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Rua Bioscience and University of Waikato eye slice of \$2.5 billion cannabis testing industry with new agritech

Rua Bioscience (NZX: RUA) and the University of Waikato have announced a ground-breaking, two-year research programme to investigate the application of hyperspectral technology to the cultivation and assessment of medicinal cannabis, paving the way for Rua to enter New Zealand's booming agritech sector.

Primarily driven by global demand for medicinal cannabis, commentators expect the cannabis testing industry to be worth \$2.5bn (USD\$1,806 million) by 2025 (Markets and Markets, 2021)¹.

However, current analytical methods present significant challenges for commercial cannabis growers. Testing requires the destruction of some product, is expensive and the turn-around of results means delays in decision-making.

Researchers at Rua Bioscience and the University of Waikato hope real-time monitoring using hyperspectral imaging will change all that, with the potential to transform the way the global medicinal cannabis industry qualifies, assesses and manages its crops.

Hyperspectral technology involves imaging that collects and processes information from across the visible and near-infrared spectrum. Screening methods using hyperspectral imaging are increasingly used in precision agriculture to determine optimal harvest timings, detect pests and diseases and the chemical profile of living plants. But, due to tight legal restrictions on cannabis cultivation, little work has been done to test the technology on cannabis crops.

The two-year proof-of-concept project aims to develop and prototype an automated, near-infrared imaging system that will enable the on-site assessment of individual cannabis plants in real-time without destroying any product.

Rua Bioscience CEO Rob Mitchell says it's encouraging to advance a project so well aligned with the company's Intellectual Property strategy, which focuses on identifying long-term opportunities right across the medicinal cannabis value chain.

"If this technology works the way we think it will, as suggested by the pilot study, not only will we be able to revolutionise our own cultivation practices, Rua will be well-placed to develop and market world-class agritech for the global cannabis industry. This will take time, but we expect it to enhance Rua's competitive position and contribute to future revenue opportunities."

The ultimate aim of the technology is to support the cultivation of consistently high-quality crops. This is a common challenge for growers of medicinal cannabis who, Rua Bioscience Chief Research Officer Dr Jessika Nowak says, often encounter variations in the quality of cannabinoid production.

“In a tightly controlled and regulated pharmaceutical environment, variations are unacceptable. Testing is therefore critical and needs to be extensive, but there is currently no cost-effective, commercially viable technology that instantly assesses the consistency of an entire crop.

“We expect an advanced sensor system like this to improve crop quality and consistency and support agile, real-time plant management decision-making.”

Dr Nowak hopes such a tool will enable growers to target specific parts of the cannabis plant (such as the flower) and support the instant analysis of key growth factors, including lighting, humidity and nutrient levels.

The partnership follows ground-breaking work led by Dr Melanie Ooi (Associate Professor at the University of Waikato), Wayne Holmes (Senior Lecturer, Unitec Institute of Technology) and Rua Bioscience.

Last year, a collaborative study between the partners showed the technology could successfully identify structural features of the cannabis plant. The pilot study determined the technology could further support the assessment of compounds produced from medicinal cannabis flower.

Dr Ooi believes applying this technology to cannabis would be a New Zealand first and could be a real game-changer for the industry.

“It is a world-leading initiative. To our knowledge, no other group has looked at using hyperspectral imaging technology to measure quality growth factors or remotely identify plant pests, diseases and optimal harvest times across an entire cannabis crop in real-time.”

Dr Simon Lovatt, Director of Research & Enterprise at the University of Waikato, says New Zealand has a strong reputation for agritech globally and there is exciting potential for this project.

“With support of the University’s commercialisation arm WaikatoLink, we have brought together some outstanding Kiwi researchers, each with extensive expertise in agritech, to advance this project. It’s exciting to work with Dr Nowak and Rua Bioscience to develop this ground-breaking technology.”

Rua’s research team has programmed the project for the next two years. Dr. Ooi’s research is partly supported by the University of Waikato and the Rutherford Discovery Fellowship. The project has also received funding from Unitec.

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About the University of Waikato’s Involvement

The University of Waikato holds extensive expertise in software, hardware and electronics engineering, AI algorithm development and application, sensor integration and image processing, measurement and instrumentation techniques, chemical products and processes. This project is led by Associate Professor Melanie Ooi, who holds a PhD from Monash University, and as well as being a UK Chartered Engineer, is the youngest female Fellow appointed to the global Institution of Engineering and Technology. Joining the University of Waikato in 2019, Dr Ooi previously held senior academic positions at Monash, Herriot-Watt University and Unitec. In 2019 she was awarded a Rutherford Discovery Fellowship for research titled: ‘Resilient and efficient light-based plant detection and characterisation for precision agriculture and environmental sustainability’.

About Rua Bioscience

Rua Bioscience is a New Zealand pharmaceutical company aiming to be a leading producer of cannabinoid derived medicines. The company was established in 2017 in part to support local economic development in Te Tairāwhiti and is a pioneer in the New Zealand medicinal cannabis sector. Rua holds a licence to operate in the medicinal cannabis sector commercially, has developed two commercial-scale facilities (a controlled cultivation site in Ruatorea as well as a manufacturing and extraction plant in Gisborne), and holds an exclusive contract with German distributor Nimbus Health to supply dried flower to Germany. Rua also has a well-defined strategy to identify long-term value opportunities in a number of areas including agritech. As well as being a funder, Rua brings extensive knowledge of the global market, expertise in cannabis plant chemistry and analytics, cultivation and growth optimisation, processing and pharmaceutical manufacturing. www.ruabio.com

Research Cited

¹Markets and Markets. (2021, January). Cannabis Testing Market by Products & Software's (Instruments, Consumables, LIMS), Services (Heavy Metal Testing, Microbial Analysis, Potency, Residual Screening), End-User (Cultivators, Laboratories, Research Institutes) -Global Forecast to 2025. Retrieved May 2021, from MarketsandMarkets.com: <https://www.marketsandmarkets.com/Market-Reports/cannabis-testing-market-46932450.html>