



DIGITAL FARMS & AGRIBUSINESS OPPORTUNITIES IN SOUTH AFRICA

HOW NEDBANK IS INVESTING IN CUTTING-EDGE TECHNOLOGY FOR SMARTER AGRICULTURE

Technology is changing the world around us, including the agricultural sector. More intelligent farming is fast becoming a necessity, as the United Nations estimates a global population increase of two billion people to nine billion people by 2050. Feeding this growing population will be a monumental challenge, and agricultural consumption will need to be about 60% higher than it was in 2005 (Source: FT).

In this rapidly growing and developing world, farming is moving from mechanisation to digitisation – and Nedbank is ready to support it.



1 FOURTH INDUSTRIAL REVOLUTION TO SECURE THE FOOD SYSTEM

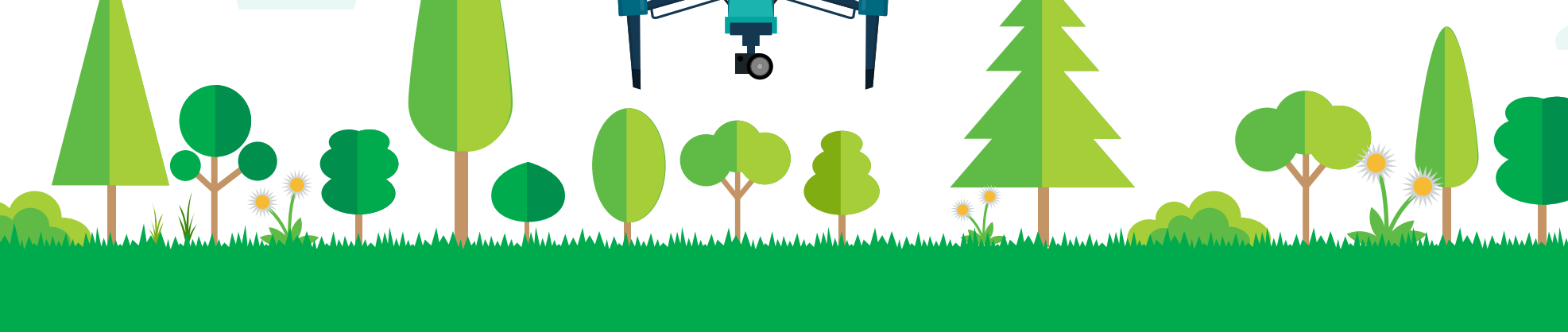
Today's technological advances have the potential to improve aspects of the current food system. That's why our Corporate and Investment Banking (CIB) disruption and innovation hub, NEDX, has taken an interest in Aerobotics (Pty) Ltd, a disruptive technology company that uses advanced analytics and aerial drone and satellite imagery to deliver precision farming tools for clients.

2 ABOUT AEROBOTICS – A FRESH PERSPECTIVE ON FARMING

Aerobotics was founded in 2014 by South Africans Benji Meltzer and James Paterson, who hold master's degrees in neurotechnology and aeronautical engineering from London's Imperial College and the Massachusetts Institute of Technology (MIT) respectively. It was one of 24 global start-ups to participate in Google's Launchpad Accelerator in San Francisco.

HOW IT WORKS

Aerobotics technology uses aerial data to identify and analyse every tree on a farm. Once the system has detected problematic trees, the application sends the route to a drone to locate these trees. The drone then positions itself a metre above each tree and takes a high-resolution image, capturing specific leaf details. This data is then processed through an in-house analytics programme, sparing the farmer the time-consuming effort of manually looking for problematic trees.



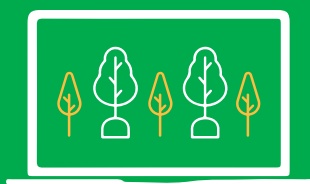
BENEFITS OF AEROBOTICS TECHNOLOGY INCLUDE:



Early problem detection



Targeted scouting



Tree monitoring

Data collection and analysis can save the agricultural sector millions with regard to crop losses due to pests and diseases, boosting the sector and increasing food security.

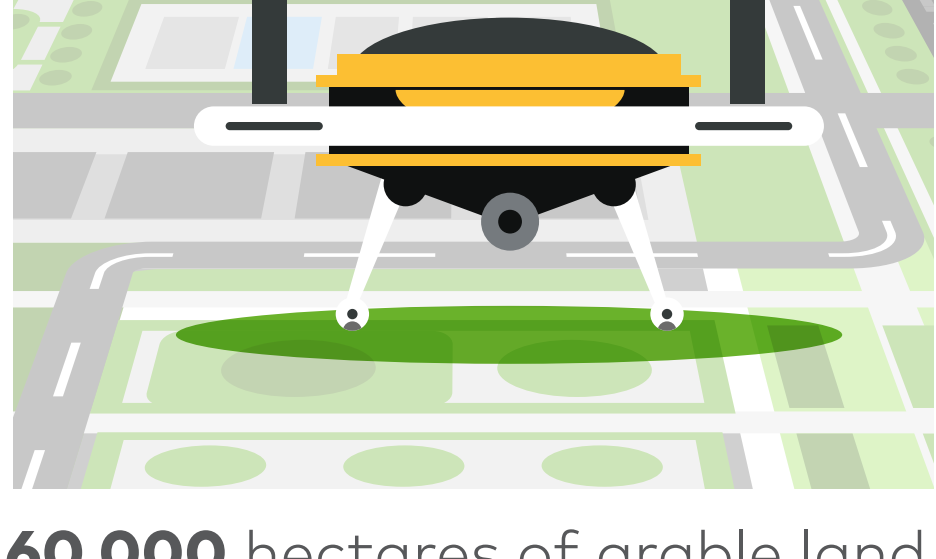
'Precision agriculture says 'let's get more precise and use that data to become more prescriptive!'

Benji Meltzer, Aerobotics cofounder

REAPING REWARDS

Aerobotics technology is currently used across 60 000 hectares of arable land (equivalent to around 500 farms) in South Africa, Australia, France, Spain and the USA. With 100 million hectares of tree crops in South Africa, the company has massive growth potential – it currently services only 0,06% of the local market. Investment from Nedbank will help bring Aerobotics technology to the broader farming sector.

Despite a relatively small footprint, Aerobotics technology is already helping farmers to reduce costs and improve productivity.

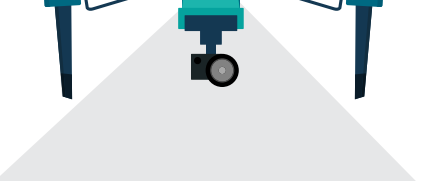


60 000 hectares of arable land

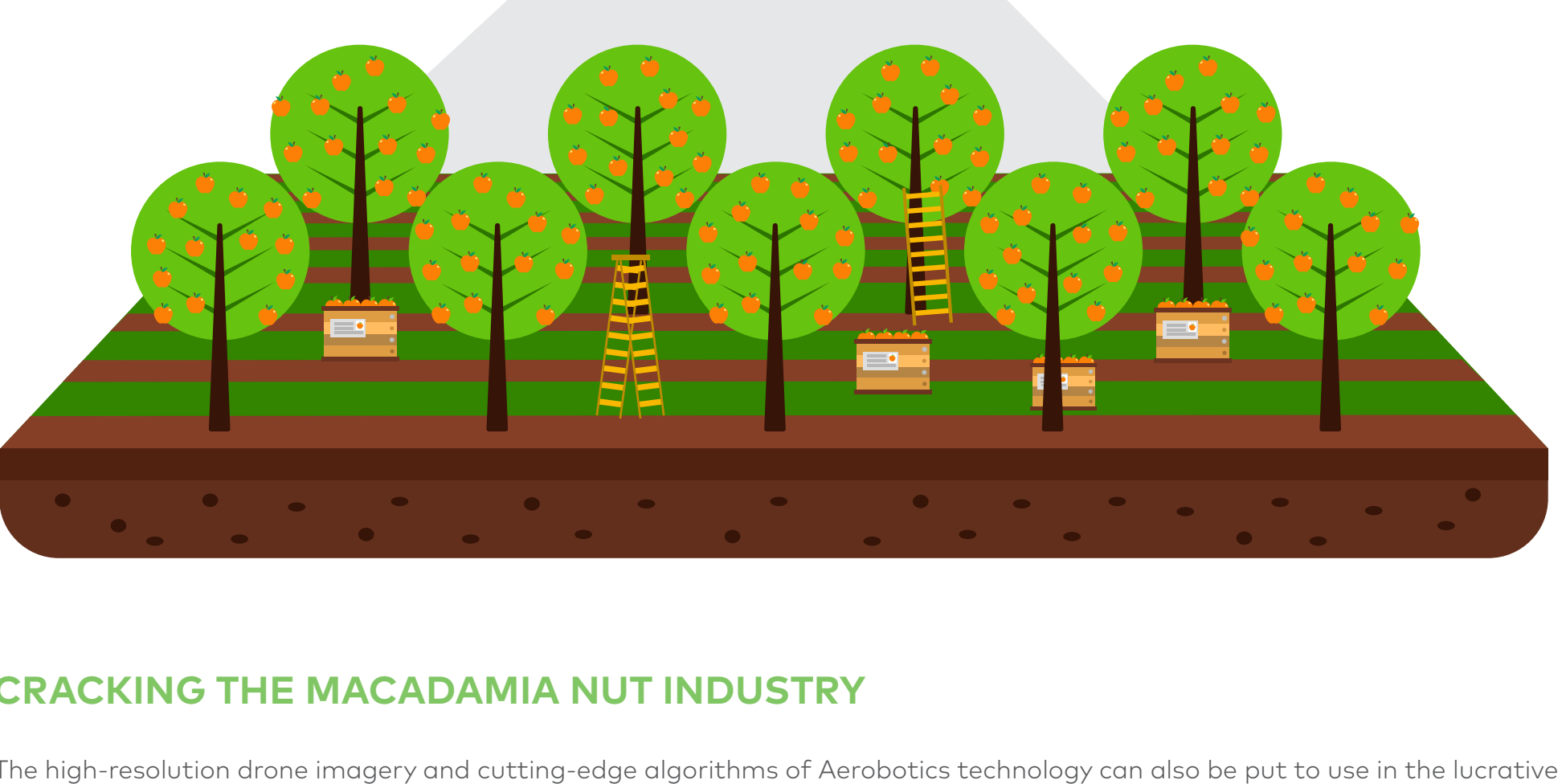
CITRUS FARMER SAVES R51 000 A YEAR

Aerobotics's first client was a citrus farmer from Western Cape. Using the ground-breaking monitoring and analytics technology, the farmer was able to save R51 000 a year on a four-hectare orchard. Before implementing Aerobotics technology, the farmer was fertilising and irrigating 'dead' trees with no productive potential. By using a drone to identify these 'dead' trees, the farmer was able to divert resources to service only the fruit-bearing trees, saving time and money.

With four drone flights per season and Aerobotics's basic subscription package, the cost of a full-service run at approximately R1 600 per hectare for one year still led to savings of R8 400 per hectare due to early intervention (this represents about 5% to 10% of net value per hectare).

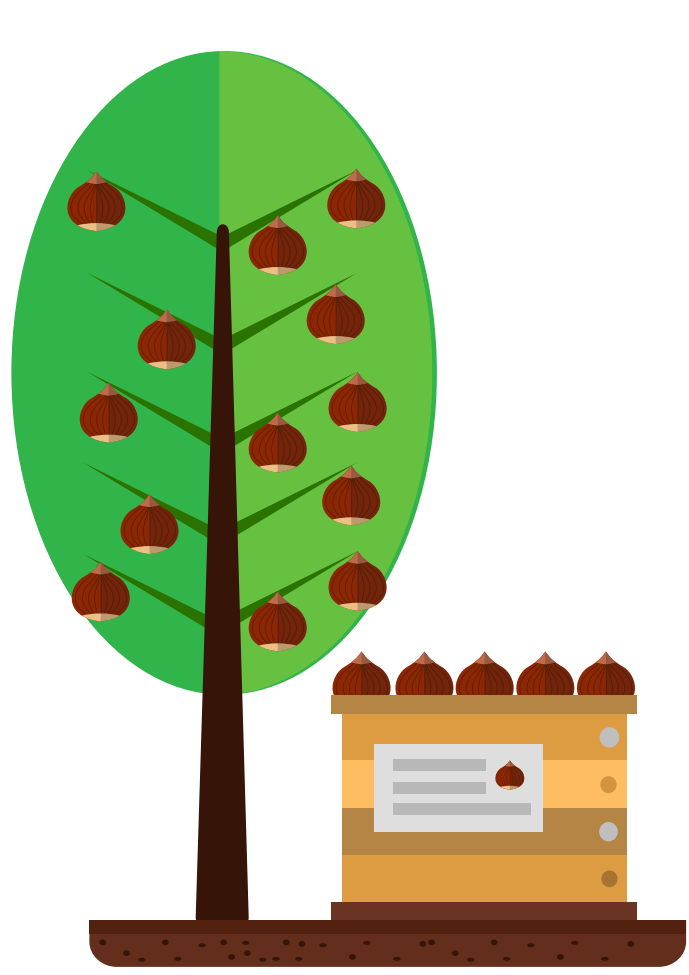


"Ground-breaking monitoring and analytics technology"



CRACKING THE MACADAMIA NUT INDUSTRY

The high-resolution drone imagery and cutting-edge algorithms of Aerobotics technology can also be put to use in the lucrative (but competitive) macadamia farming industry. This technology can help to maintain the quality and value of macadamia crops, safeguarding farmers' investments by:



- 1 Closely monitoring macadamia growth during the flower initiation, flowering and root-growth phases
- 2 Preventing disease outbreaks in the bud
- 3 Reducing stress during crucial growth periods
- 4 Monitoring axillary bud release
- 5 Planning a pruning programme.

In this way Aerobotics technology contributes to a better yield and a higher return on investment for macadamia farmers.

WHAT'S NEXT FOR AEROBOTICS?

While Aerobotics software has been developed to identify and analyse individual trees by feeding countless images into the algorithm, the next step is to enable work at leaf level so that pests and diseases can be identified before they affect the entire tree. At this targeted level, Aerobotics technology would also be useful to field crop farmers, opening a potential market of an additional one billion hectares for data analysis in South Africa alone.

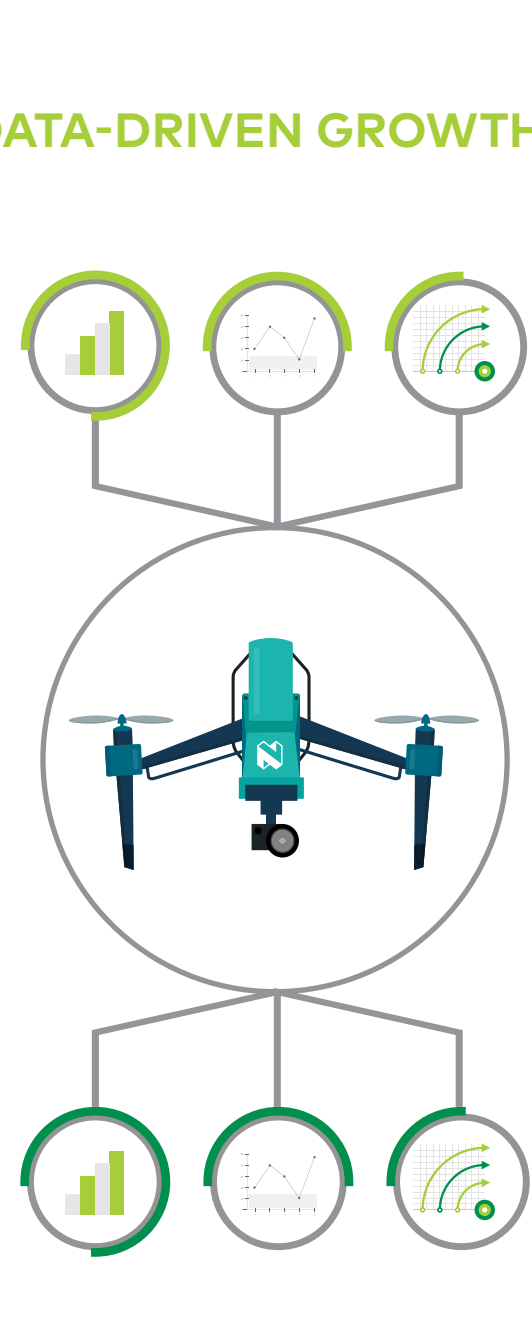
CREATING AN ALTERNATIVE FUTURE FOR FARMERS

With food security and farming becoming increasingly important, Nedbank is testing the use of Aerobotics technology to collect data to help develop innovative agrifinance products to serve Africa's farmers better. For example, accurate yield estimates (determined through data analytics), coupled with forward price estimates, could be used to determine cashflow and biological asset valuations.

Our investment in Aerobotics technology represents only one aspect of our goal of validating the technology in this sphere, finding value propositions and scaling it up in order to pass on the benefits to a more significant portion of the agricultural sector.



DATA-DRIVEN GROWTH WITH NEDBANK



Nedbank is at the forefront of investing in the technology industry and introducing clients in the agricultural sector to disruptive innovation. Partnering with Aerobotics and similar disruptors allows us to offer innovations and banking solutions to improve our own growth as well as efficiencies within our clients' businesses.

Our experimentation methodology, working with financial technology companies and technology partners like Aerobotics, allows us to match the speed of a fintech while testing the value and suitability of the technology in the banking environment. Secondly, under the venture capital mandate, we invest in technology companies that are category-defining, working alongside their management teams to scale their businesses.

'We believe that, with the advent of new alternative data sources and advanced analytics, real-time operational data is an alternative indicator of risk compared with current, traditional financial and valuation methodologies.' – Brian Kennedy, Managing Executive of Nedbank Corporate and Investment Banking

The work we've done in partnership with Aerobotics is a prime example of our commitment to going beyond mere innovation, and how disruptive technology can add value for our clients. For us, the results we see from this project represent the real value and power of disruption done right. By looking at opportunities differently, we can create new realities for businesses and the agricultural sector.

MAXIMISE YOUR YIELD WITH NEDBANK

At Nedbank we recognise that the agricultural sector requires a full range of banking solutions that go beyond transacting and borrowing. That's why our dedicated team of specialists partners with you to provide you with a holistic view of your business. We provide a different perspective on how your money needs to flow to match your goals, going beyond the traditional scope of agrifinance products.

Our approach also ensures that we continue to find new and innovative ways to manage and grow your money, for example making use of cutting-edge farming technology. With our expertise and insights, we'd like to help you see money as we do, so that we can co-create unique solutions to unlock possibilities that will take your agricultural business to the next level.



WHY NEDBANK AGRIBUSINESS?

- 1 Nedbank AgriBusiness devises and delivers tailored solutions to ensure you receive quick decisions and industry expertise from a dedicated business manager.
- 2 We offer flexible and cost-effective packages for any stage of your business lifecycle.
- 3 We offer a range of agricultural lending and transactional banking solutions.
- 4 We maintain specialised agricultural teams located in your area. They understand your local area and business situation, and are ideally positioned to help you make the right decisions for your business.
- 5 We also offer a range of value-adds – from insurance, crop and livestock cover to financial planning.
- 6 We offer innovative solutions to take your farming into the future.

HOW TO GET MORE INFORMATION

To find out more about how Nedbank AgriBusiness can help you please contact your local agribusiness manager or send an email to agriculture@nedbank.co.za



see money differently

NEDBANK

Nedbank Ltd Reg No 1951/00009/06. Authorised financial services and registered credit provider (NCRCP16).