

ARTIFICIAL INTELLIGENCE HORIZON

MALAYSIA'S PALM OIL REVOLUTION
AUTOMATED FROM PLANTATION TO PROFIT



Dickens Mambu
Calvin Jose Jol



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Nesus Academy Sdn Bhd
2025

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ACKNOWLEDGMENT

This book results from vision, dedication and breakthroughs from pioneers who imagined a new chapter for the palm oil industry where tradition meets the power of artificial intelligence. It is built on the work of researchers, engineers, plantation managers and policymakers whose pursuit of sustainable and technology-driven agriculture has turned challenges into opportunities.

We also honour the AI developers, agronomists and sustainability champions whose passion and commitment have redefined what is possible. Your efforts inspire a generation to believe that progress and preservation can exist together. This work stands as a testament to the courage to innovate for the good of people, the planet and the future.



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DISCLAIMER

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PREFACE

In Malaysia, palm oil is not just a commodity. It is a legacy that has built economies, transformed communities, and secured a leading place in the global market. For more than a century, it has fuelled industries and created livelihoods, securing Malaysia's place as one of the world's largest producers and exporters. Today, the industry stands at a crossroads. The challenges are stacking up: workers are harder to find, crude palm oil (CPO) prices swing unpredictably, sustainability rules are tightening, and global trade winds are shifting.

On the ground, the reality is clear. Plantations still depend on teams of workers walking the fields, cutting bunches by hand, inspecting fruit quality, and keeping weeds at bay. It is a system that has served the industry well for decades, yet it is now straining under modern demands. Decisions take too long, mistakes can slip through unnoticed, and the costs keep climbing. At the same time, environmental regulations expect greater precision, such as measuring emissions, applying fertilisers with care, and managing land to the highest standards.

This is where Artificial Intelligence (AI) offers hope. Imagine plantations equipped with sensors that track soil and weather in real time, drones that spot early signs of disease, and predictive models that forecast yields months ahead. AI does not replace human expertise; it strengthens it. It frees managers from repetitive checks so they can focus on strategy, while ensuring the plantation runs cleaner, faster, and more profitably.

In short, AI could help Malaysia's palm oil industry not only hold its ground but also lead the way into a smarter, more sustainable future.

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For full access to the complete book you are warmly invited to register and join our Artificial Intelligence training programme provided by Nesus Academy Sdn Bhd.



NESUS Academy Sdn Bhd

NESUS Academy Sdn. Bhd. is a Malaysia-based organization dedicated to advancing sustainability and operational excellence in the palm oil industry. With a strong focus on training, professional guidance, and capacity building, NESUS equips plantation managers, mill operators, and industry stakeholders with the knowledge and skills to adopt modern technologies and best practices.

About the Authors



Dickens Mambu brings over 22 years of industrial experience in the palm oil sector, specializing in sustainability, environmental management, social compliance, and certification audits. He has held key positions with major palm oil industry players, international NGOs, and the Sarawak land development agency, where he advanced sustainable palm oil practices across Malaysia and the wider region. He is a Certified MSPO Auditor (MS2530:2022) and a Certified MSPO Supply Chain Auditor, complementing his auditing expertise in RSPO, ISCC, and HCV-HCSA frameworks. Internationally, he has vast knowledge on ISO QMS 19001:2015 and an IRCA Certified ISO 45001:2018. His qualifications also experienced in social components such as SA8000 Social Accountability, Anti-Bribery Management System (MACA, 2025), and advanced environmental compliance certifications such as CESSWI (2025), CPESC (2025), and CISEC (2022). Additionally, he is also trained as Safety Officer, Ergonomic and Noise Monitoring which strengthening his integrated approach to occupational health, safety, and sustainability. Academically, Dickens holds a Master's in Sustainable Land Use and Natural Resources Management from UNIMAS, a Bachelor's in Conservation Biology from UMS, and an Executive Diploma in Plantation Management from UTM. For his leadership and industry impact, he received the Anugerah Usahawan Bumiputra (Agro), Sarawak in 2022 and the HRD Corp Trainer Award, Sarawak Region in 2023.



Calvin Jose Jol, a researcher with Master's and Bachelor's degrees in Chemical Engineering from Universiti Malaysia Sarawak, specializes in advanced and sustainable water treatment. He has published in high-impact journals and presented internationally on electrochemical processes and environmental technologies. Skilled in water quality analysis, process optimisation, and project management, Calvin advances NESUS Academy's mission by bridging scientific innovation with industry needs, particularly in sustainable palm oil and environmental sectors.

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