

African Biotrade Festival 2023 Conference report



















At the African Biotrade Festival, ABioSA spotlighted key issues including Traditional Knowledge, ecological sustainability, market demand, potential for value-adding and job creation, and participation of small business and communities



Biotrade definitions can be found in the ABioSA glossary.

Adrie El Mohamadi

Component Manager The ABS Capacity Development Initiative (ABS Compliant Biotrade in Southern Africa) Center for Cooperation with the Private Sector (CCPS)

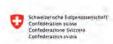
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Image: GIZ/BioInnovation Africa/Jonathon Rees

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The Accessing and Benefit-Sharing Compliant Biotrade in South(ern) Africa project (ABioSA) co-hosted the African Biotrade Festival from 14-16 September 2023. Other co-hosts included the South African Government Departments of Forestry, Fisheries and the Environment (DFFE) and Trade, Industry and Competition (dtic), the BioInnovation Africa project, and Organic & Natural Products Expo Africa.

The African Biotrade Festival was an opportunity to showcase the growth and market potential of indigenous ingredients and products derived from key biotrade species including Baobab, Marula, Sceletium, Buchu and Honeybush.

The event was a multi-stakeholder platform to explore action-orientated solutions to overcome market barriers through brokering knowledge flows between biotrade actors. It was attended by investors, researchers, buyers and innovators from the food, fragrance, flavours, ingredients and cosmetics sectors, biotrade producers, suppliers and communities. Key themes included quality, market access, regulatory compliance and global competitiveness.

The festival featured workshops and a conference, which hosted discussions about biotrade challenges and opportunities, with an emphasis on building business support networks and linkages within the biotrade ecosystem.

- Exhibition
- Sector pavilions
- Workshops
- Conference
- Matchmaking
- Demonstrations
- Tasting and testing
- Networking with producers
- Investment and trade opportunities
- ABS regulatory discussions

Day 1: Thursday, 14 September 2023

Morning session: A government perspective

Africa's biodiversity endowment and indigenous plant resources Creating an enabling environment for buyers, SMMEs and communities

Keynote address:

Biodiversity economies as a tool of economic and social development – and African perspective

Sydney Nkosi, Acting DDG: Biodiversity Economy and Sustainable Use, DFFE

- With 55% youth unemployment, it is the government's priority to create employment in the mainstream economy. Biotrade provides a good opportunity for this.
- Africa is biodiverse, and many populations depend on ecosystems for their food and livelihoods, making biodiversity crucial to the socioeconomic and political wellbeing of the continent. Biotrade is crucial for sustainable growth and services.
- We need to find ways to harness traditional knowledge when it comes to using biological resources.
- There is evidence that biotrade businesses can increase private sector involvement in biodiversity conservation.
- The sustainable use and trading of biological resources should be viewed with a cross-sectoral development lens.
 - The government must work closely with civil society, indigenous communities, custodians of resources, and the private sector to make the biotrade financially lucrative.

- South Africa's National Biodiversity Economy Strategy is a platform for the development and growth of the biotrade sector.
 - The DFFE leads the South African government's approach to biotrade.
 - Platforms such as bioprospecting forums and BioPANZA are vital to delivering sustainable value chains.
- A benefit-sharing agreement for the Buchu industry was signed today with traditional knowledge holders. Buchu is a key species in the South African biotrade and has been used traditionally to treat various ailments. It is one of the species that the South African government has prioritised for cultivation and sustainable harvesting.
- South Africa's export economy must include sustainable biotrade products. A key export market for biotrade ingredients and products is Europe.
- We must make sure that the communities who are the holders of these resources are the main beneficiaries of biotrade.

Panel discussion:

South Africa's vision for prosperity

Session host: Preshanthie Naicker-Manick, DFFE

Panel:

- · Natalie Feltman, DFFE
- · Sinah Mosehla, DTIC
- · Andile Grootboom, DSI
- Prof Neil Crouch, SANBI
- · Prof Sechaba Bareetseng, CSIR

- · Dr Cecilia Bester, ARC
- · Cyril Lombard, ABioSA
- Chantelle Martin, DSBD
- · Retang Phaahla, Setšong Tea Crafters

Cyril Lombard, ABioSA

- The natural products industry, including African traditional medicines, needs concerted effort to attain market access.
 - Challenge: Products must comply with regulations in import countries, which is typically complex and expensive.
 - In the African medicine space, there have been no new approvals for medicines for the export market for at least 12 years.
 - There's a low rate of success in market penetration.
- ABioSA provides support on a sectoral level for gaining market access.
 - Each of the six Sector Development Plans is a pillar for market access.
 - Baobab has market access for the fruit, but a concerted collaborative effort is needed to grow access. The African Baobab Alliance is working on this.
 - The Sceletium sector has a product from one company that has reached some markets.
 Other sub-Saharan African producers can't access formal markets. An association has been formed to collectively deal with US regulations.
 - Vast, complicated regulations are a major impediment. Sector associations must collaborate to plan and obtain funding so that multiple businesses can gain access to global markets.

Prof Sechaba Bareetseng, CSIR

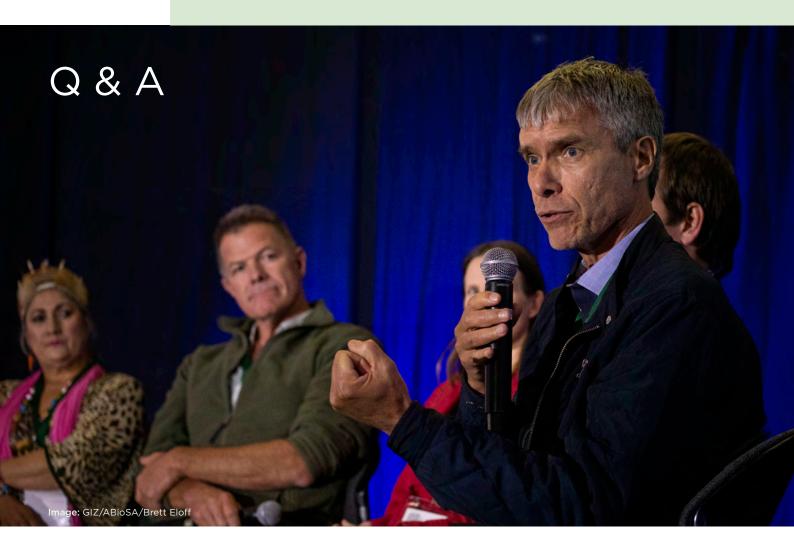
- Indigenous knowledge systems are important from an industrialisation perspective. We need to start recognising African traditional medicines when taking traditional knowledge to markets.
- Research and development are important.
- Because regulations are not allowing us to compete on the global market, there is a move towards transforming medicines into complementary medicines.

Chantelle Martin, DSBD

- There's a trend of SMMEs being survivalists. For example, many businesses started making and selling masks during COVID-19.
- We need to develop our local products and add value to raw materials instead of just exporting them. SEDA and SEFA provide financial and non-financial support to SMMEs; they've seen an increase in cosmetics manufacturing.

Andile Grootboom, DSI -

 BioPANZA supports SMMEs. It consists of stakeholders, various departments of national government and statutory bodies, SANBI, IDC, the Bureau of Standards, NRF, GIZ, industry partners and civil society.



Who will benefit from the network?

Sinah Mosehla, DTIC

- The country will benefit on an economic level in terms of taxes, and on a societal level through job creation. Businesses will benefit from the processing of raw materials and manufacturing of products which offer health benefits.
- The export of natural ingredients and products brings foreign currency into the country.
- BioPANZA must provide tools to assist the value chain, such as having a supplier cluster to help with supplying raw materials from the sector.

Prof Neil Crouch, SANBI

- Suppliers are crucial in the long-term sustainability of businesses. We must:
 - Provide access to information and guidance on engaging in the biotrade, and ensure sustainability studies, including Non-Detriment Findings.
 - · Provide reassurance for future buyers regarding our commitment to biodiversity conservation.
 - Carefully consider harvesting guidelines.
 - Create new value chains by conducting independent research, collaborating with relevant authorities, and identifying existing studies to address any queries.

How can agriculture contribute to conservation and sustainable resource supply for the sector?

Dr Cecilia Bester, ARC

- Responsibility is an integral part of sustainability. The Agricultural Research Council (ARC) played a significant role in establishing the Honeybush industry.
- We work to ensure that the production process and agro-processing methods meet product standards.
- Sustainable growth requires transitioning to commercial cultivation, as expansion in wild harvesting is limited.
- · ARC has a crucial role in developing cultivation techniques for unique South African crops:
 - They demand local, innovative approaches.
 - · Relying on international methods is not always feasible.
 - · ARC develops locally tailored solutions.
 - We collaborate to ensure responsible cultivation practices.
 - Avoiding contamination of natural plant populations is crucial.
 - The movement of genetic materials should be carefully managed.

What support is available for microenterprises to make it past the start phase for better business survival?

Dr Cecilia Bester, ARC

- We must:
 - Preserve the integrity of plants in business activities, particularly in the nutraceuticals, personal care, and agriculture industries.
 - Recognise the potential disadvantages when survivalist SMMEs all converge into a single industry, such as cannabis, which could pose risks to plant life.
 - Address the difficulties that SMMEs face when trying to meet the capacity and quality requirements
 of the retail sector. SMMEs must be developed to enhance their competitiveness and enable them to
 participate in international market chains.
- Incubation programs provide essential support to ensure the sustainability and development of small businesses.
- Collaborative associations play a significant role in helping SMMEs overcome challenges. They:
 - Address regulatory challenges and overcome barriers to entry especially in the global market.
 - Establish a strong presence in the market.
- Academia should provide institutional knowledge and expertise to advance products and industries.
 - Government, academia, and the private sector should collaborate to support the growth and sustainability of microenterprises.
 - · Business incubators should support SMMEs.
 - Use should be made of the SEDA network for non-financial support, including assistance with quality standards.

How can the network provide support for BioPANZA in practical business applications?

Retang Phaala, Setšong Tea Crafters

- · Collaborate with communities rich in indigenous knowledge.
- · Setšong tapped into indigenous knowledge to create a commercial tea range.
- Setšong received support from various institutions to bring products to market.
- · Received assistance from SEDA in registering the company.
- Collaborated with SABS for concept development, design and testing.
- We worked with the Department of Science and Innovation on research. This highlighted the importance of R&D when building trust and buy-in from the market.
- Partnerships with CSIR and ARC validated indigenous knowledge.
 - We expanded our offerings to include infusions tailored to modern tea drinkers unfamiliar with these indigenous plants and flavoured them to enhance marketability.
 - In partnership with ARC, we are addressing sustainability issues.
- · We require support to scale up the cultivation of these indigenous plants to secure a reliable source.
- Our business has identified opportunities, including diversifying our product range and accessing new market channels.
 - The BioPANZA network has opened doors to international opportunities facilitated by SEDA and the dti. We conduct market research to gauge the appetite for our products.
- Our challenge is the expansion of production and obtaining the necessary certifications to cater to new markets.
- We adopted a community development approach, facilitated by CoachLab, to enhance the skills of the local community.

How can we support Setšong to succeed in scaling?

Sinah Mosehla, DTIC		
Siliali Piosellia, Dilic		

We collaborate with the IDC to assist businesses in the natural products sector. We identify funding
opportunities, facilitate access to international markets, and work with retailers to promote and expand
the reach of these products.

Natalie Feltman, DFFE

ABS compliance is essential to opening international doors.

Chantelle Martin, DSBD —————

- SEFA could have funding options for a manufacturing plant, and can help to ensure that quality standards are in order.
- · The IDC offers a small business fund.
- There's limited financial support available for SMMEs in this space.



Panel discussion:

Conservation and sustainable use

Session host: Friedrich zur Heide, GIZ

Panel:

- · Prof Neil Crouch, SANBI
- Natalie Feltman, DFFE
- Honeybush traditional knowledge holder
- · Representatives from ARC and Parceval

Friedrich zur Heide

- The Convention on Biological Diversity and its three key goals conservation, sustainable use, and benefit-sharing from the utilisation of genetic resources are often overlooked.
- The Global Biodiversity Framework emphasises the role of benefit-sharing. The framework encourages the private sector to reduce harm and contribute to solutions. Genetic resources are addressed with a focus on generating monetary and non-monetary benefits for people and nature.
- In the Nagoya Protocol, there is a strong emphasis on creating a future-proof business model
 where companies internalise the value of nature. Businesses are expected to play a significant role
 in the conservation and sustainable use of biological resources. Governments are seen as regulators
 responsible for establishing a conducive environment and clear regulatory frameworks to support
 these efforts.

Natalie Feltman, DFFE

- The guidelines address benefit-sharing for conservation and sustainable use, but our regulations have not explicitly focused on embedding conservation benefits.
- We seek insights on how these guidelines should be implemented and their impact on various sectors.

Prof Neil Crouch, SANBI

- The implementation of the BS4CSU guidelines aims to better integrate access and benefit-sharing with conservation.
 - Prepared by the Bio-economy Chair at UCT for the DFFE, these guidelines address the interests of regulators, users, and providers of biological resources within the South African context. They have three main aims:
 - Conservation and sustainable use (CSU).
 - Consideration of other interests of the national government.
 - Integration of these notions to be mutually supportive.
 - In the South African context, the country is at the forefront of access and benefit-sharing regulations globally and has a strong history of conservation.
 - The guidelines aim to promote access and benefit-sharing and CSU in a more voluntary manner, encouraging all stakeholders in biotrade value chains to be proactive.
 - It emphasises a holistic approach to CSU, encompassing not just the species in the value chain, but also the surrounding landscape and environment.
- The guidelines provide opportunities for both monetary and non-monetary benefits for CSU, such as data sharing to enhance conservation efforts.
 - These benefits are structured based on the SMART principle, ensuring that they are specific, measurable, achievable, realistic, and time-bound.
 - The document is divided into two parts; the first covers theoretical aspects, and the second offers resources to help those involved in the ABS regulatory space navigate it more effectively.
 - The guidelines encourage alignment with national CSU initiatives and emphasise the importance of feedback to adapt to the changing policy environment.



Discussion:

Case study from the African Baobab Alliance: A successful pan-African aproach to biotrade

Session host: Suhel al Janabi, GIZ

Panel:

- · Khorommbi Matibe, DFFE
- Ulrich Feite, Parceval
- · Dr Cecilia Bester, ARC
- · Cecil de Fleur, Chair, Natural Khoisan Council
- · Thembisa Jordan, Ezemvelo, KZN Wildlife

Suhel al Janabi, GIZ

- The challenge is to connect Access and Benefit-Sharing (ABS) with the Nagoya Protocol to promote conservation and sustainable development.
 - The Nagoya Protocol states that the use of genetic resources should contribute to conservation sustainably, but there is limited evidence of this in practice.
 - The objective is to turn the Nagoya Protocol's principles into practical actions.
- · Role of governments:
 - Governments aim to create jobs and foster economic development, but should not do so at the expense of biodiversity conservation.
 - It's important to explore how these guidelines can address opportunities and what role government departments play in their implementation.

Khorommbi Matibe, DFFE

- The National Environmental Management Biodiversity Act's objective is primarily conservation.
- The Nagoya Protocol encourages countries to promote CSU, but there have been challenges in implementation. Industry expressed concerns about how to effectively implement provisions related to CSU.
 - DFFE felt it was essential to create guidelines to enhance transparency and efficiency for all parties.
 - Conservation is an integral part of ABS, not an optional component. Everyone has a shared responsibility in ensuring its success.



- How can a value chain be effectively sustained during its operation, including the
 establishment of safeguards, pre-value chain setup actions, and fostering benefitsharing practices that actively support conservation goals?
- What are the associated costs and negotiations, and how do you prioritise an interest in resource sustainability, acknowledging both its value to your enterprise and the essential negotiations involved?
- What is your perspective on the guidelines and their practical implementation in this context?

Ulrich Feite, Parceval

- Benefit-sharing has evolved over time, initially focusing on monetary benefits but now emphasising non-monetary benefits with the assistance of guidelines.
 - Businesses are learning to incorporate conservation into their practices.
 - · Resource assessments can be costly. There are more cost-effective methods available.
 - Certification through organisations like UEBT and Fair Trade enables closer collaboration with communities, training, and monitoring exercises.
 - Managing costs is crucial, and passing these costs on to clients and end-users while demonstrating added value is essential.
 - The bioeconomy space comprises mainly small SMMEs and a few large industry players, with small players facing resource and financial constraints.
- How are conversations evolving to incorporate conservation and sustainable use?
 Local development is a central concern for local groups.
- Can the guidelines strike a balance between local development and conservation, and where can traditional communities leverage the guidelines to enhance conservation without compromising local development?

Cecil de Fleur, NKC

- Communities express reservations about CSU in guidelines.
- It is crucial to acknowledge the importance of simultaneously conserving and using biodiversity products sustainably.
- Neglecting resource conservation could jeopardise ongoing ABS benefits.
- How can academia and research play a more active role in contributing to CSU, especially in the context of genetic resources and their potential development?

Dr Cecilia Bester, ARC

- · ARC are custodians of gene banks for agricultural crops, mostly exotic varieties.
 - Indigenous plants are absent from these gene banks.
 - · They conserve genetic resources, including Rooibos, Honeybush seeds, and certain medicinal plants.

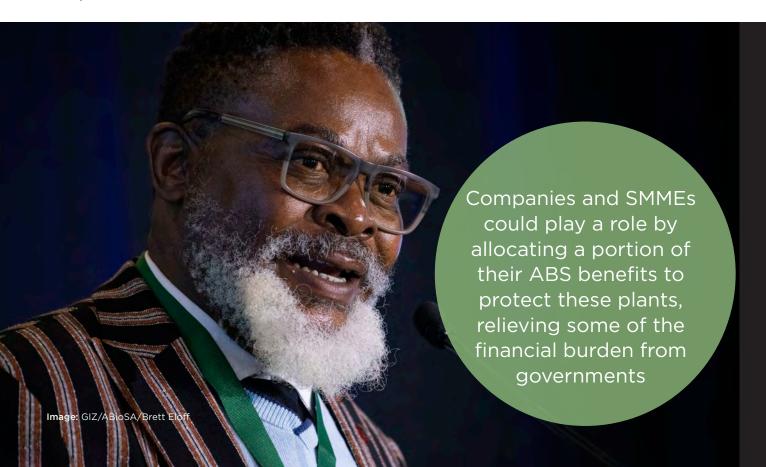
- National parks are essential for conservation, but harvesting indigenous plants in such specific environments can disrupt the ecological balance.
- Practical solutions include contributing part of the funding from ABS to institutions like the NRF for gene bank maintenance and conservation.
 - Companies and SMMEs could play a role by allocating a portion of their ABS benefits to protect these plants, relieving some of the financial burden from governments.
 - Conservation from a research perspective is essential to preventing the loss of biodiversity, ensuring the preservation of populations in different areas, and responsible management of genetic biodiversity.
- How important are interspecies and genetic diversity in permit applications?

Thembisa Jordan, Ezemvelo, KZN Wildlife

- · Highlighting conservation efforts makes your application more appealing.
- Many applications focus heavily on cultivation and the number of plants coming out; there is no clear indication that maintaining the environment will support the environment in the long term.
 - Guidelines have practical ways to do that, involving access providers to cut costs.
 - It is more expensive to conserve retrospectively.
 - · Guidelines are a working document.

Ulrich Feite, Parceval

- The biodiversity industry comprises many SMMEs. Sector organisations play a crucial role in disseminating information to the grassroots level.
- Dr Cecilia Bester highlights the potential for sector groupings to do even more and achieve greater impact.



Facilitated discussion:

Biotrade financing and funding

Panel:

- · Dagmar Honsbein, BIA
- · Cyril Lombard, ABioSA

Dagmer Honsbein, BIA

- The BioInnovation Africa (BIA) initiative aims to map available funding instruments for SMMEs in 2024.
- It aims to address challenges in upscaling and ensuring profit margins. .
 - There are concerns about the adequacy of funding for ABS compliance, considering monetary and non-monetary benefit-sharing under the Nagoya Protocol.
 - Funding requirements with an emphasis on the need for contingency planning are needed.
 - Financial instruments and funding mechanisms in the biotrade arena, including asset bank finance, balance sheet finance, and short-term grants are required.
 - Uncommon financing methods such as factoring, leasing, and angel investors should also be considered.

Cyril Lombard, ABioSA

- Instruments include the Natural and Indigenous Products Fund (IDC) and DBSA's fund for the DFFE.
- There are gaps in securing funding for businesses aiming to meet global regulations. These gaps
 represent challenges in aligning financial support with the requirements and compliance demanded by
 international regulations.



Afternoon session: An industry perspective

Developing Sector Development Plans to expand the biotrade sector Targets, budgets and resources - and removing market barriers

Panel discussion:

Putting industry in the driving seat for biotrade growth

Session host: Sandra Kruder, KSA

Panel:

- · Adrie El Mohamadi GIZ ABioSA/BIA
- · Paul Hartwig, Buchu Association
- Yolande le Roux, SA Honeybush Tea Association
- Avril Harvey, Southern Africa Botanical Products Association
- · Gus le Breton, African Baobab Alliance
- Cvril Lombard, ABioSA

Sandra Kruger, KSA

• The focus here is on businesses - and trade associations that represent them - placing the industry in the driving seat.

Adrie El Mohamadi, GIZ ABioSA/BIA

- It's important to understand the Sector Development Plan process, which started in 2019, and emphasise ABioSA's approach to systemic competitiveness. Examining role players at micro, meso, macro, and meta levels ensures all stakeholders work together.
- Stakeholder development plans aim to move all stakeholders towards a common goal. They create platforms for high-level government and industry engagements to address identified problems.
- Six sectors are being developed, emphasising the need to institutionalise these plans and monitor and evaluate their impact for a snowball effect.

Tell us about the institutional and organisational development within the SA Honeybush Tea Association and how it has evolved since the inception of the sector development planning process.

Yolande le Roux, SAHTA

- The sector was divided and lacked inclusivity. Actions were taken by SAHTA to address these issues:
 - Introduction of a secretariat to improve communication.
 - Expansion of the board to be more inclusive.
 - Implementation of sub-committees, including a marketing team.
 - Establishment of an ABS sub-committee for ABS negotiations.
 - Creation of a sub-committee focused on wild harvesting, addressing challenges and promoting enterprise development.
- The Sector Development Plan is considered a guideline and will evolve with changing circumstances.

What was identified as a key issue for ensuring sustainable use and conservation if the sector grows, especially because it is still dependent on wild harvesting?

Paul Hartwig (Buchu Association)

- Collaboration and research in the sector, particularly concerning sustainable harvesting practices, data collection and the emphasis on traditional medicine and community needs.
 - Efforts are being made to collaborate with Cape Nature to develop sustainable harvesting practices.
 - Data is being collected within the association to understand the extent of wild harvesting versus cultivation.
 - Emphasis is placed on traditional medicine and addressing community needs.
 - The sector is shifting towards sustainable cultivation practices.

There hasn't been a shift in market access due to the high costs of registering products. From the perspective of the Marula industry, what role does the industry association play in establishing market access for a specific product?

Cyril Lombard, ABioSA

- Without collaboration, it is extremely difficult for new products to enter the market, especially without the support of large corporations.
- Stringent regulations and complex compliance procedures have made it challenging for new food products to enter international markets.
- Large corporations, such as Nestlé, dominate the field of novel food applications.
- These corporations are not currently interested in smaller sectors, but if they were, they would aim to monopolise the market.

Gus le Breton, ABA -

- The systematic development of the Baobab value chain over the past two decades highlights the shift in focus to local markets.
- The importance of education and marketing efforts to create demand for Baobab products in both local and international markets.
- Challenges regarding variable quality standards, scientific research, and variable regulations in different countries can be addressed.
- The prediction of significant growth in the African market and the opportunities it presents for local production and consumption.
- · Market development as a key focus for driving the Baobab industry forward has been identified.

How does the Sceletium Sector Development Plan address the critical factors of quality and consistency, and what benefits do companies gain from focusing on these aspects in the plan?

Avril Harvey (SA Botanical Products Association)

- Quality is a multifaceted concern in the Sceletium sector.
 - The starting material, an agricultural product, exhibits significant variation in quality. Quality involves aspects such as processing quality, ingredient profile accuracy, and safety for human consumption, with a focus on avoiding harmful effects and microbial contamination.
 - Regulatory requirements, especially in the case of products classified as food or pharmaceuticals, must be met.
 - Companies benefit from prioritising quality as it aligns with client expectations and the growing consumer interest in these aspects.
- The benefits of the Sceletium Sector Development Plan include addressing quality variation and consolidating efforts to develop different dosage forms, enhancing market trust in reputable and responsible suppliers.

Case study from the African Baobab Alliance: A successful pan-African approach to biotrade

Gus le Breton, ABA

- The Baobab value chain has systematically developed over the past 20 years; this was a driven rather than an organic process.
- Tree Crops Malawi was the first company in southern Africa to commercially produce Baobab.
- PhytoTrade started focussing on the export market.
 - Local consumers were not interested in buying something they could get for free under a tree. We experienced regulatory hurdles.
 - PhytoTrade started on cosmetics, the regulations for which are generally less strict than food regulations. The volumes sold were small. The 'novel foods' classification was a significant issue, as EU regulations are extremely complicated. The process took four years and cost half a million US dollars. This was eventually granted.
 - Baobab was the first African ingredient to get novel food approval, but it didn't take off. The evidence of its safety did not equate to sales. We created demand by attending trade shows.
 - Now our biggest customer is a local customer, not an export customer.
- The African Baobab Association was established in 2018.
 - A Baobab Sector Development Plan was published in 2021, with impact goals and objectives. Objectives of the plan focus on industry growth and benefiting rural harvesters. It emphasises the importance of multi-stakeholder partnerships that work across various boundaries.
 - The significance of developing the Baobab industry is highlighted, including its lengthy growth period (up to 80 years) and the vast number of Baobab trees across Africa.
 - Challenges include the lack of awareness about Baobab and limited scientific research on its health benefits.
 - Variable quality standards and differing country regulations are issues faced by the industry.
 - Growing the demand for Baobab products involves marketing, educating consumers, and food manufacturers about Baobab's benefits and uses.
 - Sustainability and competitiveness are improved through video guides, sustainability standards like the Fairwild Foundation, and quality standards for Baobab powder.
 - An African biotrade advisory group has been formed to address these issues.
 - The African Baobab Alliance now has 46 members.

Will Marula be the next superfruit from Africa?

An overview of science supporting new product ideas and what the Marula sector can learn from the Baobab industry

Cyril Lombard, Biotrade Ventures

There is a material basis for terming Marula a superfruit in treating metabolic syndrome, an important health and wellness area. To realise this requires concerted, resourced and collective action.

A 'superfruit' is a marketing reference rather than a scientifically recognised term. It is applied to fruits perceived as having exceptionally high nutritional benefits, or 'nutraceuticals'. They are characterised by high concentrations of vitamins, minerals, antioxidants and bioactive compounds thought to provide health advantages. Common fruits deemed 'superfruits' include blueberries, pomegranates, goji and acai berries, to name a few.

Unpublished reports suggest that Marula is abundant in pectins and dietary fibres. On pectins, a cause and effect relationship has been established between their consumption and the reduction of post-prandial glycaemic responses, as well as the maintenance of normal blood cholesterol concentrations. On fibres, it has been shown that Marula can slow the absorption of sugar and improve blood sugar control, and reduce levels of cholesterol and low-density lipoprotein in the human body. Accessible health and nutrition claims on each of these are extant.

Additionally, potassium levels in Marula per 50g – in both its flesh and peel – vastly exceed levels in fruits such as apricots, bananas and oranges. This means that Marula is uniquely placed to address high blood pressure and issues of muscular function and digestion. There are a convincing array of publications which support positioning Marula around the treatment of the metabolic syndrome, given the abundance of molecules and compounds such as phenols, polyphenbols, catechins, epigallcatechins and flavonoids. Metabolic syndrome includes a cluster of conditions, such as abdominal obesity, hypertension, insulin resistance and high triglyceride.

The Marula industry has developed a strong body of science on which to draw, though there are gaps from the perspective of commercialisation. There appears to be a trend towards identifying new molecules, but the industry should not lose sight of identified nutritional compounds. The plant should be positioned as a product which supports healthy living.

Marula is not currently accepted as a food in export markets; this needs to be addressed. The Marula Sector Development Plan is doing this by obtaining Novel Foods approval in the EU. A similar plan will need to be developed for other territories, such as the 'dietary supplement' classification in the USA. Building on local officially recognised approvals may support global market access. The South African Health Products Regulatory Authority would be a useful partner in this regard.



Day 2: Friday, 14 September 2023

Morning session: International perspectives

Preparing for biotrade industry exports

What are international buyers looking for in African biotrade?

Session host: Gustavo Ferrero, SIPPO

Panel:

- · Daniel Fraas, Schwaabe
- · Michelle Nott, Botanica
- · Sven Ballschmiede, IOFI

Introduction

- International market access should be viewed through various lenses, including the supply perspective, buyer perspective, and international sector organisation perspective.
- One critical aspect is the establishment and maintenance of biosupply relationships. This entails
 building and nurturing connections between suppliers and buyers in the biotrade sector. It involves
 addressing issues related to supply chain sustainability and ensuring that the sourcing of natural
 resources is environmentally and socially responsible.

Sven Ballschmiede, IOFI

- · IOFI represents the flavouring industry, dealing with food ingredients rather than additives.
- It represents 95% of the global flavour industry, including large multinational companies and hundreds of SMMEs worldwide, with over 300 SMMEs active in the EU.
- The science and safety of their ingredients are prioritised.
- · It is a trade association, focusing on regulatory harmonisation globally, following the IFRA charter.

Gustavo Ferrero, SIPPO

- It is important to establish relationships as a buyer, and gain access to the international market.
- · The international market is well-segmented, with each buyer looking for different things.
- Suppliers face challenges in finding the right match for their products.

Daniel Fraas, Schwaabe

- Consideration is given to whether raw materials are collected or cultivated.
- There is a need for:
 - Support for cultivation optimisation and product development.

- · Focus on the origin of raw materials worldwide in terms of quality and quantity.
- Evaluation of potential partners and their qualifications.
- Emphasis on natural conditions and the quality of partner relationships as vital factors.

Gustavo Ferrero, SIPPO

- Evaluating a supplier goes beyond the product and includes understanding their supply chain and product knowledge.
- Some companies struggle to find suitable suppliers or export partners.

Sven Ballschmiede, IOFI,

- Responsible sourcing includes establishing long-term and fair relationships with local communities, respecting human rights, and adhering to international labour standards.
- The organisation has a charter with objectives and a publicly available toolbox to provide guidance.
- Collaboration with other organisations such as UEBT is in place, and there is a mutual sharing of common members.

Gustavo Ferrero, SIPPO

- · Compliance is a significant issue in the biotrade industry both before and during export.
 - Constantly evolving regulations from organisations like EFSA are a reality, and these raise the bar for safety standards.
 - Another struggle is the abundance of new regulations that can sometimes be overly stringent. These
 regulatory initiatives have a more significant impact on SMMEs in the industry, as larger companies
 can adjust more easily.
 - Early consultation with legislators is crucial, as it allows for discussions on how to implement new regulations and provides time for adaptation.
 - An example is the EU's aim to reduce pesticide use by 50%, which requires adaptation periods.

Regarding compliance with the EU Green Deal, have you experienced any impacts and what specific challenges have you encountered?

Michelle Nott, Botanica

- When complying with local ABS rules, international customers often struggle to be compliant with our legislation.
- A blanket approach to bioprospecting has made it complicated to fill out an application and get the permit. This is administratively onerous.
- The Nagoya Protocol is becoming more apparent and everyone wants to become more compliant we are seeing more EU customers wanting to go through the permit process, especially in SA, but when they see what they have to go through it almost brings us to a dead end.

Daniel Fraas, Schwaabe

- The application and permit process for bioprospecting is time-consuming and complicated, with numerous documents and procedures involved.
- While there is a growing demand for compliance with the Nagoya Protocol, the complexity of the process can be discouraging, especially for EU customers.

Gustavo Ferrero

 Some companies may already be compliant with regulations, but they may not have all the necessary documentation and procedures in writing.

How much intellectual property in is a cup of tea?

Panel:

- · Magdaleen Van Wyk, SSAIP
- · Dr Thandanani Cwele, CIPC

Magdaleen Van Wyk, SSAIP

- · Southern African Intellectual Property presentation themes:
 - · Forms of IP
 - · Traditional knowledge
 - · Copyright
 - Trademarks
 - · Geographical indicators
 - Certification marks
 - Plant breeders' rights
 - Trade secrets
 - Explanation of IP and its legal protection
 - · Examples and relevance of IP in the tea industry

Dr Thandanani Cwele, CIPC

- Not everything needs to be disclosed or protected, for example, trade secrets like the unique taste of some Rooibos products are valuable.
- Trademarks distinguish businesses and create associations with taste and quality.
- IP includes various forms and bundling them can provide leverage in business.
- Restraints on employees can safeguard trade secrets.
- Design rights can protect the aesthetic and functional aspects of products.
- Patents are more technical and research-intensive, granting rights to exclude others from using your invention.
- The choice of what to patent depends on what you want to protect (process, product, etc.).
- The Pelargonium and Rooibos stories highlight the importance of patenting and protecting IP internationally.
- IP is essential in biotrade and can be leveraged in business growth.
- Small businesses can seek assistance from CIPC for patenting, even though it can be expensive.

The presentation highlighted examples where southern African materials, like Marula, originated from the region but were patented in other countries. The concern raised is whether the southern African community is benefiting from these patents?

Dr Thandanani Cwele, CIPC

- Benefit-sharing agreements emphasise the importance of ensuring that local communities and traditional knowledge holders benefit from the commercial use of plants originating from their regions.
- It introduced the concept of a South African biotrade CSU standard and why it's essential.

A South African biotrade conservation and sustainable use standard: Why bother?

Panel:

- · Preshanthie Naicker-Manick, DFFE
- Prof Neil Crouch, SANBI

Preshanthie Naicker-Manick, DFFE

• The Conservation and Sustainable Use (CSU) standard development is part of a project under the UNDP GEF-6 program. The project represents a partnership involving the DFFE and SANBI. This reflects a collaborative effort to develop and implement the CSU standard in South Africa.

Prof Neil Crouch, SANBI

- The development of the CSU standard in South Africa is motivated by the country's constitutional requirement to provide subsequent generations with the same access to biodiversity benefits, and to sustainably use and conserve biodiversity.
- The standard aims to move away from the historically top-down, command-and-control approach of government regulation, and shift toward more diverse, business-positive solutions.
- The goal is to achieve nature-positive outcomes and ensure that the environment is left in a better state than it was found.
- Specific tools and methodologies, such as Non-Detriment Findings, Biodiversity Management Plans
 and harvesting guidelines are used to assess the extent of resource sustainability, take necessary
 actions, and ensure the long-term survival of key species.
- Collaboration between industry sectors, communities and regulators is essential to achieving CSU and managing natural resources effectively.
- Harvesting guidelines and other industry-driven non-monetary benefits contribute to the CSU goals, and these approaches help shift toward a more self-regulated and inclusive standard.

Preshanthie Naicker-Manick, DFFE

- Collaboration between the public and private sectors and indigenous local communities is essential for the protection of natural resources.
- Environmental legislative efforts aim to extend and diversify non-regulatory mechanisms.
- The goal is to make safeguarding value chains more practical and user-friendly.
- · Understanding various types of standards in the sector, such as quality standards, is crucial.
- CSU standards are designed to ensure a sustainable value and supply chain.
- · We must learn from national and regional trends to avoid reinventing the wheel.
- The increase in voluntary sustainability standards is a significant trend.
- · Biodiversity Management Plans help control resources at the local level.
- The CSU standard aims to support government obligations under international treaties and conventions.
- The development of the standard involves partnerships and consultation with stakeholders.
- · The CSU standard is voluntary and development-focused.

- The major pillars of the framework include a voluntary code, a public standard, applicability to wild harvesting and cultivation, and a focus on development, ethical practices, and fair and equitable access and benefit-sharing (ABS).
- Industry support is crucial for the development and testing of the standard.
- · Increasing awareness is essential for taking African ingredients and products to the global market.

To what extent do the guidelines contribute to the standard or reference it?

Prof Neil Crouch, SANBI -

- The guidelines emphasise the responsibility for CSU lies with everyone, whether they are community members, regulators or industry stakeholders.
- They aim to encourage active involvement from stakeholders beyond regulatory bodies in biodiversity management in South Africa.
- Engaging with these guidelines will lead you to employ tools and instruments, enabling industry, communities and others to assess the local resources, understand how much can be harvested, and guarantee environmentally sustainable practices within the value chains.
- To what degree are the costs involved in implementing the SA biotrade standards taken into account? Do these standards align with existing reporting and standard obligations, such as FairWild and UEBT?
- How can these standards contribute to addressing the requirements of other standards like FairWild?

Preshanthie Naicker-Manick, DFFE

- Cost management is a core principle in standard participation.
- Existing requirements are leveraged at the national level, minimising the creation of new requirements.
- Participation in international standards is part of the vision to equip local enterprises for global standards.
- Evolving due diligence requirements are being considered.



Evolving due diligence requirements

Panel:

- Rik Kutsche Lojenga, UEBT
- Daniel Fraas, Schwaabe

Rik Kutsche Lojenga, UEBT

- The Union for Ethical Biotrade (UEBT) is a non-profit organisation focused on botanicals.
- UEBT has developed a standard based on biotrade principles and criteria set by UNCTAD, focusing on respect for biodiversity and people.
- The due diligence process for UEBT consists of several recognised steps, including embedding responsible business conduct, identifying and assessing risks, and taking appropriate actions.
- EU corporate sustainability due diligence is a proposal for EU-wide legislation to be adopted in 2024, which will impact companies' supply chains, human and labour rights, and certain environmental issues.
- This due diligence legislation will affect biotrade products, especially larger companies that source from SMMEs.
- Smaller companies will need to gather information from their suppliers, emphasising the importance of documentation.
- The UEBT is working to provide a risk database for its members, develop a due diligence platform, offer supply chain assessments for clients, and collaborate on supply chain projects.

Daniel Fraas, Schwaabe

- The regulations are new, but the topics covered are not new for business. As a family-owned business, there's a strong value system in place.
- Detailed reports for 2024 are needed to comply with relevant supply chain legislation.
- The law mandates that all foreign entities must be involved.
- The company, based in Germany, deals with a vast network of suppliers worldwide.
- · Partnering with software companies to use AI for supplier screenings has opened new opportunities.
- The company works in agriculture, which comes with challenges such as child labour and environmental problems.
- Reporting and publications are crucial to address these issues and comply with regulations.

The value of Geographic Indicator status for African biotrade species and producers

Panel:

- · Marthane Swart, KSA
- Rik Kutsch Lojenga, UEBT

Marthane Swart, KSA

- Increasing EU requirements are a growing concern. Systems for trading with the EU need to be reviewed and updated.
- Companies need to assess their supply chain risks and report on assurances. Buyers often want to be part of the assurance journey.
- Larger companies are more resilient, but SMEs are vulnerable to cut and run. Collaboration and innovative solutions are essential to prevent industry consolidation.

Rik Kutsch Lojenga, UEBT

• The EU regulation is currently a proposal and will be further refined in 2024. It's important for all of us to engage with it and prepare.

Marthane Swart, KSA

- Rooibos is an important product in the biotrade sector.
 - The industry initially pursued Geographic Indicator (GI) protection for Rooibos due to trademark registration issues in the US in 1994, and a French company's attempt to trademark the product in 2013.
 - GI protection safeguards the name of Rooibos, ensuring it's not misused and allowing for its cultivation without foreign markets being able to claim the name.
- GI provides guidelines for producing and harvesting the plant, ensuring quality.
 - Rooibos is produced in a fragile ecosystem that must be protected.
 - The Rooibos Council monitors media mentions to track the marketing value of Rooibos.
 - · The GI protection process involves working through the dtic, which provides support.
 - While the process is lengthy and complex, it is ultimately worthwhile for the industry.

Standards for essential and vegetable oils – trade facilitator or barrier?

Panel:

- · Dr Elsie Meintjies, GOSP-SA
- · Karen Swanepeol, SAEOPA

Dr Elsie Meintjies, GOSP-SA

- Standards are fundamental in the biotrade industry to ensure that what suppliers promise matches what buyers receive.
 - Compliance with standards can be achieved through certification, which may be voluntary or compulsory.
 - · South Africa has thousands of national standards, with only a small number being non-compulsory.
 - The choice of which standard to use depends on the product, service, customer and destination market.
- It's important to be aware of regulatory requirements, product specifications, and buyer preferences.
 - In the biotrade industry, maintaining quality along the value chain is essential, particularly for essential oils and vegetable oils.
 - Standards contribute to creating a culture of quality and ensuring products meet desired specifications.
 - New entrants can benefit from having a strong track record or obtaining certification from an accredited body to establish trust with buyers.

Karen Swanepoel, SAEOPA

- There are three types of buyers: those who buy economically; those who buy with their heart; and, those who buy with their heads, looking at labels and product value
- The importance of standards lies in understanding where they fit and how they benefit the industry. It involves mapping out who is involved, their size, issues, and how to assist them.
- Five essential oils and five vegetable oils were shortlisted, with standards being developed or amended for each.
 - Standards ensure product quality, authenticity and safety, with information on appearance, colour, odour, relative density, and more.
 - Standards are voluntary and serve as marketing tools to position businesses as price-makers.
 - The development of standards helps provide a competitive marketing advantage, especially in international markets.

What about the application of Lippia javanica in horticulture and the oil's usage?

Karen Swanepoel, SAEOPA

• Lippia javanica is known by various groups as an insecticide, often used among citrus trees to reduce insects. It is also used in insecticide candles. It has a berry-like flavour and is sometimes added to wine. Caution should be exercised as it can be toxic, and proper application and usage are essential.

Trading as equals while preserving biodiversity – What's the cost?

Panel:

- · Ingeborg Adelfhang-Hodgson, ABioSA
- Dr Damien Krichewsky, University of Bonn
- Mons Adelfhang-Hodgson, Quiet Insight

Ingeborg Adelfhang-Hodgson, ABioSA

- What set the Alterntative Community Engagement Pilot Project apart was its aim to be transformative and cathartic.
- The intention was to delve into working with Honeybush communities both within the individual and as a collective. It sought to investigate how communities could pave the way for biocultural protocols.
- The process involved communities collectively discovering their true concerns and values, ultimately leading to a shift in perspectives.
- · This gathering took place in Tsitsikamma.

Dr Damien Krichewsky, University of Bonn

- The pilot envisioned the future of the Honeybush sector, and whether traditional setups should be maintained or whether alternative approaches were necessary.
- Conventional conceptions of value chains are valuable but come at a cost, as adherence to familiar structures can hinder innovation and creative problem-solving.
- Deviating from established blueprints is essential to tackling collective challenges like inequality and ecological crises.
- · Economic systems impact human behaviour and the treatment of nature as a resource.
- Shifting perspectives from linear value chains to multidimensional networks of relationships allows for a richer understanding of biotrade.
- Investing time, knowledge, and risk into exploring different possibilities can lead to transformative change, fostering long-term trust relationships and reducing transaction costs.
- There's a strong consensus at the international level for the need for transformative change, but it requires concrete initiatives.
- The journey to transformation is driven by individuals' motivations and has brought them to this point.

Mons Adelfhang, Quiet Insight -

- The Honeybush sector pilot project shares outcomes and examples from community engagement, focusing on how the lessons learned could be applied to other biotrade sectors.
- The project defines the community broadly, including various relationships, networks, and stakeholders connected to Honeybush.
- The engagement process involved three events to bring together diverse perspectives within the community.
- This engagement process provided a solid foundation for building partnerships and was considered essential for preparing for biocultural protocols or ABS agreements.
- · The project's engagement started at the source, involving community leaders, women in Honeybush,

traditional healers and cultivators. We gained insights into traditional knowledge, medicinal uses, and socio-cultural traditions.

- The community expressed the need to inspire the youth, revive cultural values, and provide mentorship and entrepreneurial support.
- A key focus was on the whole person, connecting individuals to Honeybush and its culture.
- Wild harvesters addressed the physical challenges and issues related to illegal harvesting and advocated for sustainability.
- Another wild harvester emphasised the importance of networking within the Honeybush sector.
- The project also energised and formalised wild harvesters, contributing to the sector's sustainable growth.
- The cultivation of Honeybush increased substantially, with initiatives like Honeybush nurseries and a focus on developing entrepreneurial skills and involving young adults.
- The project aims to inspire young adults to become thriving entrepreneurs in the Honeybush sector.
- It supports artisanal craftsmanship within the sector and focuses on realistic and achievable goals.
 - · Artisanal craftsmanship in Honeybush was highlighted as a key focus during the pilot project.
 - Local community leaders emphasised the importance of developing a broader perspective of the Honeybush sector to increase access and contribute to sector networks. They also stressed the principle of "nothing about us without us", and the local community's role in making a difference.
 - · Customers who become passionate promoters are considered the best form of marketing.
 - The need for new and innovative ways of sharing traditional knowledge was highlighted.
 - Women in the honeybush sector are strong advocates for youth and are working on establishing a mentorship network for young people.
- The importance of community engagement in realising the vision behind ABS and flourishing partnerships was emphasised.
 - The quality of engagement is seen as a key to unlocking momentum.
 - The project plans to move into the next phase, aiming to replicate the process followed in the honeybush sector to benefit other sectors.





The Accessing and Benefit-Sharing Compliant Biotrade in South(ern) Africa project (ABioSA) co-hosted the African Biotrade Festival conference student session on 15 September 2023. Attendees heard from six postgraduate students about their research on indigenous species including Rooibos, Marula and Honeybush. At the end of the session, three students were selected to attend an international conference of their choice in 2024, and if possible, present their findings.

In the first phase of ABioSA – which ran from February 2018 to October 2021 – one of the collateral benefits of the project was the development of young talent who would contribute meaningfully to the future of the southern African biotrade. All of the appointed project consultants were required to work with postgraduate students as part of their deliverables, ensuring development opportunities for the sector's next generation of experts. As a result, the students gained work experience and knowledge to assist them in building their careers in the sector, even inspiring some of them to become entrepreneurs developing their own biotrade products.

Including the next generation of biotrade researchers and developers is essential for the sector's growth, and a priority for ABioSA. ABioSA aims to create a platform for R&D to discuss recent research results and how these can be transferred to stakeholders outside of academia, including industry, government, business support organisations, local and international buyers, communities in the biotrade sector, and the public at large.

Now in its second project phase, ABioSA invited postgraduate students from higher education institutions to present their research at this conference. Submissions with a strong focus on practical application and solutions in the biotade sector were invited from both natural and human sciences faculties. The call was aimed at students registered at accredited southern African higher education institutions studying towards a Masters' or PhD qualification, and conducting research on topics related to:

- The use of southern African indigenous plants
- Conservation of biodiversity
- Sustainable use
- Fair and equitable sharing of benefits
- Sustainability, and
- Compliance

The ABioSA project management team conducted a pre-assessment of the submissions against evaluation criteria. A specialist evaluation team conducted technical assessments to ensure that the evaluation criteria and requirements were met, and then selected the six finalists. The finalists received presentation training from Proof Communication Africa, who also scored them according to the evaluation criteria.

The finalists shared their research, results, and how these results can be utilised practically within the sector. The session was competitive, as the attendees were also scoring the students against the evaluation criteria. The audience vote accounted for 40% of the overall score; the technical evaluators' vote counted for 50%, and Proof Africa's for 10%.

The three winners were Shana De Bruyn-Orr (Cape Peninsula University of Technology), Kyle Le Roux (Stellenbosch University) and Rhoda Malgas (Stellenbosch University). They were announced by Mr Khorommbi Matibe, representing the DFFE. Mr Matibe is the Chief Director: Biodiversity Economy and Sustainable Use in the Department of Forestry, Fisheries and the Environment.

Assessing the effects of Rooibos on gut health

Shana De Bruyn-Orr Cape, Peninsula University of Technology -

De Bruyn-Orr is investigating the efficacy of the Rooibos in increasing bioavailability and absorption in the gut. Much is known about Rooibos and its uses in the food, cosmetics and medicine sectors, and this research aims to add to that wealth of knowledge by showcasing how beneficial it can be for gut health, especially as an alternative to conventional medications.

Her research into Aspalathin, a flavonoid unique to both Green (unfermented) and Red (fermented) Rooibos with established blood glucose lowering properties, has shown significantly higher antioxidant capabilities for Green Rooibos.



The research into the effects of both Green and Red Rooibos teas has shown, to different degrees, a barrier restoring effect and anti-inflammatory propertires. De Bruyn-Orr is assessing applications including as prophylaxis/pre-treatment of gut problems, and as a nanotechnology for drug delivery. De Bruyn-Orr's work as part of a PhD in Biomedicine Sciences advocates for the commercial use of Rooibos as a novel anti-inflammatory treatment. This research has the potential to increase the production, transformation and use of Rooibos, benefitting the biotrade sector.

Cultivation practices and utilisation of Marula by smallholder farmers in the dry region of Zimbabwe

Andrew Tapiwa Kugedera, Bindera University of Science Education

Kugedera is investigating the utilisation of sustainable cultivation and harvesting methods relating to Zimbabwean Marula fruit. Marula is underutilised by indigenous knowledge holders, and has the potential to form a strong pillar for a new biotrade industry capable of empowering rural communities and industry in Zimbabwe.

Specifically, Kugedera sought to determine practices related to utilisation, harvesting and economic effects of Marula on human livelihoods. He assessed propagation techniques, including truncheon, seeds, grafting and natural regeneration from 2014 to 2023.



Kugedera emphasised the need for resource management and conservation legislation, including strategies to support sustainable utilisation and marketing. The need for the creation of public/private partnerships was also emphasised. The largest potential economic benefit of Marula would be increasing yields to 65,000 kg/hectare.

Kugedera's work was completed as part of a Master's of Science (Agroforestry), and aims to help industry managers in developing Marula products that are sustainable, profitable and empower local people.

The medicinal value of Honeybush in managing diabetes

Kyle Le Roux, Stellenbosch University -

Le Roux is investigating the potential beneficial effects of Honeybush extracts in the treatment of hyperglycemia-induced disease conditions. The proposed research project aims to fill this gap in knowledge and further the appeal of Honeybush as part of a potential intervention strategy for oxidative stress-related diseases, such as diabetes.

In the diabetic scenario, high amounts of glucose enter the cells, producing excessive oxidants. This leads to mitochondria – necessary for a cell's biochemical reactions – to become dysfunctional, resulting in complications.



The anti-inflammatory, anti-diabetic and anti-oxidant properties of Honeybush to rescue mitochondrial functions and bioenergetics against oxidative injury are already showing positive results. Le Roux affirmed that Honeybush has an untapped market in the form of a nutraceutical extract.

Le Roux's work as part of a Master's in Science (Biochemistry) could have significant impact for individuals affected by diabetes with preventive and novel ethnopharmacological interventions that could aid in reducing morbidity and mortality.

Sustainability of the cultivated Honeybush tea industry in South Africa

Tafadzwa Makhuza, Rhodes University

Makhuza is investigating the environmental, social, and economic characteristics of cultivated Honeybush tea enterprises. Despite extensive research and financial commitments over the years by the public and private sectors, the cultivated Honeybush industry is yet to achieve its full potential.

Makhuza aims to investigate what has made certain enterprise models successful while highlighting challenges that have caused other enterprises to exit the industry. She is working to update the cultivated industry's inventory, as well as develop a sustainable resource use framework which takes into account successful environmental, economic



and social aspects useful for the industry's future. Makhuza's research is ultimately aimed at identifying the elements of a successful enterprise and community project value chain, looking at both reseeded and resprouting Honeybush.

Makhuza's work, as part of a Masters in Geography degree at Rhodes University, will help guide future investment in the sector to inform the best approaches to the sustainable use of the natural resource (in line with production, biodiversity, job creation and the development of a sustainable biotrade sector).

The only sustainable economy for Rooibos and Honeybush is green

Rhoda Malgas, Stellenbosch University

Malgas' work investigates how the South African biotrade can ensure sustainable fynbos (which includes products like rooibos and honeybush) biomass production to support the livelihoods of small-scale producers in the Cape Floristic Region.

Rooibos and Honeybush are endemic species of one of the oldest and most biodiverse ecosystems in the world. They are part of ecological communities which, through ecosystem goods and services, sustain the ecological processes that are foundational to nature-based sectors. These plants, for instance, help to maintain soil nutrients



in harsh fynbos environments. They also provide food for insects that humans depend on for pollinating commercially important crops.

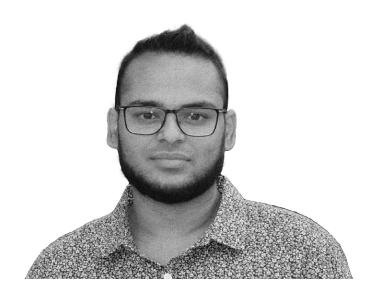
The research shows that sustainable outcomes for wild harvesting and agricultural production must ensure the ecological integrity of production landscapes; enhance the collective choices and actions of all local actors, and sustain the livelihoods of people directly dependent on Rooibos and Honeybush. With a PhD in Conservation Ecology, Malgas' work highlights ecological mechanisms which have the potential of ensuring the long-term viability of the Rooibos and Honeybush sectors, along with other fynbos-based industries.

Adding value to Marula

Trishen Reddy Vaal University of Technology

Reddy is investigating underlying factors inhibiting the Marula oil sector from increasing its local production to meet the growing international demand. While the sector is dominated by European companies, the opportunity exists for South African businesses to change this if they can produce locally.

His work as part of a Master's in Chemical Engineering argues the need to develop mathematical models and empirical studies to determine the most viable operating conditions to increase oil output, which will add value to the biotrade and broader agricultural sectors by introducing novel models. Reddy's primary



objectives were to determine different yields of Marula oil using experimental data of supercritical fluid extractions methods, including the incorporation of response surface methodology.

These models will also aid in the development of scaling-up techniques from laboratory to pilot and industrial stages, and the costing of equipment and design specifications required to optimise the output of oil.





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