

International Macadamia Symposium 2023



MOVING FORWARD TOGETHER

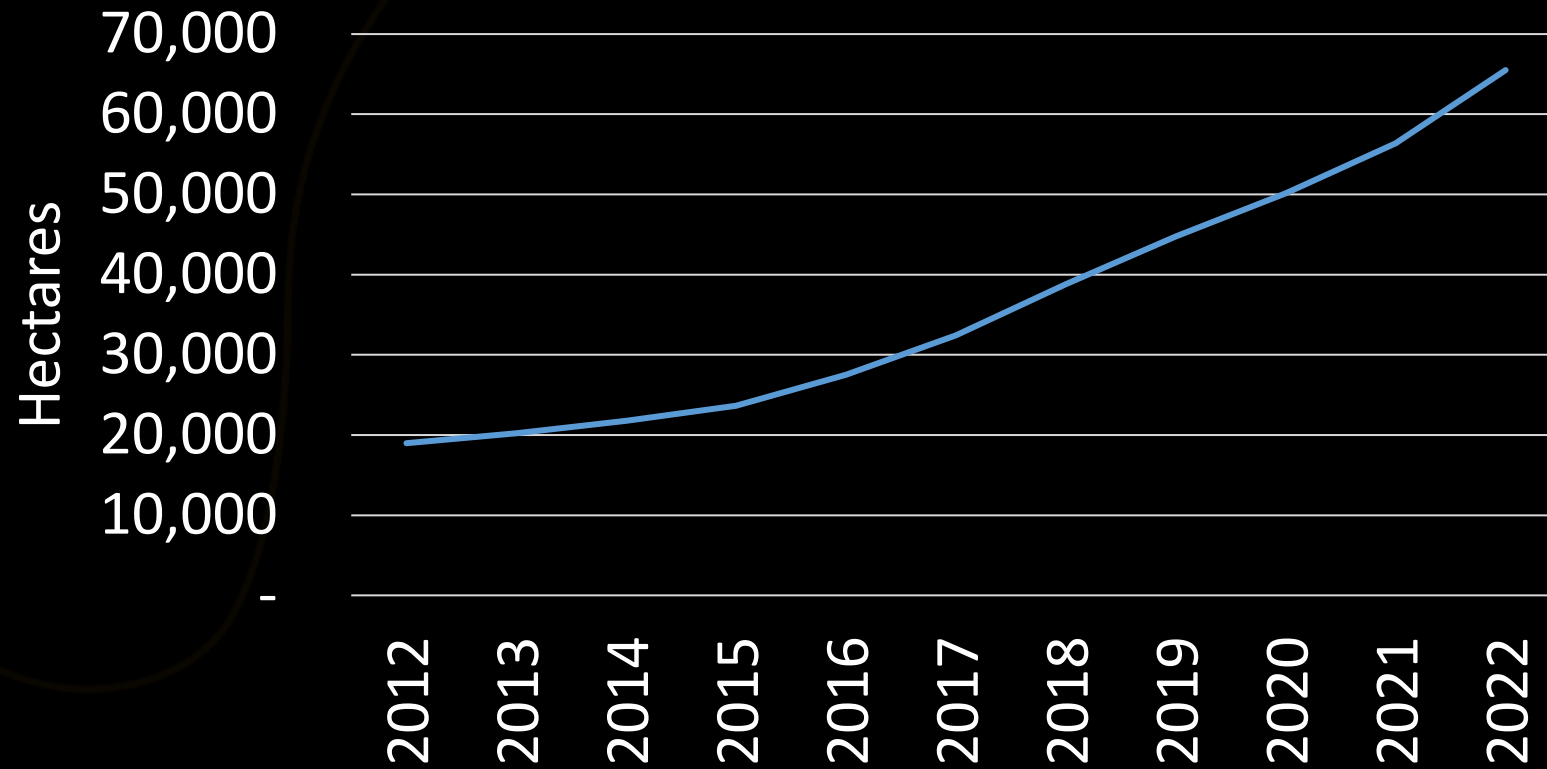
Macadamias South Africa (NPC)  
(SAMAC)



The industry in numbers  
South Africa

Lizel Pretorius

# Hectares established in SA





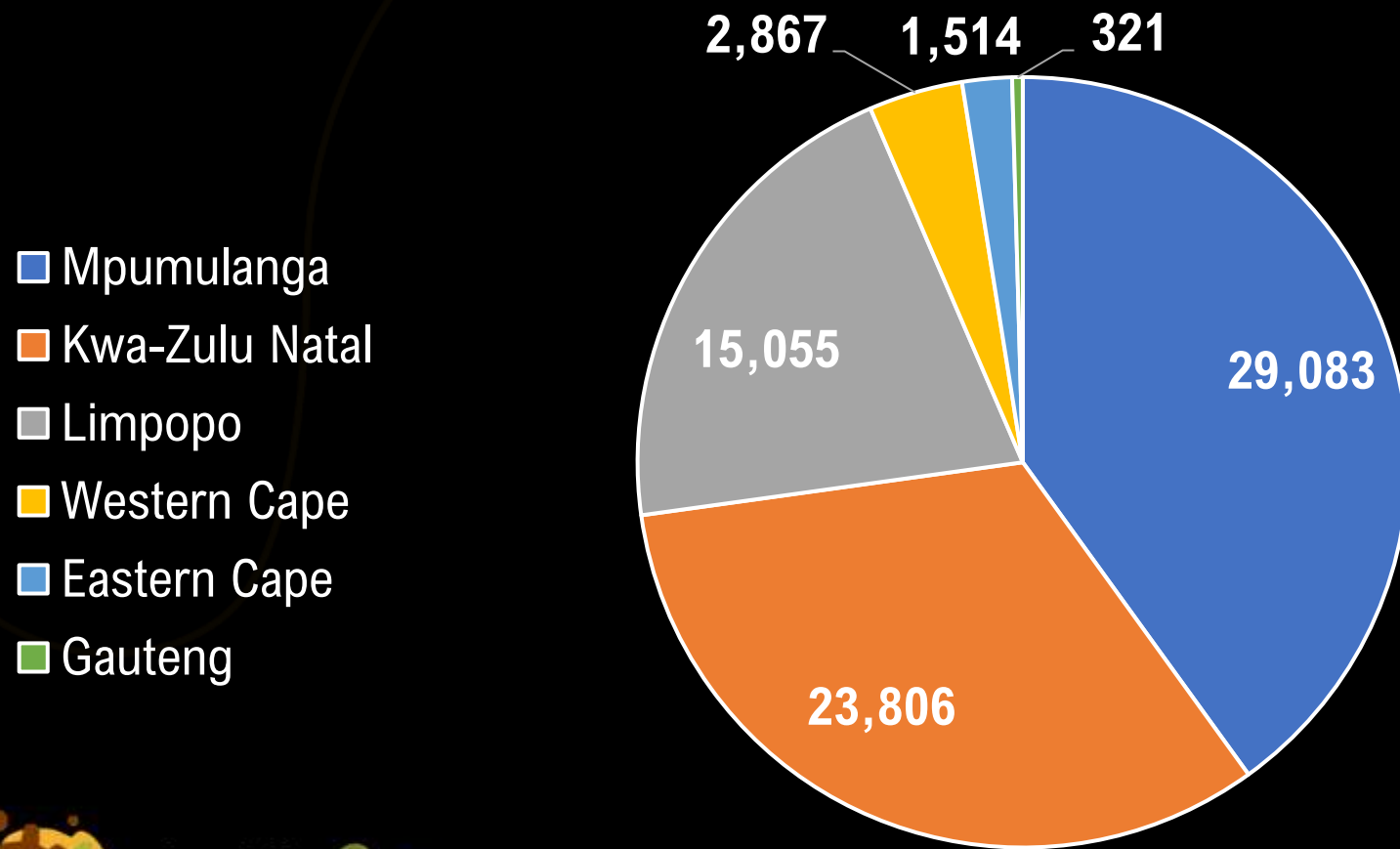
**SAMAC**  
Macadamias South Africa NPC



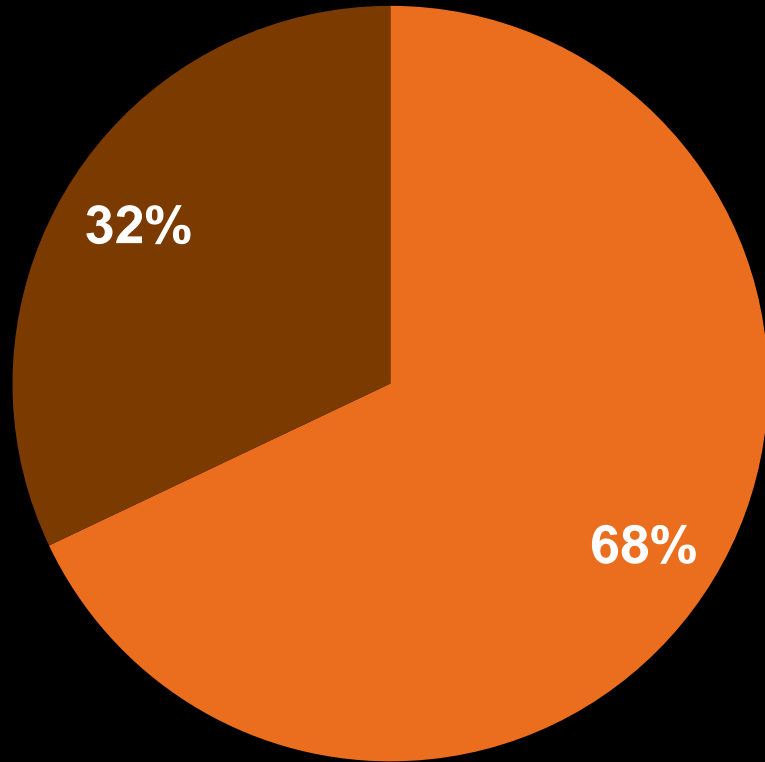
**AARSC**

**UNE**  
University of  
New England

# Hectares per province



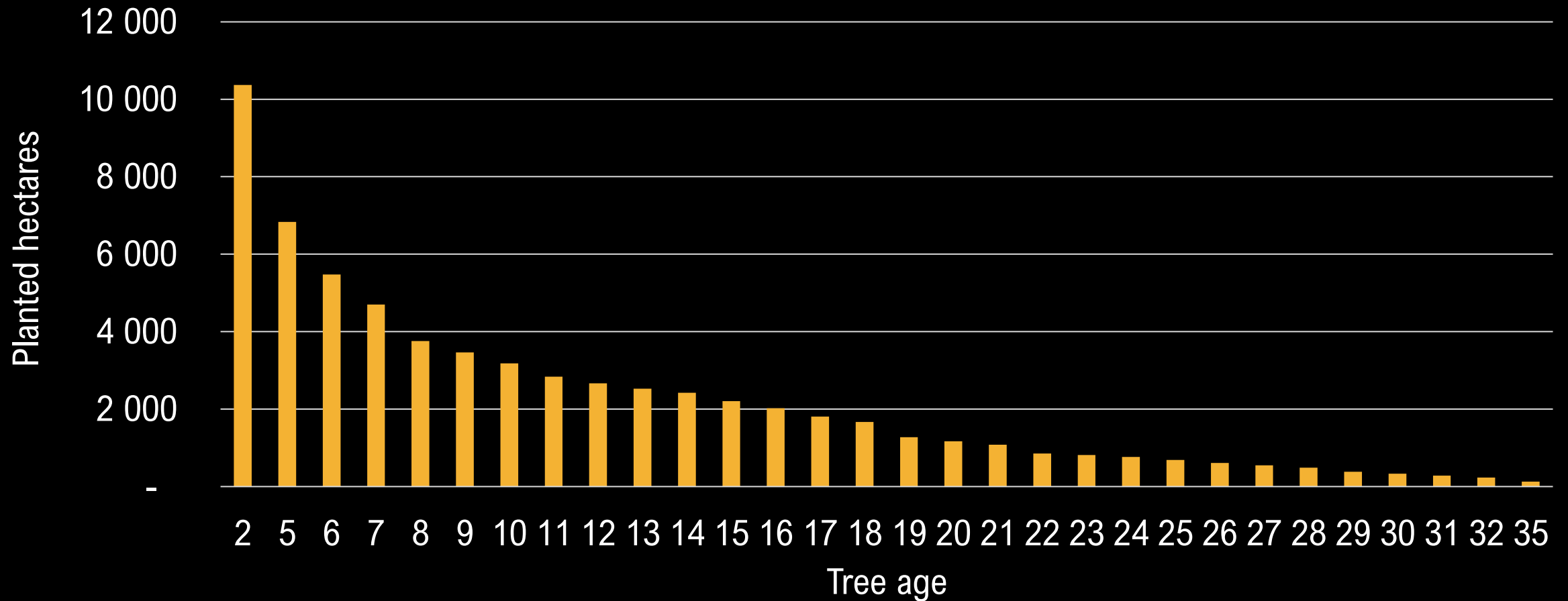
# Hectares in production



■ Hectares in full production ■ Hectares not in full production



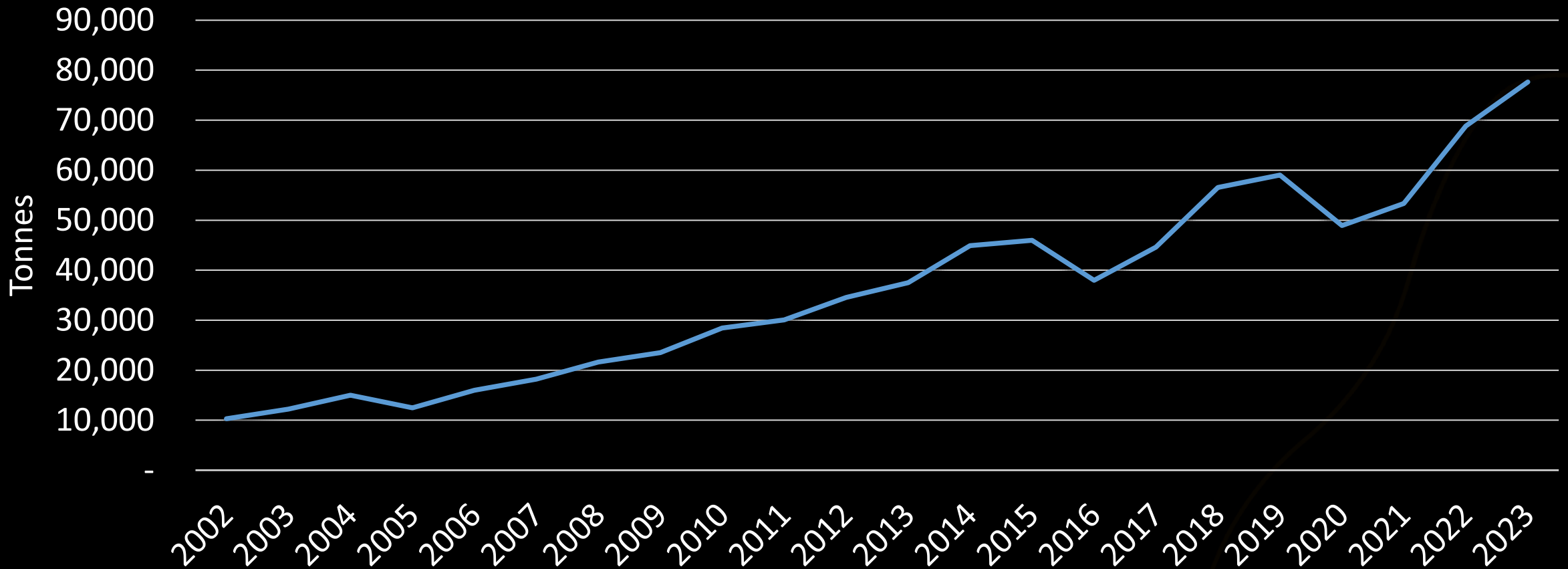
# Hectares in production



# Production

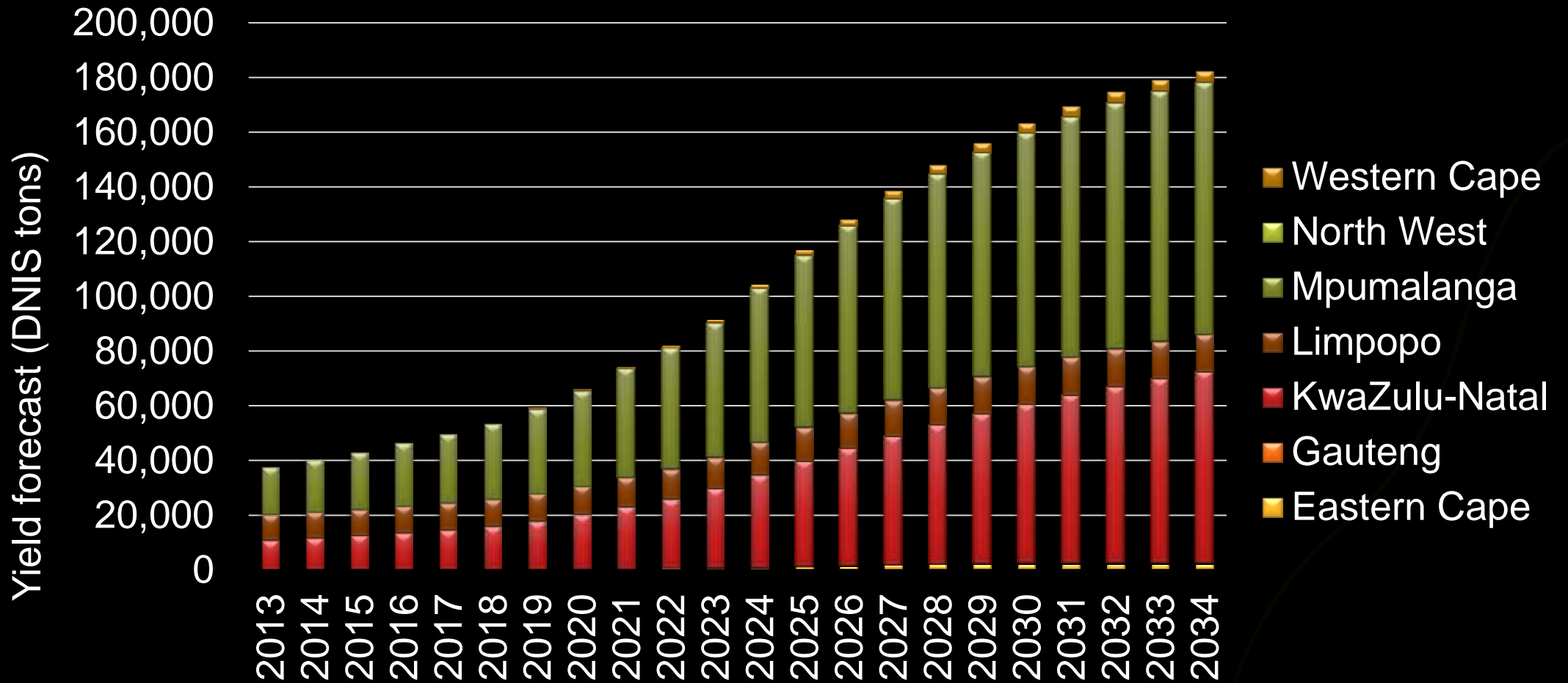


# South African production





# South African production forecast

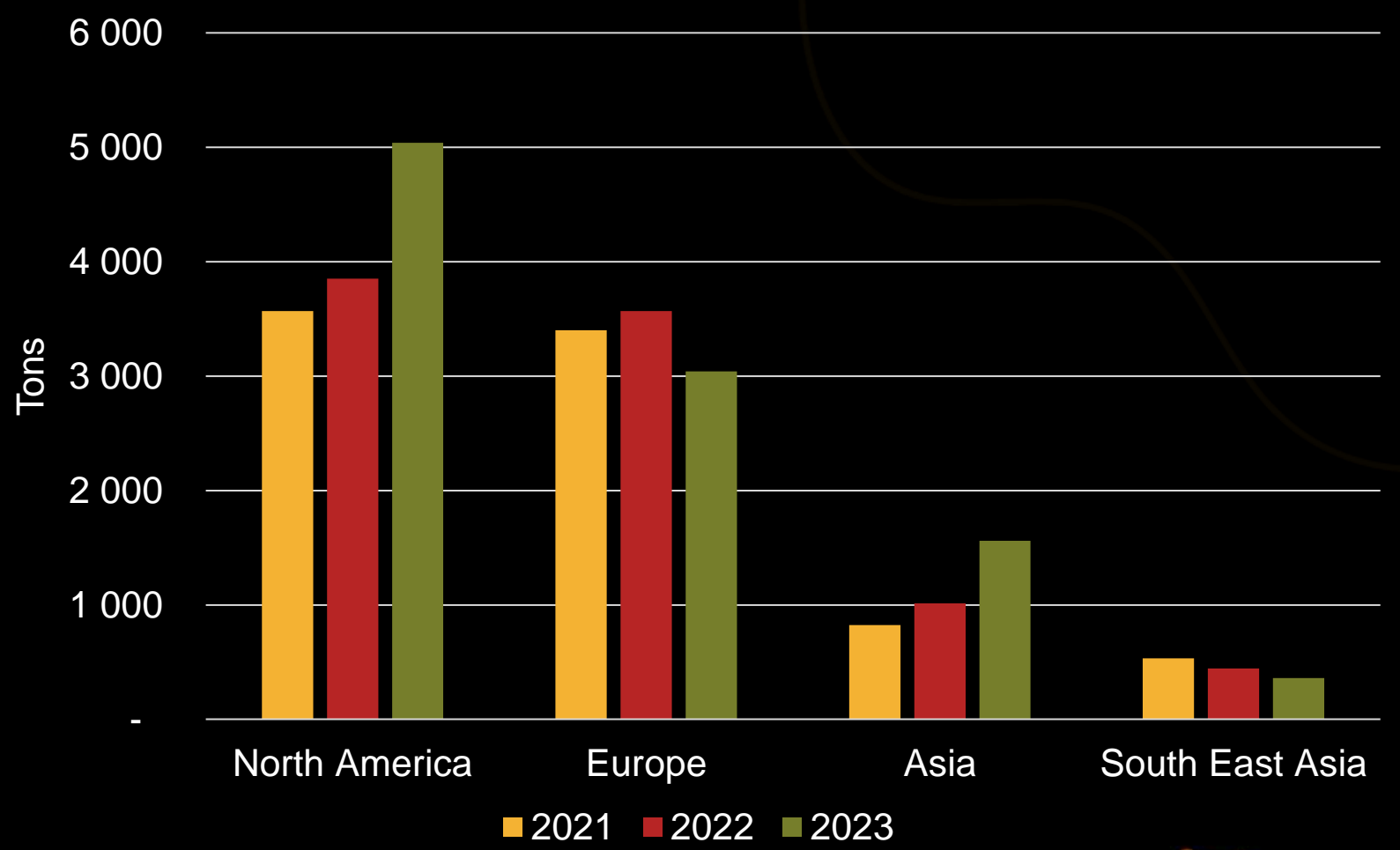


# Export markets





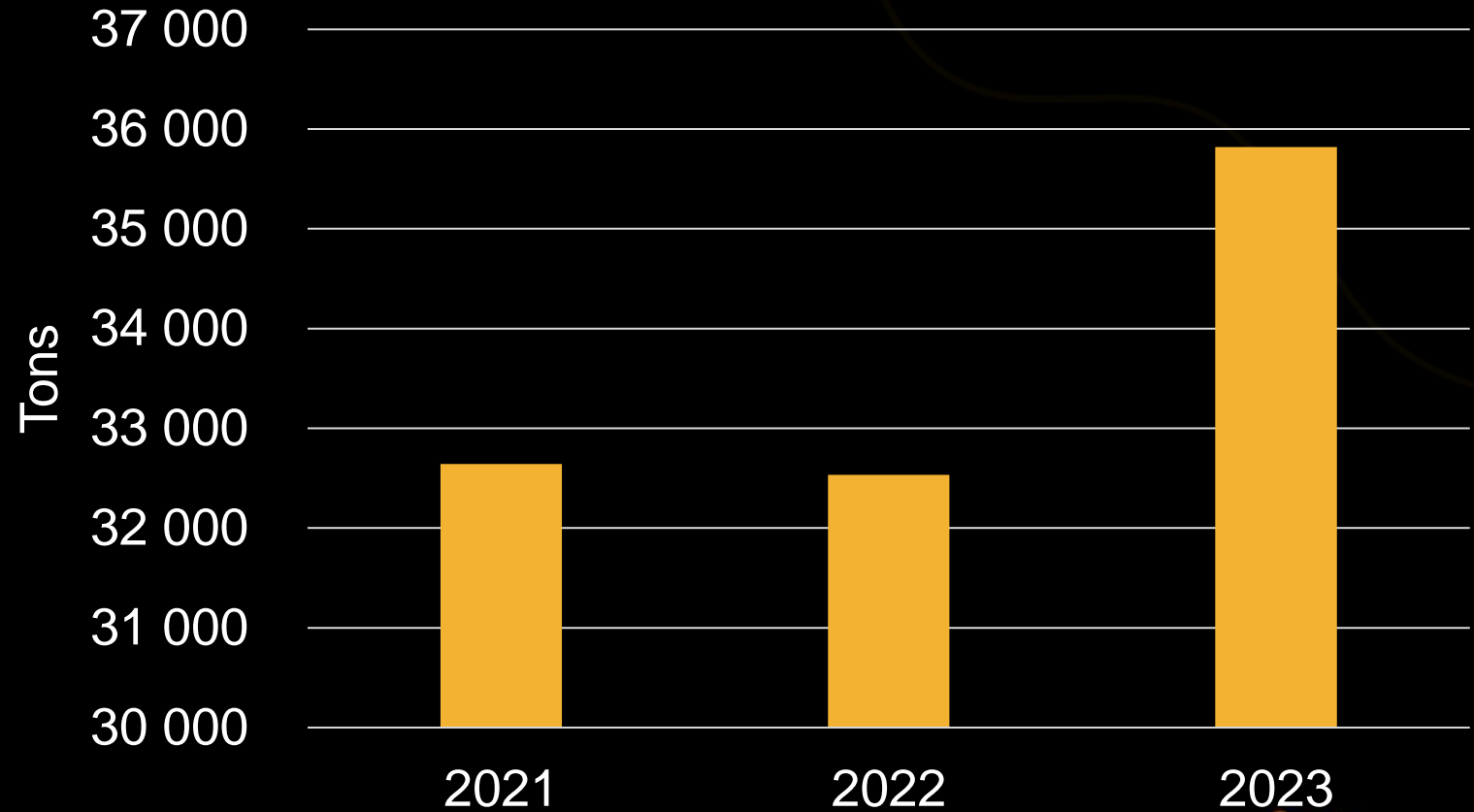
## South Africa kernel export markets – June to July





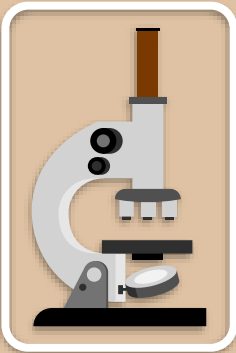
# NIS exports to Asia

South Africa





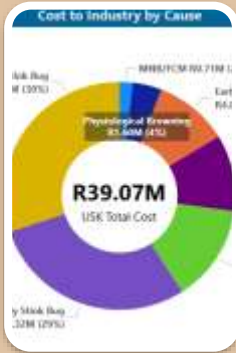
# Research



Research Projects



Future Orchards Projects



Benchmarks



Services



MacShield



Surveillance



# What informs our research needs?

- Disease diagnostic clinic and surveillance activities identify pest and disease risks
- Benchmarks
- Grower surveys and engagement
- Research Networking Day
- R&D Committees and sub-committees



# SAMAC RESEARCH PROJECTS



## Benchmarks

Loss factor  
Carbon footprint  
Production



## Disease Diagnostic Clinic at FABI

Post and disease identification  
Bark borer survey  
Laboratory populations of stink bugs, macadamia nut borer, macadamia felted coccid



## Stink bugs

Alarm pheromone  
Diversity  
Insecticide resistance  
Alternative hosts and gut symbionts  
Entomopathogenic fungi as biocontrol agents  
Thermal biology



## Husk compost

Benefits  
Application rates



## Macadamia nut borer

Sex pheromone  
Effectiveness of commercial products  
Thermal biology



## Precision farming

National mapping of macadamia orchards  
Site classification of macadamias  
Optimizing spray deposition  
Climate modelling  
Industry management tool (integrator)



## Cultivars

Genotyping and parentage evaluation  
Cultivar evaluation trials  
Breeding technologies  
Nursery rootstock and scion compatibility trial



## Macadamia ringspot virus

Yield effects  
Spread within orchards



## Post-harvest

Shin adherence/shell skin marks  
Effect of ethylene on nut quality  
Differences in fatty acid profiles and quality between cultivars



## Botryosphaeria dieback

Causal agents and reservoirs  
Pathogenicity of species  
Susceptibility of cultivars  
Stress factors predisposing trees to infection  
Fungicides



## Irrigation

Optimizing application  
Cultivar differences in water requirements



## Pollination

Cross-pollination  
Hive closure structures  
Best practices and minimum hive standards



## Thrips

Species  
Susceptible cultivars and developmental stages  
Control



## Husk rot

Species and their pathogenicity  
Predisposing factors  
Fungicides



## Starch content

Seasonal changes in wood stored and non-structural carbohydrates



## Flower diseases

Species and their pathogenicity  
Predisposing factors and spore loads  
Role of thrips  
Fungicides



## Macadamia felted coccid

Laboratory colony  
Host specificity testing of macadamia felted coccid parasitoid



## Soil and leaf analysis

Causes of yellowing of trees  
Causes of poor Beaumont crop



## Crop removal values and root flushes



## Phytophthora and Pythium

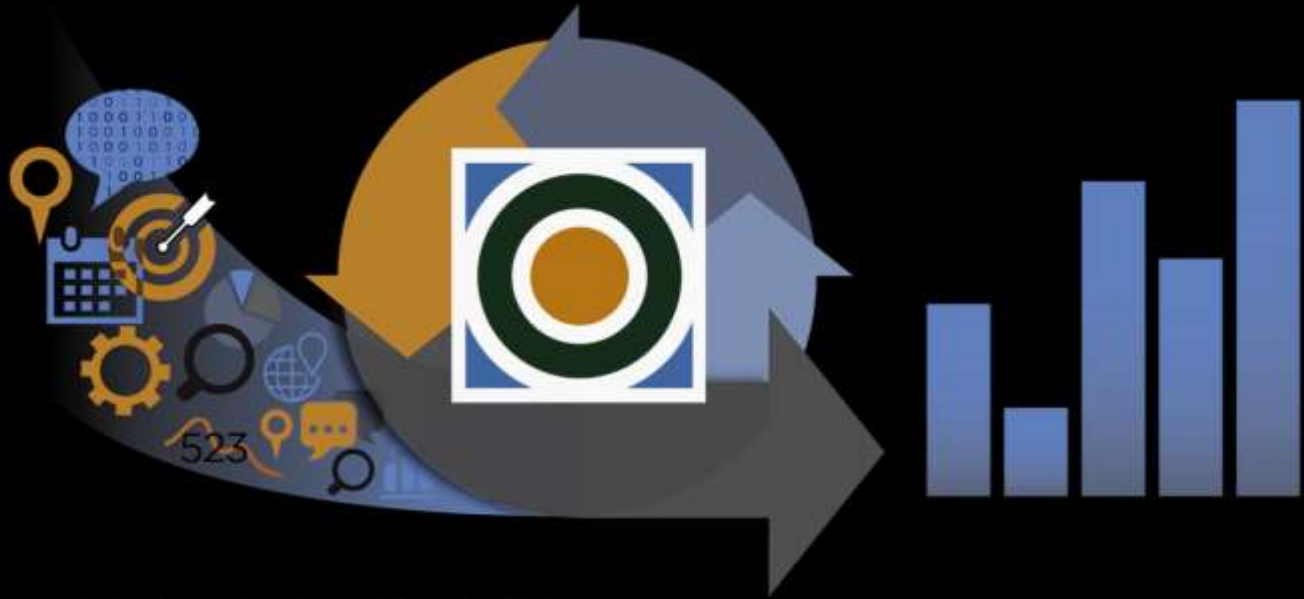
Species and their pathogenicity  
Cultivar susceptibility  
Control (phosphonates and non-toxic mineral compounds)  
Diagnostics and control in nurseries



SAMAC



# Future Orchard



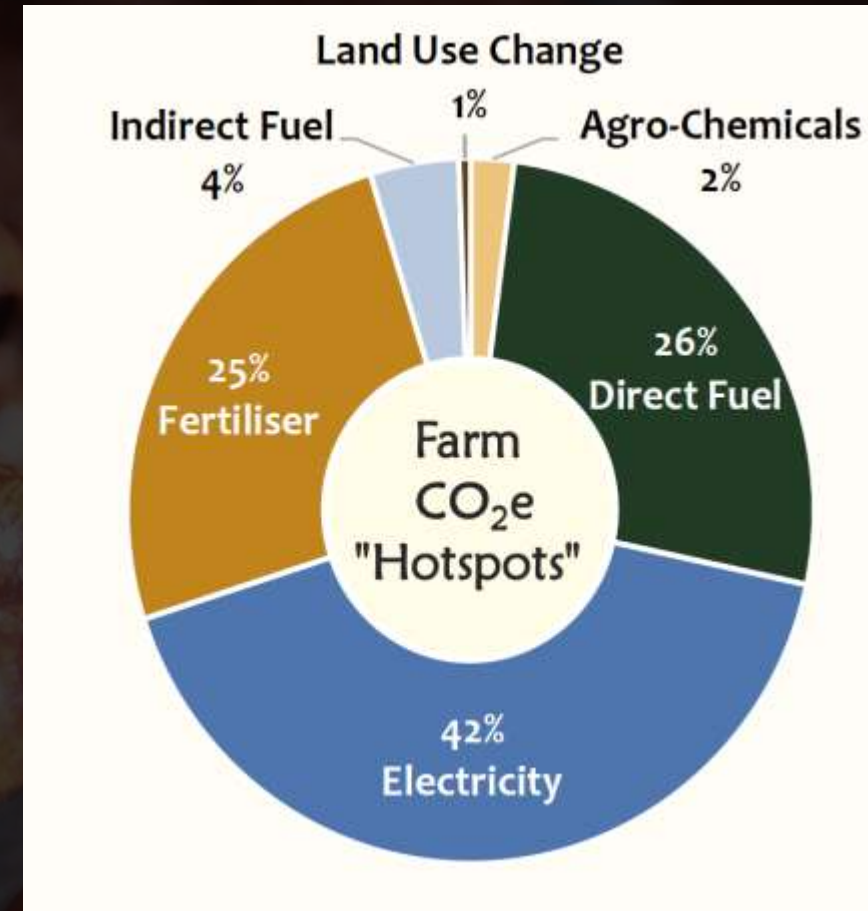
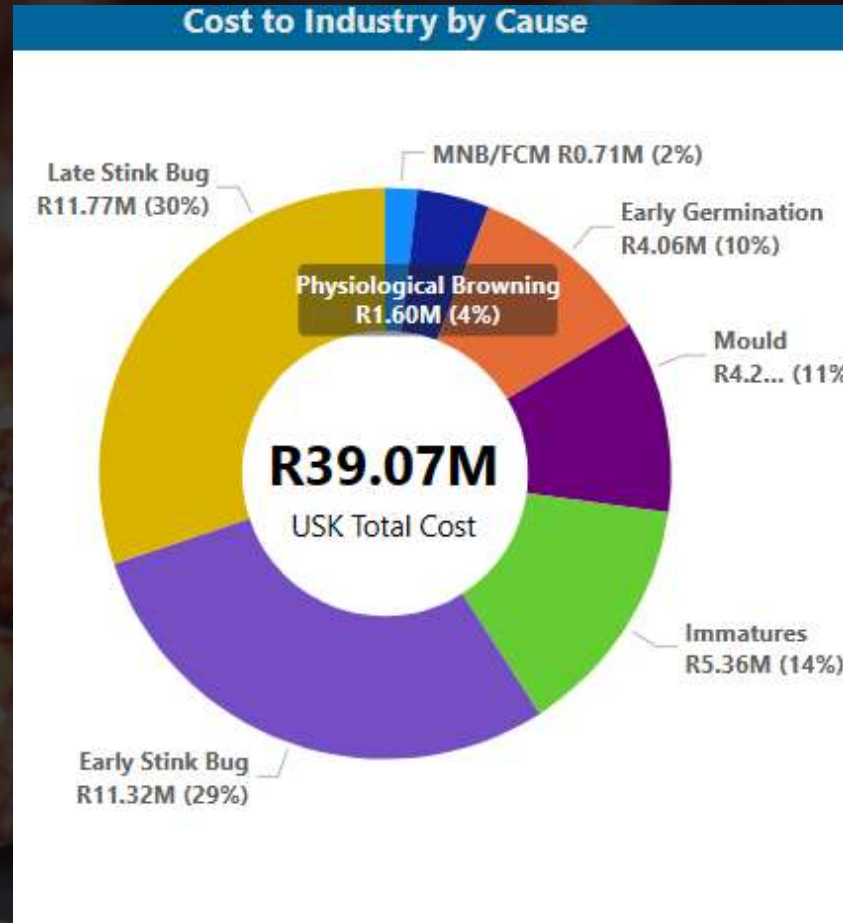
## SAMAC Integrator



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# Benchmarks



# MNB / FCM



Harvest Year

2022 ^

**Select all**

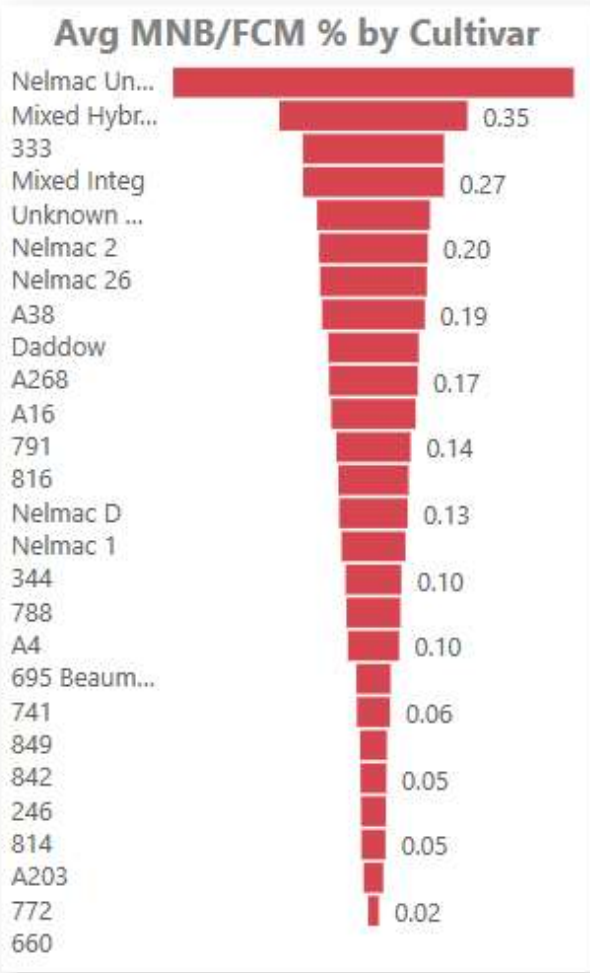
2020

2021

**2022**

2023

**25,515 kg**  
MNB/FCM Damage



### Select Price

Back on Farm Price (R)

**30**

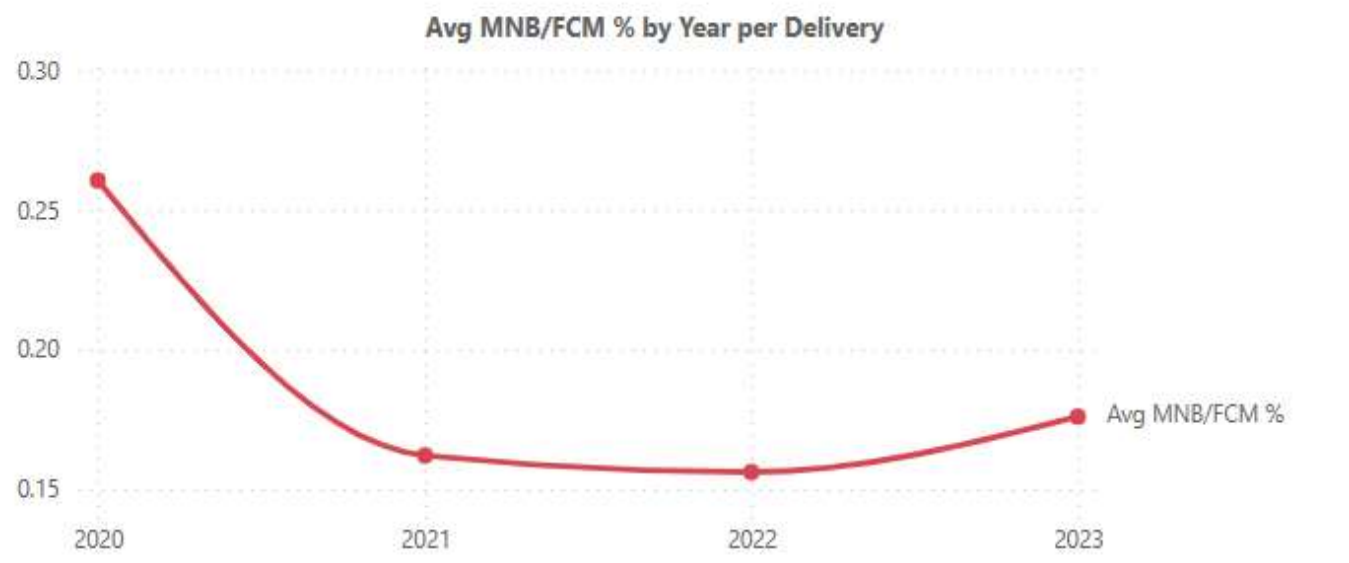
**Total Cost of MNB/FCM to the Industry**  
(Based on the selected filters)

**R765,447**

Definitions / Information:

**Note** - MNB/FCM damage is one of the easier USK factors to sort out at a farm level. As such, the accompanying figure based on Processor data, is not a true reflection of the impact of Macadamia Nut Borer or False Codling Moth damage to the industry.

**MNB** - Macadamia Nut Borer  
**FCM** - False Codling Mot



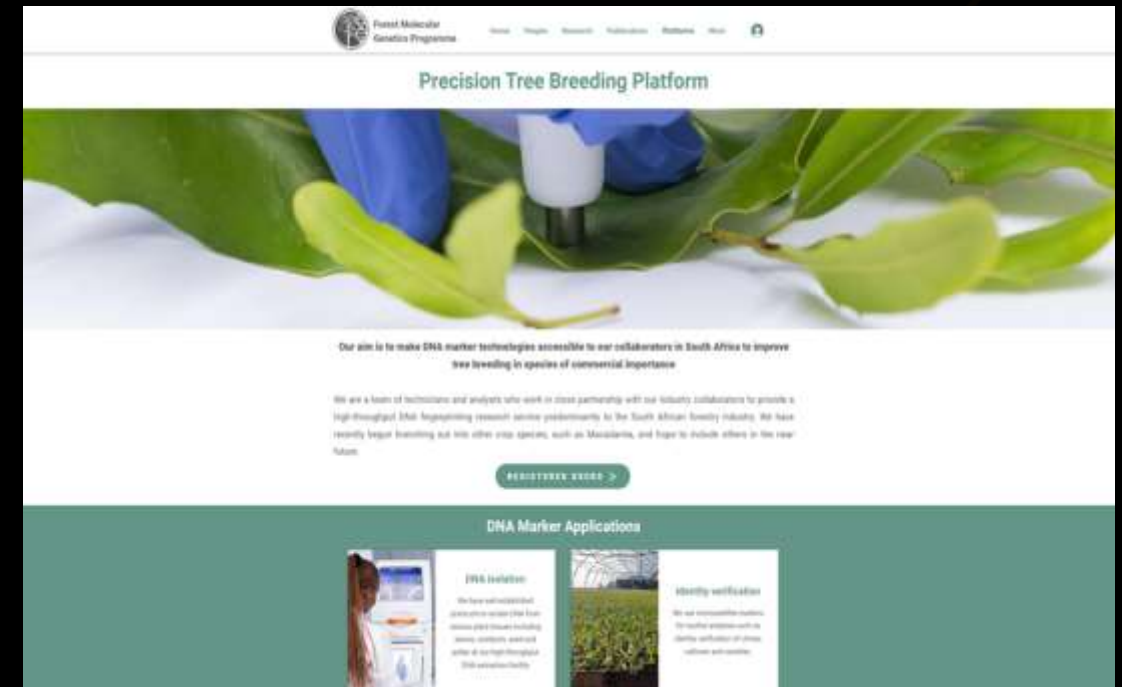
# Services

## Disease Diagnostic Clinic



The screenshot shows the FABI website's 'Services' page. At the top, there is a navigation menu with 'FABI', 'Research Groups', 'People', 'Resources', 'Genomes', and 'Vacancies'. Below the navigation is a large banner image of a tree with the text 'Welcome to the FORESTRY & AGRICULTURAL BIOTECHNOLOGY INSTITUTE'. The 'Services' section is highlighted in green. Below this, there is a sub-navigation menu with 'Home', 'Services', 'About Us', and 'Contact us'. The main content area describes the 'Disease diagnostic clinic' as a service to the marikantia industry, providing a platform for growers to report pest and disease problems. It lists several objectives: monitoring pest and disease impact, accumulating data over time, ensuring early identification, improving capacity for pest and pathogen identification, and informing future research focus areas. At the bottom, there are links for 'Sample information sheet', 'Diagnostic sample submission', and 'Diagnostic clinic protocols'.

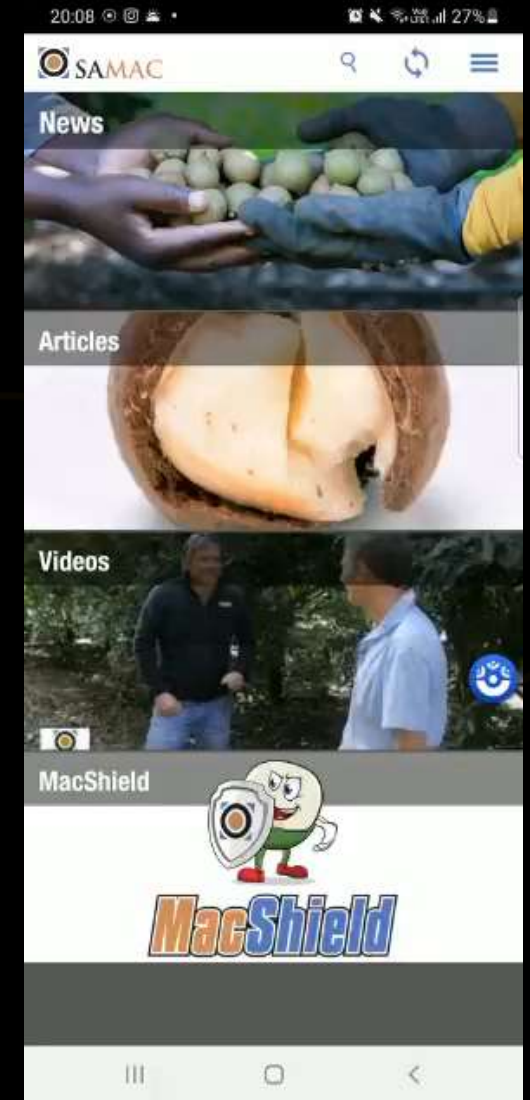
## Precision tree breeding platform



The screenshot shows the 'Precision Tree Breeding Platform' website. At the top, there is a navigation menu with 'Forest Molecular Genetics Programme', 'Home', 'People', 'Research', 'Publications', 'Software', and 'News'. Below the navigation is a large banner image of a hand using a blue pipette to add liquid to a test tube, with the text 'Precision Tree Breeding Platform'. The main content area describes the platform's aim to make DNA marker technologies accessible to collaborators in South Africa to improve tree breeding in species of commercial importance. It mentions a team of technicians and analysts working in close partnership with industry collaborators to provide a high-throughput DNA fingerprinting service predominantly to the South African forestry industry. A 'REGISTER YOURS' button is visible. Below this, there is a section titled 'DNA Marker Applications' with three sub-sections: 'DNA isolation', 'Genotype verification', and 'Genotype verification' (repeated).

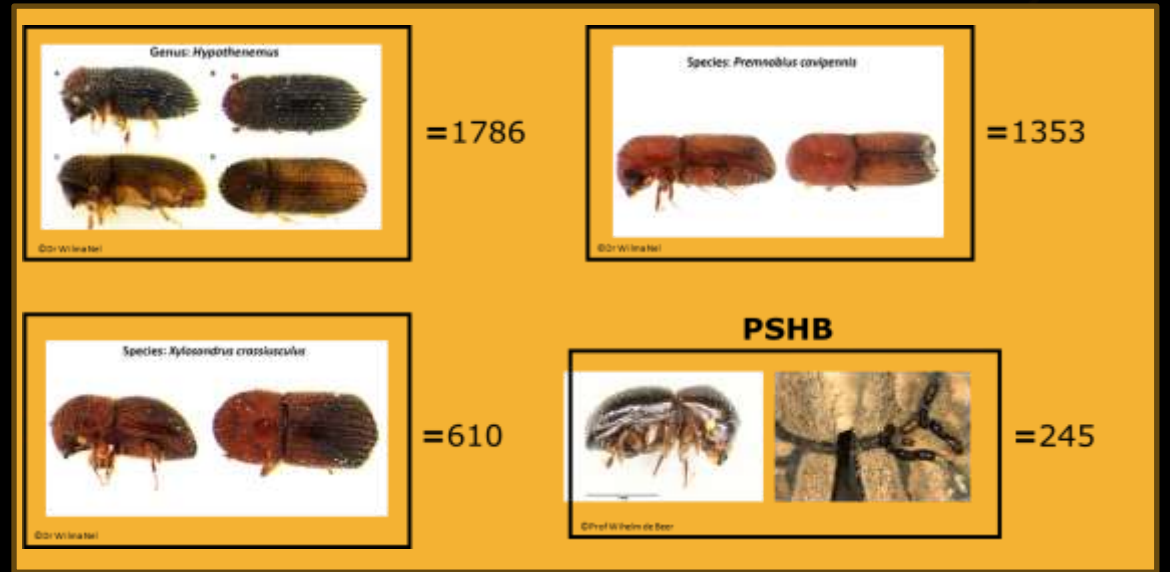
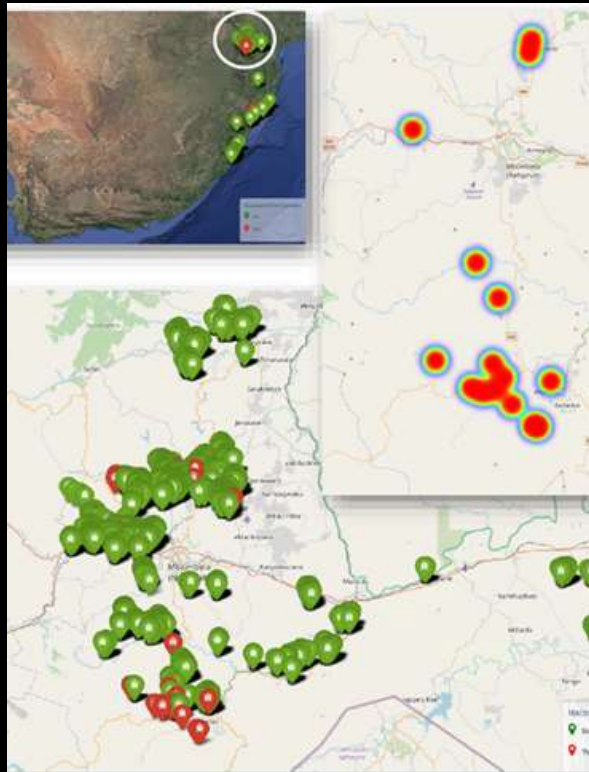
# MacShield

- Pest and disease information
- Registered plant protection products
- Label instructions
- Maximum residue levels



# Surveillance

- Initiated on an ad hoc basis to identify and assess risks
- Macadamia felted coccid and bark borers





QUESTIONS ?