style="list-style-type: none"> <li>• Biodiversity management bill – this was developed in 2007/2008 and a proposal for it to be reviewed was submitted.</li> <li>• A chemical management bill which will be overarching on all chemicals in the country was developed after a national inventory of chemicals was taken.</li> </ul>	<p>Mr Nana Matsebula was to be contacted for the feedback.</p> <p>There is need to check with Eswatini Environment Authority (EEA) on the progress of this bill.</p>
Presence of toxic trees in the foraging areas of bees	<p>Not all plants are good forage for honey bees. Some plants on which bees forage can form residues that are poisonous to people who will consume the honey. Two types of trees namely; umfombotsi (<i>Spirostachys Africana</i>) and umdlebe (<i>Euphorbia capillaries</i>) were known to be</p>	<p>Bee a farmer starts a beekeeping enterprise, resource assessment which include assessment of forage areas must be done.</p>

	having toxic residual effects on the honey. These trees together with all the other milk producing trees mainly found in the Lowveld of Eswatini were not good forage for bees. Beekeepers were supposed to be discouraged from starting projects in the areas where the trees were found.	The forestry departments need to be assisted with plant species that are make good forage for honey bees.  There was a need to have an inventory of the indigenous trees in the different ecological zones.
Public Partnership	Private There must be a mutual understanding between foresters and beekeeping. With climate change, beekeeping services might be the solution. Bees pollinate more than 70% of forests and this can be a solution to protect against climate change.	More trees and crops that will support the bees need to be planted, this might be a solution to climate change.
Conservation areas and apiculture	It has been observed that conservation areas are expanding. There was a need to explore starting apiculture projects in the conservation parks.	
Research	There is need to do research on; <ul style="list-style-type: none"> <li>• Honey and other hive products demand in Eswatini.</li> <li>• The different trees that serve as good forage for honeybees</li> <li>• Invasive species and if they are good in honey production.</li> </ul>	
A multi-sectorial approach in apiculture, Forests and Ecosystems	It has been observed that a lot of ministries and sectors are involved in apiculture. As each sector implements its mandate, the other sector suffers.	A multi-sectorial approach in apiculture must be practiced

## SYMPOSIUM OUTCOME ANALYSIS AND WAY FORWARD

The attendants were divided into 5 groups. Each group was given tasks to come up with solutions on issues/problems that were raised in the symposium. The groups were to come up with activities and give a way forward on these issues. The assignments were as follows;

### GROUP 1

1. Apiculture Policy and Legislation.
  - a. Registration of farmers
  - b. Enforcement and compliance
  - c. Herbicides and pesticides usage

- d. Price regulation
2. Pesticides and herbicides
    - a. Import regulation of herbicides and pesticides
    - b. Regulation of usage especially around apiaries
    - c. Prosecution of those who misuse/ intentionally kill bees

**GROUP 2**

1. Apiculture Extension Service
  - a. Official assignment of government extension officers
  - b. Clear job description (duties and responsibilities)
  - c. Empowerment of the extension officers
2. Mainstreaming of apiculture training curriculum for schools and tertiary institutions.
3. Coordination

**GROUP 3**

1. How to facilitate Public - Private Partnership (Government, Forests and traditional leaders)
2. Encouraging Partnership of beekeepers with the forests/ forest companies
3. Combating the effects of climate change on apiculture
  - a. Planting the right trees
  - b. New technologies

**GROUP 4**

- a. Regulation of the quality of honey in the shops.
- b. Establishment of honey collection centers

**GROUP 5**

1. Youth and women Involvement in apiculture, how can it be encouraged?
2. The engagement of lead farmers in apiculture extension.
  - a. Training and certification of lead farmers
  - b. Capacity building for lead farmers on value addition and business.
  - c. Discipline/ deregistration in case of “malpractice”

All the groups were to report back to the plenary in the format on Table 3 below:

**TABLE 3: TABLE FOR REPORTING GROUP WORK**

Outcome	Activities to address outcome	Lead Entities	Time frame

The different group reports were consolidated to form the Apiculture Action Plan for 2024/ 2025 as shown in Table 4.

## DAY 2 – 28<sup>th</sup> March 2024

### Recap Dr. Bavukile Kunene

Dr. Bavukile Kunene who was the program director for the day led the participants in recapping of day 1 of the workshop.

## PRESENTATIONS

### Management of honey bees – Mr. Ncamiso Mamba

Mr. Ncamiso Mamba presented that beekeepers in Eswatini use mainly the Swazi Top Bar Hives and the Langstroth Hives. There were few beekeepers who still harvest honey from the traditional bee hives.

Hive management is to be done once every 3 - 4 weeks, and either in the early morning hours or in the evening. During management, farmers will be checking production (rate of production, combing patterns, vitality of the colonies), diseases and pests that could be affecting their colonies. Before any hive management can be done, farmers must have donned their full protective wear, they should have alerted the communities and must be having the proper working tools, i.e. the smoker and the hive tools.

Hive management informs the farmers of decisions that must be taken – whether to mix colonies, divide colonies or start harvesting.

Lastly he encouraged anyone who wishes to venture into beekeeping to get proper education on bees because they were very dangerous.

### Agro-ecology systems (Agroforestry) and the significance of integrating beekeeping – Mr. Wilfred Nxumalo

Agroforestry was described as a collective name for land use systems and practices. It comprises of shrub component (trees), field component (crops) and animal component (livestock). Agroforestry ensures maximum utilization of land and labour, reduces soil erosion by 50%, improves soil fertility thus increasing output of trees and crop yields which lead to increased food security. Other benefits which have been noted are that some species act as wind breakers and they provide a cheaper fence alternative.

Though there are benefits, challenges that have been seen are allelopathy effect, where one component releases toxins that do not favour the other component; and competition for sunlight above ground and soil moisture below the ground. For farmers not to experience the adverse effects of agroforestry, they were to do a proper selection of the different components.

## WAY FORWARD

Table 4 which was showing 2024/2025 Apiculture Industry Work Plan was projected. This table was detailing outcomes, activities to achieve the outcome, lead agencies and the time frame on which the outcomes would be achieved. Inputs from the participants were welcomed and were to be incorporated in the plan.

### Symposium analysis outcomes:

**TABLE 4: APICULTURE INDUSTRY WORK PLAN (DRAFT 0)**

Outcome	Activities to address outcome	Lead Entities	Time frame
<b>1. Apiculture Policy and Legislation</b>			
<b>Register</b> <ul style="list-style-type: none"> <li>• Farmers</li> <li>• Number of Hives</li> <li>• Brand registration</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity Building of recorders and enumerators.</li> <li>• Resource Mobilization.</li> <li>• Data collection</li> </ul>	MOA (DVLS),MTEA, NGO's, Associations	1 Year
<b>Policy</b>	<ul style="list-style-type: none"> <li>• Develop National apiculture strategy</li> <li>• Develop an apiculture Policy.</li> <li>• Develop apiculture Legislation.</li> </ul>	MOA (DVLS)	6 months – 3 years  1 year  1 year
Institutional arrangement for Pesticides Act  Enactment of the Chemicals management Bill	<ul style="list-style-type: none"> <li>• Gazetting of the committees</li> <li>• Provide resources</li> <li>• Lobbying policy makers</li> </ul>	MOA(DVLS)/DA/RESEARCH  MTEA(EEA)	6 Months
Regulated Pricing (Adoption/ references of)	<ul style="list-style-type: none"> <li>• Implement honey quality standard.</li> <li>• Other bee products standards implementation</li> </ul>	MOC,MOA (DVLS, EDB)	6 Months
<b>2. Apiculture Extension Service</b>			
1. A list of 28 apiculture extension officers evenly	1. Identify regional (4 regions) focal apiculture officer.	DLVS, DA, Forestry	End of April

distributed to different sub regions.	2. Identify other extension officers with technical capacity to perform extension services at sub-regional levels (28 sub-regions)		2024
2. Clear job description for the Extension Officers with roles and responsibilities			End of April 2024
3. Capacitated and enabled Extension Officers	3. Review and finalization of the Apiculture Training Manual.  Training of new extension officers AND In-service/ refresher training of old extension officers.		End of June 2024
<b>3. The engagement and certification of lead farmers in apiculture extension</b>			
Regional (RDA) list of qualified and certified lead farmers	Develop a trainers' manual for apiculturist Establish registry and Develop registration guidelines for farmer certification	MOA (DVLS), MTAD Farmers Associations, MoA, MTEA	Annually
Good quality produce and diversity of products	Exchange programs with established farmers and processors, consumers  Practical Training of lead farmers		
Fully functional legal frameworks governing apiculture with provisions for discipline/deregistration	Formulate Apiculture Policy, Strategy and Bill By-laws of farmer associations		
<b>4. Mainstreaming of apiculture training curriculum for schools and tertiary institutions.</b>			
Incorporate/ integration of apiculture in the agriculture curriculum for every level of education (primary –tertiary)	1. Engage national curriculum centre.  2. Benchmark apiculture curriculum from the regional (SADC)  3. Establish apiculture training	DVLS, CYPD,NCC	1 year

	centre. Engage consultant in developing curriculum Engage training tertiary institutions		
<b>5. Coordination</b>			
Develop The National Apiculture Coordinating team	1. Stakeholder consultation meeting to establish the team (INCLUDE BOTH PUBLIC AND PRIVATE SECTOR).  2. Public sector should include all the relevant sectors in government. Establish terms of reference of National Apiculture Coordinating team	DVLS	1 year
<b>6. Public Private Partnership</b>			
1. Strengthened public-private partnership (e.g. establishment of a collection and processing centre, training)  2. Improve Partnerships or collaboration of beekeepers and forestry companies	1. Stakeholder engagement  2. Community meetings  3. Needs analysis from community meetings  1. Engagement between foresters and beekeepers  2. Develop MOUs and MOAs between the beekeepers and forest companies with clearly defined conditions  3. Registration/ licensing of beekeepers  4. Facilitate bilateral meetings	MOA (DVLS), Traditional leaders, MTEA(Forestry), Associations, CANGO, EWADE	3 years
<b>7. Using apiculture combat the effects of climate change in</b>			
Implementing mitigation	Promote planting of indigenous	MTEA (FORESTRY),	5 years

measures to combat effects of climate change by Planting the right trees and using New GREEN/ SMART technologies	<p>trees, fruit trees, reforestation and afforestation (agroforestry)</p> <p>Planting flowering crops during the dry season</p> <p>Advocate for Smart farming</p> <p>Encourage Organic farming</p> <p>Use of organic pesticides such as rabbit urine and aloe</p> <p>Climate controlled environment(shelter)</p> <p>Promote crop rotation</p>	CLIMATE CHANGA UNIT, MOA (DA)	
<b>8. Encourage Youth and women involvement in Apiculture (GENDER MAINSTREAMING)</b>			
Equal representation of women and youth in apiculture	<p>Facilitate markets and apiculture opportunities for women and youth</p> <p>Create awareness in available opportunities</p> <p>Subsidy/Financing (i.e. RDF) apiculture projects for women and youths</p> <p>Identify lead farmers and facilitate exchange programs for women and youth in apiculture</p> <p>Inclusion of apiculture in schools' curriculum</p> <p>Tailor made programs targeting youth and women in apiculture (Capacity building)</p>	MoA, MoE MoICT, NGOs, DPM, MoT, Ministry Sports and Youth Affairs, Policy makers, gender mainstreaming	1 -3 years
<b>9. Production of good quality honey</b>			
Honey products adhering to the quality compliance of Eswatini standard Authority	Develop Standard operating procedures (SOP's) - INCLUDE ISSUES OF	DVLS, ESWASA and RSTP	3 years

(ESWASA)  POTENTIAL FOR RESEARCH UNDER THIS OUTCOME	GOOD HYGIENE PRACTICESE Training of relevant stakeholders on honey standards and the SOPs  Implementing enforcement of honey standards And SOP's  Accrediting the testing facility		
Established honey collection centers (HCC) in all the 4 regions	Document honey production data in each region  Identify sites for HCC  Raise awareness about importance of HCC	DVLS, Honey processors	1 year

## OFFICIAL CLOSING

### Remarks by a Local Participant

Mr. Mzamo Bhembe, on behalf of the local participants thanked CCARDESA and the organizers of the symposium and the workshop. He acknowledged the information and the training they have been given in the past 3 days. He went on to commit that as local Extension Officers they will work hard to achieve the activities within the set timeframes.

### Remarks by Visiting Participant

Professor Malusi from Botswana who represented the appreciated the organizers of the symposium and the workshop for allowing the participants from other SADC countries to come and witness this well planned meeting. He went on to thank CCARDESA for their financial support and participation in the meeting. Even though the visiting participants thought that they were coming to share their experiences, they also learnt a lot from Eswatini. He then promised that all the lessons they got from the 3 days will help advance apiculture in their respective countries. He concluded by requesting that when similar events are hosted in their respective countries, some of Emaswati who will be invited to please honour those invitations.



**TABLE 5 AND 6:** REMARKS BY DR. EARNSHAW WHILE PROF. DLAMINI AND DR. DLAMINI IS LISTENING ATTENTIVELY

## Speech by CCARDESA

CCARDESA is not a funder but can be sent to look for funders. Concept notes and proposals can be written to CCARDESA who will forward these to international partners for funding. Any form of funding is awarded to countries and not individuals. Eswatini has missed out on some opportunities because the country never sent any proposals. Funding can be in the form of a loan or a grant. Once funded, the country will have to make sure that the funds are not diverted to other projects.

Dr. Earnshaw then appreciated the work plan but expressed her worry that some of the timeframes were too short. And that there was need to reconsider them, she then urged the Director of Veterinary and Livestock Services who was the lead agency in most of the activities to work extra hard since the plan was depending on his department.

## Speech by Director of Veterinary and Livestock Services

Dr. Patrick Dlamini who was representing the Director of Veterinary and Livestock Services thanked CCARDESA and the organizers of the symposium and the workshop.

He went on to thank the participants from outside Eswatini for agreeing to come and share experiences from their countries with Eswatini. Their act was reassuring to all the stakeholders who were in attendance.

He then challenged all the apiculture stakeholders, especially the technical staff to be more focused, to go and work extra hard as they will now be guided by the outcomes of the intense 3 day deliberations and the way forward.

He emphasized that coordination was the key to ensure that;

- honey production is increased to close the gaps that have been identified in the local market
- opportunities for export markets are explored
- climate smart methods of producing honey are used
- beekeeping is integrated with development and management of forests ecosystems

He stated that he believed that this was the beginning of a long partnership with CCARDESA. He then wished everyone a safe journey home and a blessed and safe Easter weekend. He then declared that the workshop was officially closed.

Pastor Boy Boy Mamba closed the workshop with a word of prayer.



**FIGURE 4:** OFFICIALS FROM CCARDESA, DVLS, FORESTRY AND FARMERS AT THE END OF WORKSHOP