OCTOBER–NOVEMBER 2025 (FOR SOPPOA MEMBERS ONLY)

E-NEWSLETTER

SARAWAK OIL PALM PLANTATION OWNERS ASSOCIATION

DATU JOSEPH BLANDOI

Chairman's Message

Dear Members,

The past two months have been a period of active engagement and meaningful progress for Sarawak's palm oil sector. Across workshops, trainings, and collaborative initiatives, SOPPOA has continued to strengthen partnerships and drive programs that respond directly to the evolving needs of our industry.

SOPPOA fully acknowledges the seriousness of the Ganoderma challenge, which has intensified in both second-cycle and young palms. Recognizing its impact on productivity and long-term sustainability, SOPPOA acted swiftly by partnering with MPOB to organize the Ganoderma Workshop in Miri. This platform allowed members to gain practical guidance on detection, treatment, and field management, ensuring operators are better equipped to address this persistent disease.

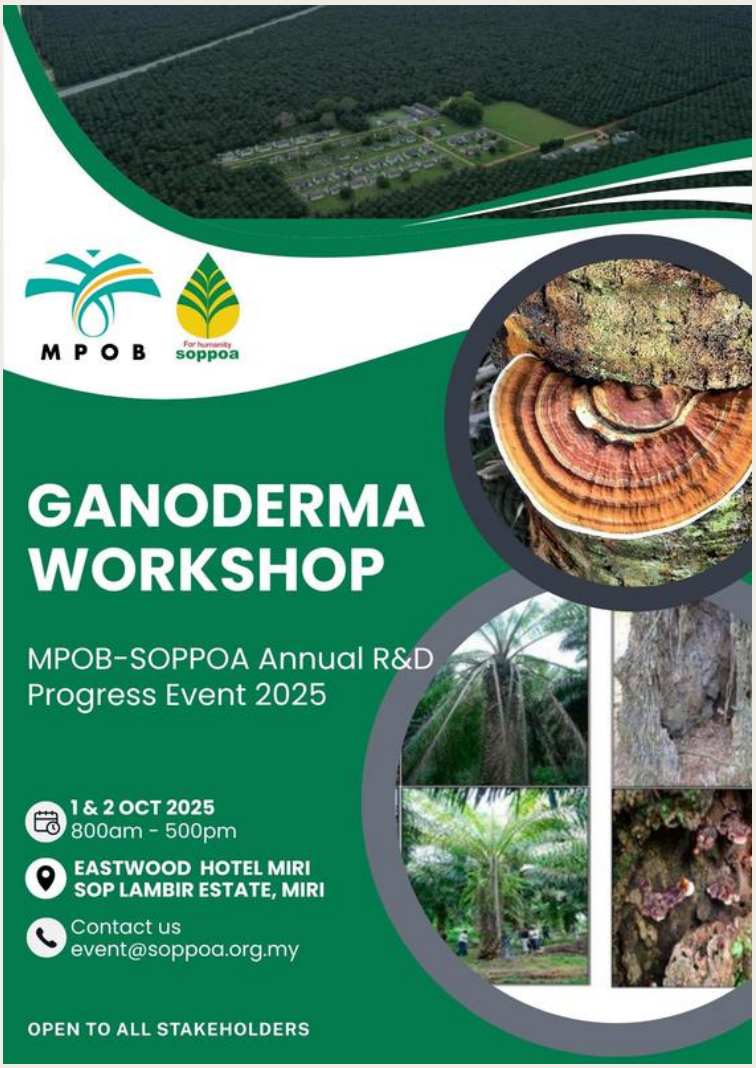
SOPPOA also recognizes the importance of highlighting the sustainability efforts undertaken by the Sarawak industry. Beyond our collaboration with MPOC on the Sarawak Impact Report, which aims to present accurate and evidence-based insights into the sector's contributions, we also worked closely with MSPO to support members in the transition to MSPO 2.0. The recent MSPO-endorsed HCV Internal Assessor Training in Sibu reflects our commitment to strengthening member competency and meeting enhanced certification expectation.

All these initiatives - from disease management to sustainability reporting and certification readiness - reflect SOPPOA's continuous efforts to strengthen, uplift, and advocate for the Sarawak's palm oil industry. We remain committed to driving programs that benefit our members, enhance industry standards, and reinforce Sarawak's reputation as a responsible and progressive palm oil producers.

As we are approaching the year's end and moving into 2026, we look forward to opening new chapters for the association and the industry. SOPPOA remains committed to continuous improvement, and we encourage members to share suggestions, feedback, or ideas that could help us serve you better. Members may email their input to secretariat@soppoa.org.my - your views are valuable in shaping SOPPOA's direction for the coming year.

Happy Reading!

MPOB–SOPPOA ANNUAL R&D PROGRESS EVENT 2025 – GANODERMA WORKSHOP – ON 1 & 2 OCT



Opening Remarks by SOPPOA Chairman

The Malaysian Palm Oil Board (MPOB) and SOPPOAjointly organized the MPOB-SOPPOA Annual R&D Progress Event 2025, which this year centered on the growing concern of Ganoderma infection in oil palm plantations.

Held as a Ganoderma Workshop, the event brought together researchers, plantation managers, and the industry representatives to share the latest findings and best practices for identifying, treating, and controlling the disease, which has increasingly affected not only second-cycle plantings but also young palms, particularly on peat soils.

Now in its forth years, the MPOB-SOPPOA R&D Progress Event has become a key annual platform for research collaboration and industry knowledge exchange.

Under the leadership of Dr. Felix Moh, the journey of this initiative reflects our shared commitment to continuous improvement.

- 2022: We began modestly during movement restrictions with a virtual dialogue involving senior MPOB researchers, SOPPOA Council members, and our R&D Committee.

- 2023: The event grew into a mini seminar in Bintulu, featuring discussions on pests, diseases, and milling operations. It was the first time SOPPOA members were invited, and the strong turnout underscored the value of such engagement.

- 2024: We hosted a webinar on bagworm management, drawing over 300 participants from across Malaysia.

- 2025: With Ganoderma incidence rising sharply—affecting not only second-cycle plantings but also young palms, particularly on peat soils—this year's workshop focuses entirely on Ganoderma. The objective is to equip estate operators and agronomists with practical knowledge on identification, treatment, control, and disease monitoring techniques.

SOPPOA Chairman Datu Joseph Blandoi expressed appreciation to MPOB for its continued partnership and strong commitment to supporting the industry. He acknowledged MPOB Director General YBhg. Datuk Dr. Ahmad Parveez for his consistent involvement in the event since its inception. Notably, MPOB has participated at its own expense each year, reflecting the institution's dedication to strengthening industry collaboration.

"THE CONTINUED COLLABORATION BETWEEN MPOB AND SOPPOA REFLECTS OUR SHARED COMMITMENT TO ADVANCING R&D FOR THE BENEFIT OF SARAWAK'S PALM OIL INDUSTRY. THROUGH INITIATIVES LIKE THIS WORKSHOP, WE AIM TO EQUIP OUR MEMBERS WITH THE KNOWLEDGE AND TOOLS NEEDED TO TACKLE CHALLENGES SUCH AS GANODERMA MORE EFFECTIVELY,"

While the event was previously offered free of charge, this year's session was held at a hotel venue to accommodate a larger audience and more extensive activities. A nominal participation fee was introduced to help cover the organization costs. Despite this adjustment, attendance remained strong, reflecting members' continued commitment to profession development and industry advancement.

The workshop concluded with a field demonstration visit, where participants observed Ganoderma control practices applied directly in plantation settings.

The MPOB-SOPPOA Annual R&D Progress Event continues to play an important role in fostering industry-research cooperation. SOPPOA reaffirmed its commitment to working closely with MPOB and other stakeholders to address emerging challenges such as Ganoderma, promote innovation, and enhance the sustainability of Sarawak's palm oil industry.

Opening Speech by MPOB DG

The MPOB Director General, Datuk Dr. Ahmad Parveez, has called for stronger collaboration between researchers and the plantation sector to tackle the growing threat of Ganoderma Basal Stem Rot (BSR), describing it as one of the most serious challenges facing Malaysia's palm oil industry today.

Speaking at the opening of the Ganoderma Workshop held in Miri, he commended the SOPPOA for taking the lead in organizing the event and for its commitment to addressing the issue head-on.

"Sarawak plays vital role in Malaysia's palm oil sector, contributing more than a quarter of the nation's planted area. What happens here directly affect national performance, resilience, and sustainability," he said, noting that SOPPOA's initiative demonstrates the industry's determination to protect estates, mainly yields, and safeguard livelihood dependent on oil palm.

Datuk Dr. Ahmad Parveez highlighted that Ganoderma BSR remains the most destructive and economically damaging disease affecting oil palm, capable of reducing yields, shortening plantation lifespans, and increasing replanting costs.

"THE FIGHT AGAINST GANODERMA CANNOT BE WON IN LABORATORIES ALONE. IT REQUIRES STRONG COLLABORATION BETWEEN RESEARCHERS AND PLANTERS TO TURN SCIENCE INTO PRACTICAL, FIELD READY SOLUTIONS."

MPOB's field survey indicate infection rates exceeding 20% in some mature areas, resulting in potential yield losses worth hundreds of millions of ringgit annually if not properly managed.

"This is not merely a plantation-level problem, but a national economic concern," he emphasized. "With palm oil contributing up to RM60 billion in export earnings annually, the sustainability of the industry depends on how effectively we manage and contain Ganoderma."

Over the past three decades, MPOB has invested heavily in Ganoderma research, covering areas such as early detection technologies, breeding for tolerant materials, improved cultural practices, and biological control agents as greener management options.

The board has also developed a Standard Operating Procedure (SOP) for Ganoderma management, which provides practical guidelines for detection, sanitation, replanting, and integrated control.

However, Datuk Dr. Ahmad Parveez stressed that research must be effectively transferred into practice. "Workshops like this are essential to bridge the gap between science and the field," he said.

"MPOB cannot fight this battle alone; we need insights and adoption from industry players to ensure our strategies are both scientifically sound and operationally practical."

He also underscored the importance of localized solutions for Sarawak, where soil and climatic conditions differ from those in Peninsular Malaysia. "We need results that are tested and proven in Sarawak's own environment to make a real difference," he added.

Beyond productivity, Datuk Dr. Ahmad Parveez noted that Ganoderma management has global sustainability implications. Poor disease control can lead to declining yield; increasing pressure for land expansion, and negative perceptions linked to deforestation and biodiversity loss. Strengthening disease management, he said, helps preserve Malaysia's sustainability credentials and supports certification standards such as MSPO and RSPO, in line with the Malaysia Madani framework for responsible and inclusive development.

The MPOB Director General urged participants to take full advantage of the workshop by engaging actively, sharing estate experiences, and being open to testing new biological and integrated control methods. "Ganoderma cannot be eradicated overnight, but step by step, together, we can reduce its impacts," he said.

He reaffirmed MPOB's commitment to working closely with SOPPOA and its members in providing scientific support, facilitating field trials, and ensuring that R&D outcomes are translated into practical, scalable field solutions.

Datuk Dr. Ahmad Parveez concluded by commending SOPPOA's proactive efforts and expressing confidence that the workshop would lead to actionable strategies benefiting not only Sarawak but the entire Malaysian palm oil industry.

Paper 1: Understanding the Epidemiology and Predisposing Factors of Ganoderma Basal Stem Rot

Presenter: Dr. Shamal Sundram, Head of Plant Pathology & Biosecurity, MPOB

Dr. Shamala provided a comprehensive overview of Ganoderma Basal Stem Rot (BSR) – the most destructive disease affective the Malaysian oil palm industry.

Dr. Shamala began by highlighting the significance of the oil palm as Malaysia's key commodity crop, contributing approximately RM60 billion in export revenue annually, and the critical threat posed by BSR to its long-term sustainability. The disease, caused mainly by Ganoderma boninense, has escalated steadily since the 1990s, with national infection rates rising from 1.5 percent in 1995 to 13.7 percent in 2024. Current surveys estimate that nearly 200,000 hectares of oil palm plantations are affected, representing more that 29 million trees.

The presentation outlined the epidemiology and infection mechanisms of BSR. Primary infection typically occurs when healthy oil palm roots come into contact with contaminated debris containing the fungal inoculum, while secondary infection spreads through root-to-root contact between diseased and healthy palms. Studies have also identified potential roles of basidiospores and insect vectors, such as the Eumorphus beetle, in transmitting the pathogen.

Dr. Shamal explained that the disease's progression begins in the root system before advancing into the palm bole, gradually impairing water and nutrient uptake. Once visible symptoms appear – such as the presence of fruiting bodies or foliar wilt – the infected palms typically have less that three years of productive life remaining.

Sanitation remains the basis of BSR control, involving timely detection, deboling and chipping of infected palms, and proper disposal to prevent further spread. Complementary strategies, such as biological control agents (BCA), help restore soil health and reduce inoculum load.

Dr. Shamala emphasized that good replanting practices and consistent field monitoring are vital to prolong the productive life of palms and delay the onset of infection. She noted that many estates in Malaysia still do not implement complete sanitation measures – only about 23 percent reported doing so in the most recent survey – indicating the need for stronger industry adoption of recommended practices.

In concluding her presentation, Dr. Shamala stressed the importance of continued fundamental research to better understand pathogen behaviour, insect vectors, and soil-microbe interactions, particularly under Sarawak's unique plantation conditions. Strengthening collaboration between MPOB, industry players, and research partners remains essential to developing localized solutions and sustaining Malaysia's global leadership in palm oil production.

"MPOB's research over the decades has established that effective management requires an Integrated Ganoderma Management (IGM) approach – combining sanitation, biological control, and cultural practices."

History of *Ganoderma* basal stem rot (BSR) disease

1915 The BSR disease was described in Republic of Congo, West Africa

1931 Thompson detected the disease infecting oil palms over 25 years in Malaysia but on old palms due to replanting

1960s BSR incidence increases and infects younger palms (10-15 years old)

In the initial years of planting....

Ganoderma found to be infecting replanted oil palms as early as 12 – 24 months

Replanted areas

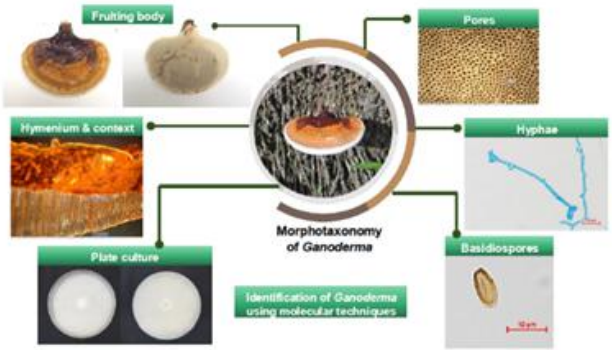
Areas underplanted and previous coconut palms

(Ariffin *et al*. 1996)

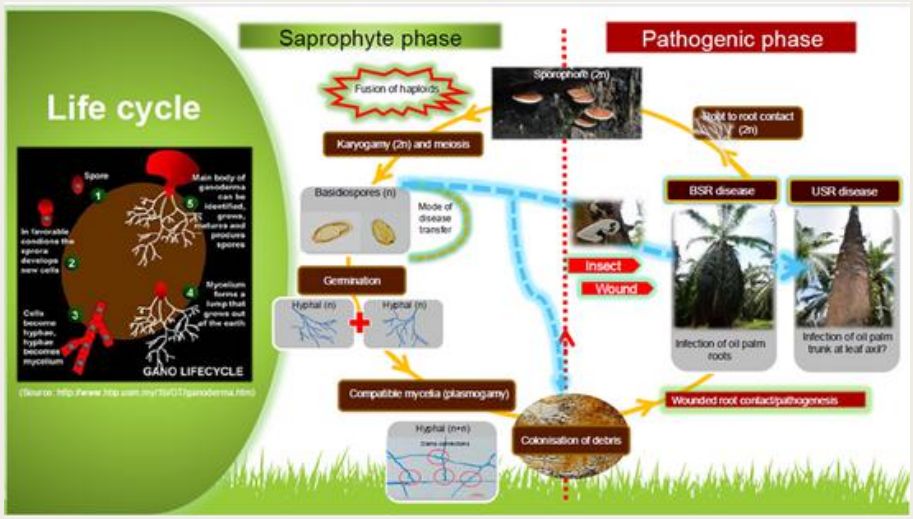
Pathogen: *Ganoderma boninense?*

Updating the systematics of *Ganoderma* spp

- sampled > 500 sporophores
- recorded demographic data of the sampled palms
- identification based on:
  i. Morphotaxonomy
  ii. DNA (ITS)
  iii. Gene
- first portal for *Ganoderma* to archive scientific information – GanoID



Sundram et al (in press)



Mechanism of infection

Healthy oil palm roots expands in soil

Infection occurs via *Ganoderma* inoculum surviving on dead and degrading substrate (oil palm biomass)

Active mycelia penetrates healthy roots → spreads into cortex and palm bole

Hemibiotrophic → **Necrotrophic**

Root's basic function affected → reduced water, impaired nutrient absorption → wilting and photosynthesis process disrupted

Paper 2: Early Detection and Accurate Census – The First Line of Defence Against Ganoderma

Presenter: Ts. Dr. Maizatul Mohamed, Senior Research Officer and Head of Integrated Ganoderma Management Group, MPOB

Dr. Maizatul highlighted the critical importance of early disease detection and accurate census in managing Ganoderma BSR.

She began by streesing that early detection is the cornerstone of effective disease control. Identifying infected palms in the initial stages allow planters to act before the pathogen spreads, reducing both scale of infection and overall management costs. “Catching the disease early is always cheaper and more effective than controlling a widespread outbreak,” she noted.

The presentation explained how accurate diagnosis ensures that the right management strategy – whether chemical, biological, or cultural – is applied. Misdiagnosis, on the other hand, often leads to wasted resources and treatment failures.

Methods of Ganoderma Detection

Dr. Maizatul outlined several complementary approaches for identifying Ganoderma infection:

- Visual Field Identification – Early signs include white mycelium growth, fruiting bodies (bracket-shaped or button-like), and rotting at the base of the trunk. Foliar symptoms such as yellowing fronds, unopened spears, and collapsed lower leaves are also strong indicators of infection.

- Laboratory Analysis – MPOB employs Ganoderma Selective Media (GSM) for culturing the pathogen from tissue samples drilled 30 cm into the trunk, as well as molecular diagnostics using Polymerase Chain Reaction (PCR) and Loop-Mediated Isothermal Amplification (LAMP). These methods can detect fungal DNA in minute quantities – sometimes before visible symptoms appears.

- Aerial and Remote Sensing Technology – The latest detection tools involve drone or satellite imagery that can screen large plantation areas. Using multispectral imaging, MPOB’s studies have shown over 90% accuracy in distinguishing infected palms based on specific spectral reflectance values, particularly at 662 nm. This allows for rapid assessment of Ganoderma distribution over vast estates.

“Accurate identification, detection, and census are optional – they are essential tools in the fight against Ganoderma. Without them, control measures would be “blind, inefficient, and wasteful.”

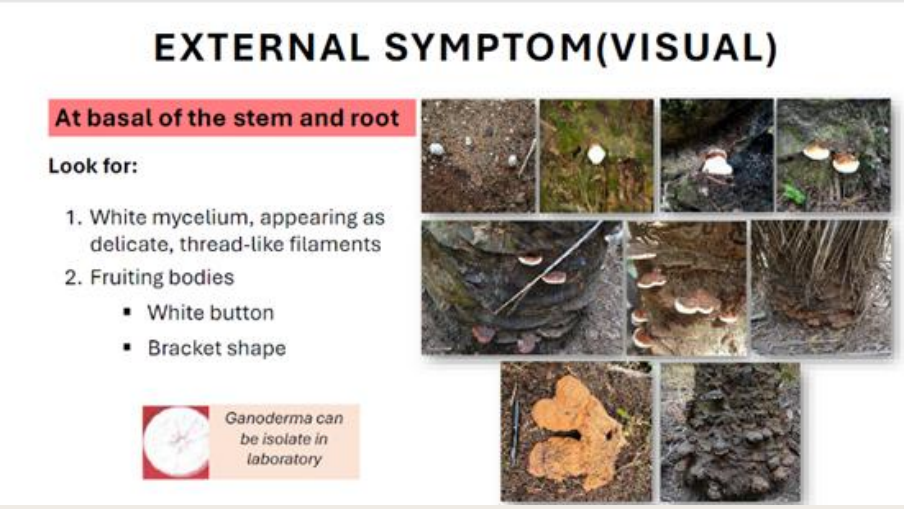
The Importance of BSR Census

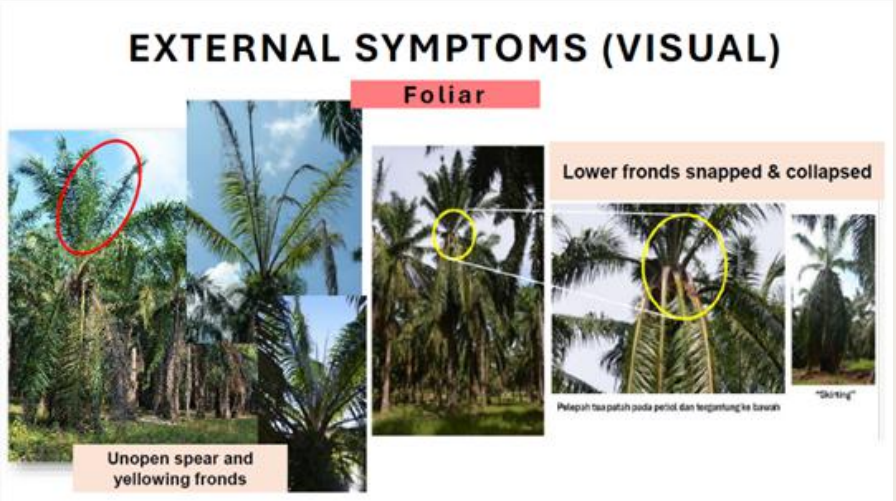
Dr. Maizatul emphasized that regular and accurate disease census forms the backbone of effective management. By mapping the spatial distribution and severity of infections, plantation can:

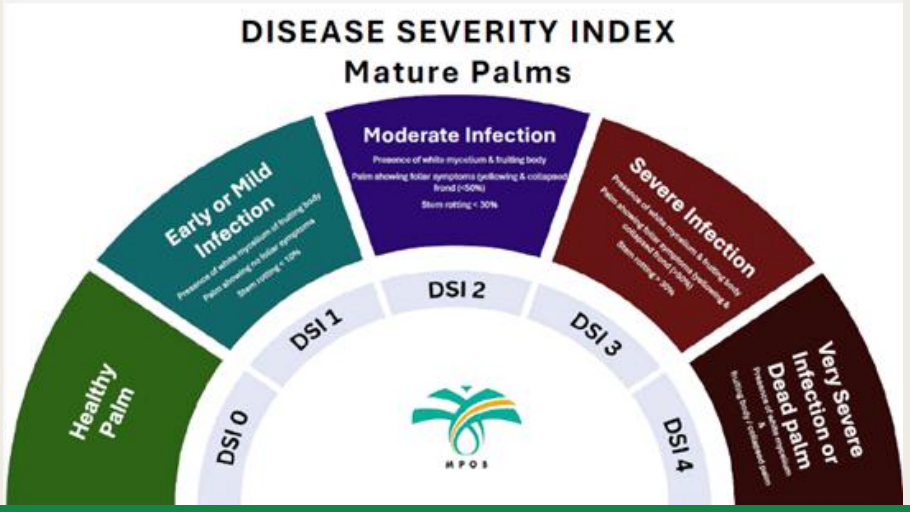
·Identify disease hotspots and monitor spread pattern over time.
·Support epidemiological studies to understand contributing environmental and management factors.

·Guide targeted interventions, such as selective sanitation or biological treatments.
·Provide valuable data for policy-making and resource allocation at both industry and government levels.

She presented MPOB's Disease Severity Index (DSI), which categorises infection levels from DSI (early or mild) to DSI 4 (very severe or dead palm) based on visible symptoms, stem rot extent, and presence of fruiting bodies. This standardized system helps estate managers assess and prioritise control measures effectively.







Paper 3: Innovative and Integrated Approaches to Managing Ganoderma in Existing Plantations

Presenter: Dr. Yuvarani Naidu, Senior Research Officer, MPOB

iDr. Yuvarani presented practical and research-based insights on the management of Ganoderma BSR in existing oil palm plantings – focusing on the application of Integrated Ganoderma Management (IGM) and emerging innovations that complement conventional disease control methods.

Integrated Ganoderma Management (IGM)

Dr. Yuvarani explained that IGM is a multi-pronged strategy combining early detection and census, sanitation or cultural practices, and biological control agents (BCAs) to reduce disease spread and inoculum build-up in plantations. While disease control refers to immediate interventions to suppress existing infections, disease management involves a long-term, integrated approach to prevent and delay future outbreaks.

Effective Ganoderma control, she emphasized, began with regular disease census to map infection hotspots and determine the appropriate management response based on Disease Severity Index (DSI) levels.

"No single method can eliminate Ganoderma, but integrating sanitation, biological control, and alternative technologies can effectively reduce disease severity and prolong palm lifespan."

Alternative Control Techniques

1. Chemical Control (Fungicide Hexaconazole)

Fungicide treatment using Hexaconazole remains a viable short-term control option for early-stage infections (DSI 1-2). The treatment involves drilling into infected palm's trunk and injecting a fungicide solution using a pressure injection apparatus (PIA). Field trial in Teluk Intan and Kluang demonstrated that treated palms experienced significant lower infection rates – 36.3 compared to 85% in untreated palms after 36 months – highlighting its effectiveness when used as part of as integrated strategy.

2. Soil Mounding

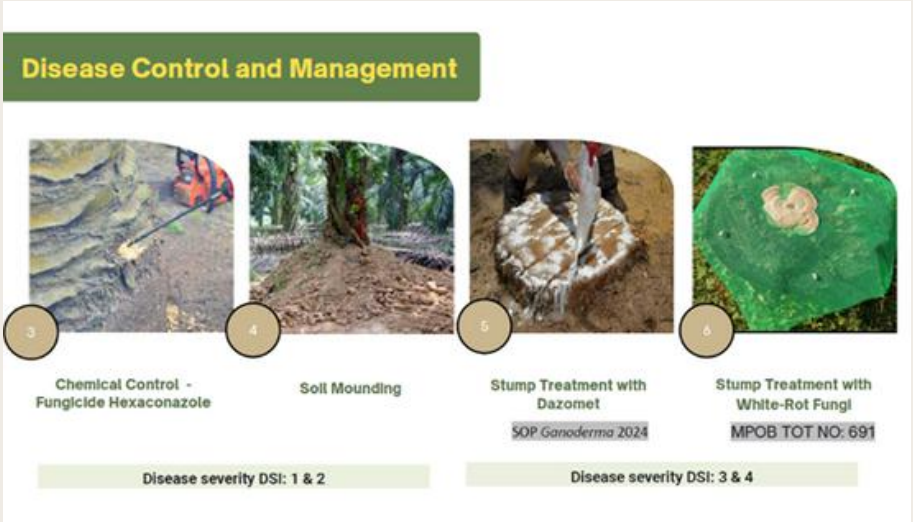
The soil mounding technique, which involves piling soil around the palm base to a height of one meter, helps protect healthy root zones and stimulate new root growth. It has shown promising results in slowing down disease progression, especially for palms with mild to moderate infection. However, the practice requires suitable equipment, proper field access, and cost considerations of approximately RM23-25 per palm.

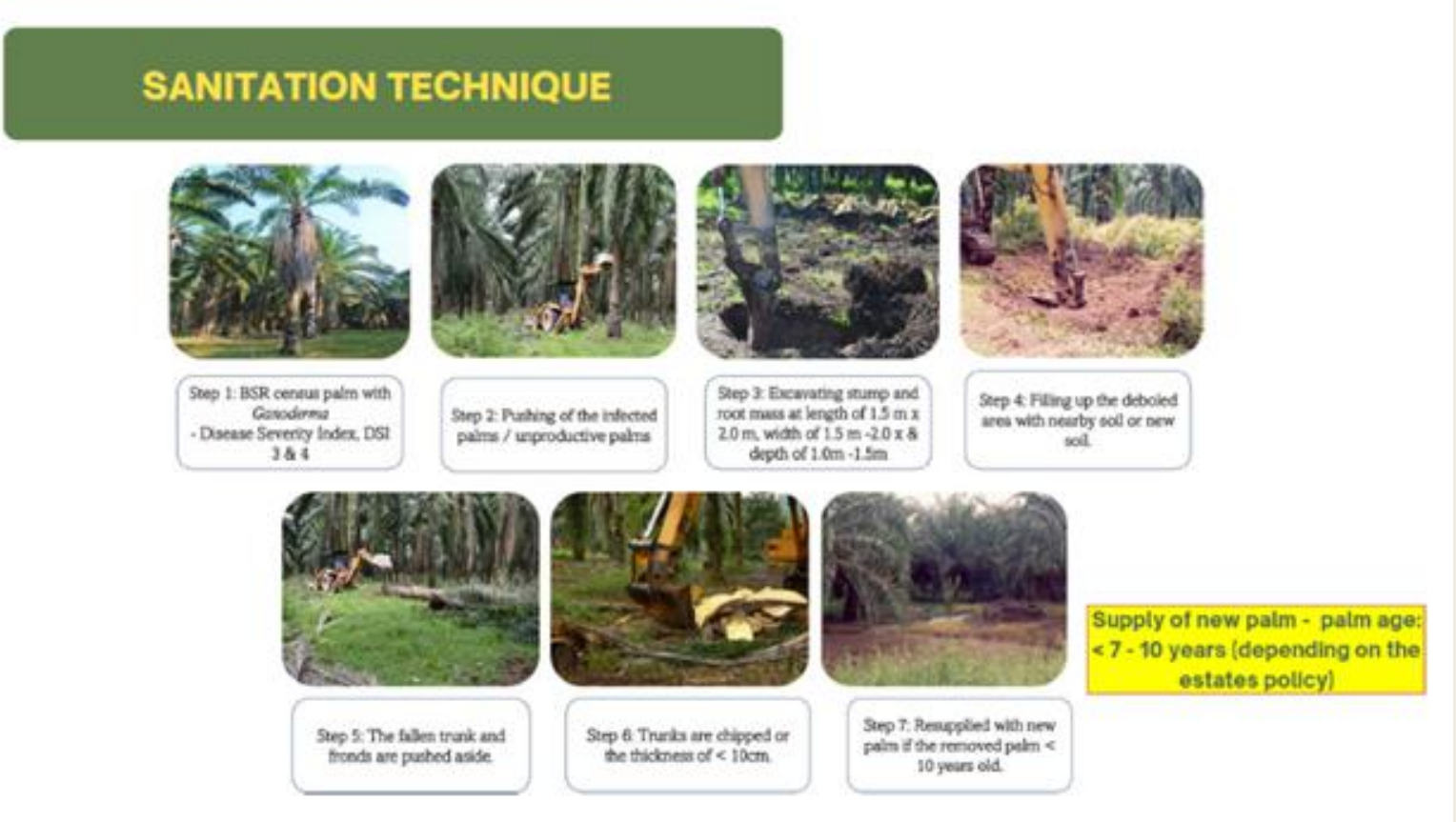
3. Fumigation with Dazomet

In areas where mechanical stump removal is not feasible, particularly on hilly or dense terrains, fumigation using dazomet, a soil fumigant that releases methylisothiocyanate (MITC), has been shown to suppress Ganoderma and other root-rot fungi effectively.

4. White-Rot Fungi Application

As an eco-friendly solution, MPOB has developed the use of Trametes lactinea (GanoBF1), a white-rot fungus capable of accelerating the decomposition of infected oil palm biomass. Trials conducted at MPOB's Keratong Research Station demonstrated successful colonization and decay of treated stumps within 12 months, effectively reducing pathogen inoculum in the soil.





Paper 4: Enhancing Replanting Practices to Minimize Ganoderma Basal Stem Rot

Presenter: Shariffah Muzaimah Syed Ahmad, Research Officer, MPOB

Pn. Shariffah presented a comprehensive paper on managing Ganoderma BSR during replanting, highlighting sanitation, soil management, and the application of biological control agents as key strategies for success.

The Importance of Strategic Replanting

According to Shariffah, replanting provides an opportunities not only to replace old and unproductive palms but also to interrupt the disease cycle and establish new, high-yielding, and disease-resilient materials. However, she warned that poor replanting practices can create a "pathogen reservoir" in the soil, allowing Ganoderma to persist and infect young palms.

"Replanting must be viewed as both a productivity and a disease management exercise," she explained. "Failing to remove infected stumps and roots simply reintroduced the problem into the next generation of palm."

Avoiding Underplanting and Following the Zero-Burning Policy

This paper cautioned strongly against underplanting – the practice of planting new palms before old ones are fully removed – as this increases the risk of early and severe Ganoderma infection. Instead, Shariffah recommended a clean break approach, where fields are cleared and left fallow for a short period to reduce inoculum pressure before replanting.

She reaffirmed that Malaysia's Zero Burning Policy remains essential to sustainable replanting, ensuring environmental protection while promoting soil rehabilitation through proper decomposition of palm residues.

Sanitation: The Cornerstone of Disease Prevention

Shariffah emphasized that sanitation is the most crucial step in managing Ganoderma during replanting. Infected stumps, root, and trunk debris are the primary sources of disease inoculum. Effective sanitation involves:

·Census and identification of infected palms prior to clearing.
·Excavation of stumps and roots up to 1.5-2.0 meters deep.
·Chipping and decomposition of infected biomass, followed by careful arrangement of the chipped material at least one meter away from new planting rows.

Field trials by MPOB have demonstrated that proper sanitation significantly reduces BSR recurrence compared to standard replanting methods that not only involve felling and stacking.

"An Integrated Ganoderma Management (IGM) – combining sanitation, soil preparation, and biological control – offers the best defence against BSR in replanting cycles."

Pulverization Techniques for Field Sanitation

Shariffah also outlined four pulverization techniques currently used in commercial estates to accelerate biomass decomposition and reduce inoculum:

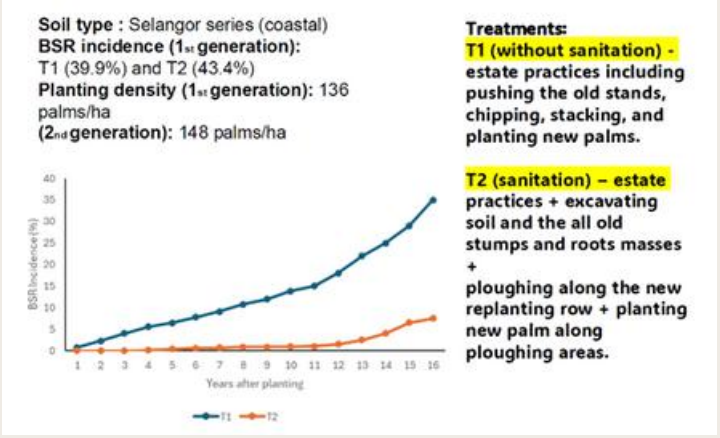
1. Partially Decomposed Palm Chips – Excavators and mulchers pulverize decomposing palm biomass, enabling faster decay.

2. Standing Palm Pulverization – using the EnviroMulcher system, trunks are shredded into fine biomass within minutes.

3. Newly Felled Palm Pulverization (Mountain Goat System) - Large-scale mechanical chipping using a 750 hp machine to process palms and toot masses efficiently.

4. Root Bole Pulverization (Beaver System) – A heavy-duty blade severs root masses and pulverizes palms in situ, ideal for compact soils.

These methods, she noted, allow effective decomposition without burning, align with the zer-burning policy, and reduce reinfection risks in replanted areas.



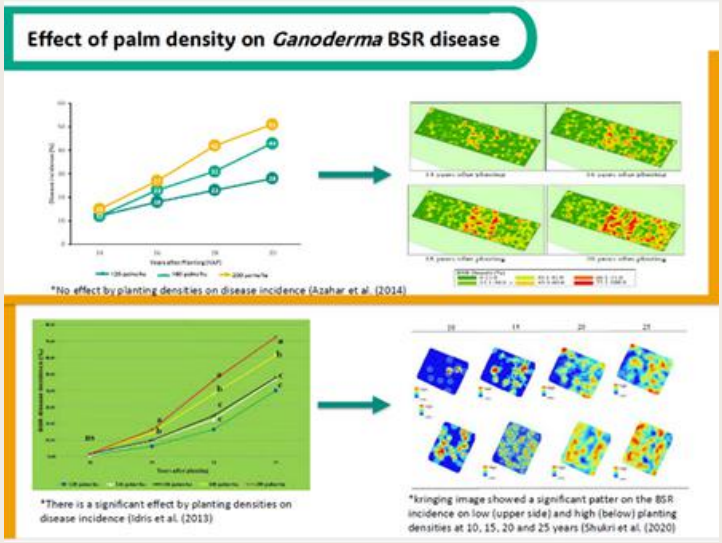
Soil Preparation and Deep Ploughing

Citing research by Mathews et al. (2021), Shariffah explained that complete clean clearing – including excavation of heathy and diseased palms, followed by deep ploughing – proved most effective in delaying Ganoderma infection, especially on inland mineral soils. Techniques such as deep ripping with a steel ripper mounted on bulldozers help remove buried root fragments and improve soil aeration.

Prevention Biological Treatments

Beyond physical control, preventive treatment using biological control agents (BCA) were highlighted as a key complementary measure. Products such as TrichoTec, TrichoShield, GanoEF bioferrtilzer, and actinoPLUS (Streptromyces GanoSA1) have demonstrated promising results in inhibiting Ganoderman boninense while promoting healthy root development.

MPOB's nursery and field trials found that seedlings treated with Streptomyces GanoSA1 remained healthy for up to 36 months after planting, compared to untreated palms that developed typical Ganoderma symptoms. These findings suggest that integrating biocontrols during replanting can significantly delay disease onset.



Paper 5: Streptomyces Biocontrol – Nature's Self-Defence Against Ganoderma

Presenter: Rais Andersen, Pascal Biotech Sdn. Bhd.

Mr. Rais was invited to present the industry's perspective, sharing practical experience and insights on the adoption and field application of biocontrol solutions for managing Ganoderma in oil palm plantations.

He showcased the scientific innovation behind ActinoPlus®, a bio-based solution developed through collaboration with MPOB and various research institutions.

A Biotech Approach to a Persistent Problem

While traditional control strategies – mechanical sanitation, chemical treatments, and selective breeding – have achieved varying levels of success, none offer a complete or environmentally sustainable solution.

According to Rais, this is where biological control agents (BCA) such as Streptomyces GanoSA1 present a major breakthrough. "Our focus is not on eliminating the pathogen entirely, but on building a natural defence system in the soil that suppresses disease pressure and promotes healthier palms," he explained.

ActinoPlus® - Harnessing the Power of Streptomyces

ActinoPlus® is agrnualr formulation that contains Streptomyces – a naturally occurring soil bacterium known for its antagonistic properties against Ganoderma boninense. Developed through years of R&D and field validation with MPOB, the product functions as a bio-control, bio-fertilizer, and bio-stimulant, offering both disease suppression and improved soil health.

The product development process involved extensive laboratory and field trials, including molecular identification, efficacy testing, and large-scale plantation validation. By 2014, ActinoPlus® was officially launched during the MPOB Transfer of Technology Exhibition. It has since been adopted across Malaysia through the TSSPK smallholders replanting scheme, covering over 3,000 hectares and supplying 450,000 sachets to smallholders nationwide.

"Biocontrol is not an alternative – it's the future of plantation health management."

How Steptomyces Works

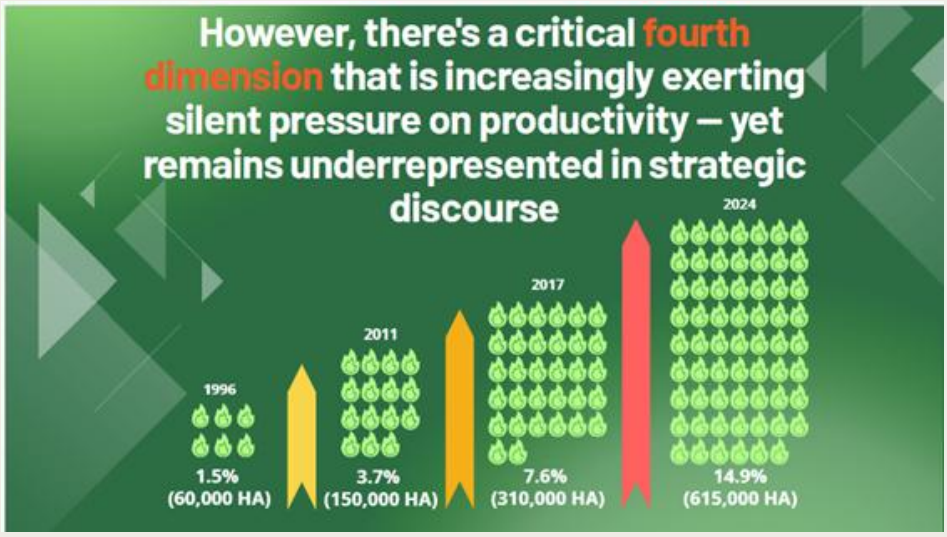
Streptomyces GanoSA1 functions as a biological antagonist that colonizes the rhizosphere and enhances plant immunity through several mechanisms:

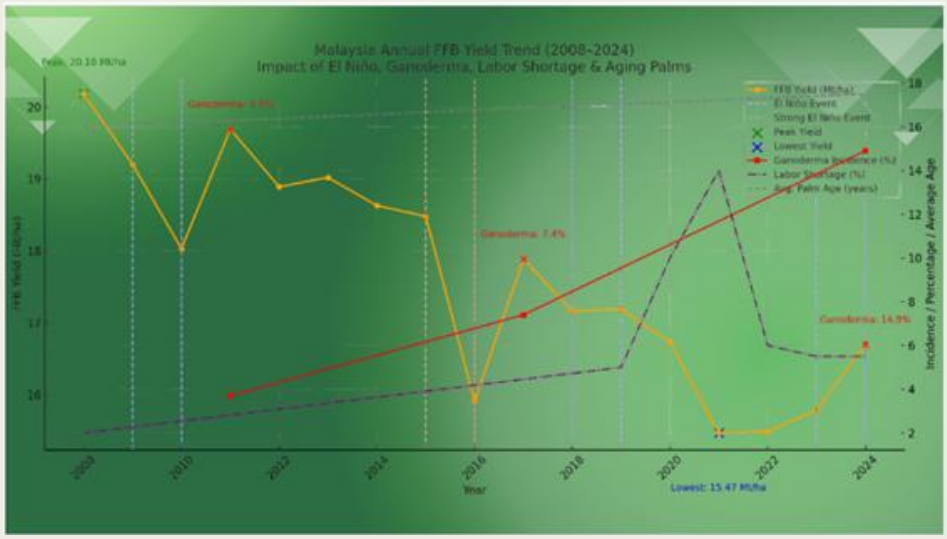
- Nutrient composition: Produces siderophores that rapidly chelate iron, depriving pathogens of essential nutrients.
- Antifungal compound production: Synthesizes antibiotics and hydrolytic enzymes such as glucanase, chitinace, and lipase that inhibit fungal growth.
- Induced systemic resistance (ISR): Stimulates the palm's natural defence enzymes, including β-glucanase, PPO, and PAL, strengthening its ability to resist infection.
- Biofilm formation: Enhances microbial colonization around roots, promoting nutrient uptake and long-term soil health.

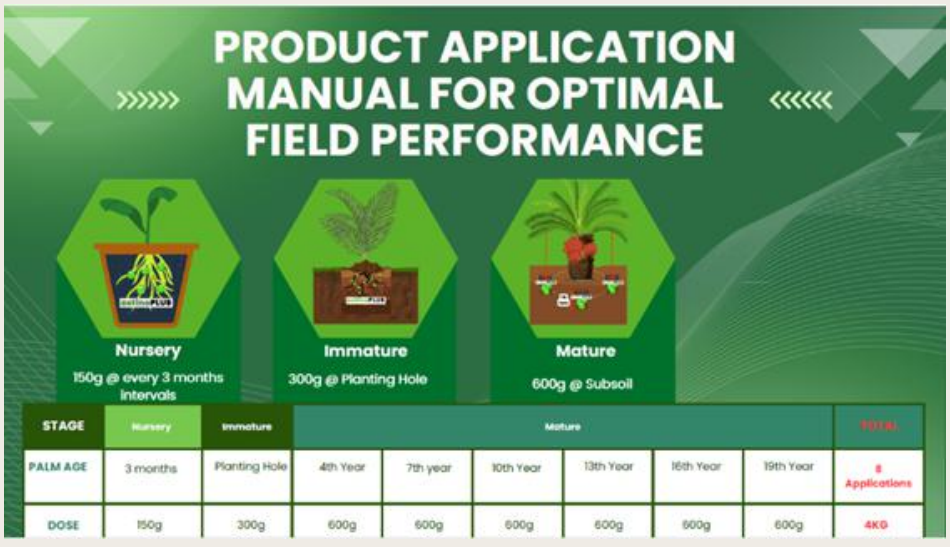
Field Proven Effectiveness

Data from field evaluations at MPOB Teluk Intan Research Station demonstrated a threefold reduction in disease incidence in plots treated with ActinoPlus® compared to untreated controls. In some smallholder replanting trials, zero Ganoderma infection was recorded three years after application, while control plots showed 3-5% infection rates.

Furthermore, economic analysis under the TSSPK scheme indicated a 3.8 times return on investments (ROI) within three years – proving both its efficacy and financial viability for smallholders and estates.







Paper 6: Industry Experience in Managing Ganoderma – A Case Study from Tradewinds Plantation Bhd

Presenter: Ling Chia Yi, Senior Agronomist, Tradewinds Plantation Bhd

Mr. Ling shared an industry case study on the company's ongoing efforts and field experiences in managing Ganoderma BSR – the most challenging disease confronting oil palm plantations in Sarawak and across Malaysia.

Understanding the Extent of the Problem

Ganoderma infection remains a major concern for TPB, particularly on peat soils, where disease incidence is significantly higher than on mineral soils. According to internal plantation data, nearly 90% of Ganoderma-affected palms were recorded on peat, while only 10% occurred on mineral areas, underscoring the heightened vulnerability of peat environments to the disease.

Across TPB's estate in Sarawak – including Melur, Gemilang, Sri Aman, Matu Daro, Pelitanah, Retus, Kuala Suai, Binu, and Trusan – tens of thousands of palms have been affected, either suspected, confirmed, or dead due to Ganoderma. This extensive distribution highlights the disease's persistence and the complexity of effective management in large-scale operations.

Structured Surveillance and Census

TPB adopt a dual-level monitoring approach through regular surveillance and annual census exercises.

- Surveillance is conducted at 10% intensity (every 10th row of palms) on a bi-monthly basis, integrated with other pest and disease monitoring activities. This acts as an early warning system, capturing suspected and confirmed Ganoderma cases for immediate follow-up.

- Census activities, on the other hand, are performed annually at 100% intensity, often in conjunction with termite assessment. The census compiles detailed records of all suspected, confirmed, and dead palms, forming the basis for planning control measures and replacement strategies.

However, Mr. Ling pointed out a critical gap in the industry – the lack of standardized methods for managing Ganoderma census data. Questions remain on how to categorize treated palms (e.g. those mounded or partially recovered) and whether data should be reported as real-time (current-year) or cumulative figures, especially in tracking mortality trends.

Treatment Practices at Field Level

TPB's management approach focuses on practical and site-appropriate treatments:

- Removal and deboling are carried out for infected palms aged five years and below, followed by replanting with AMF (arbuscular mycorrhizal fungi)-inoculated seedlings to enhance root health and disease resistance.

"Managing Ganoderma requires a long-term, data-driven approach combining surveillance, sanitation, prevention, and innovation."

- Mounding is widely practiced to improved palm growth, especially in poorly developed blocks. Mounds typically measure 3m x 3mx 0.8m or 2m x 2m x 0.4m, depending on palm size.

- Chemical trunk injection, trialled in 2012, was discontinued due to its labor-intensive and low-productivity nature.

- Trenching, though effectibe in mineral soil, is not recommended for peat areas, as it increases the risk of palm toppling.

Preventive Measures During Replanting

Replanting presents a critical opportunity to break the disease cycle. TPB enforces several preventive steps:

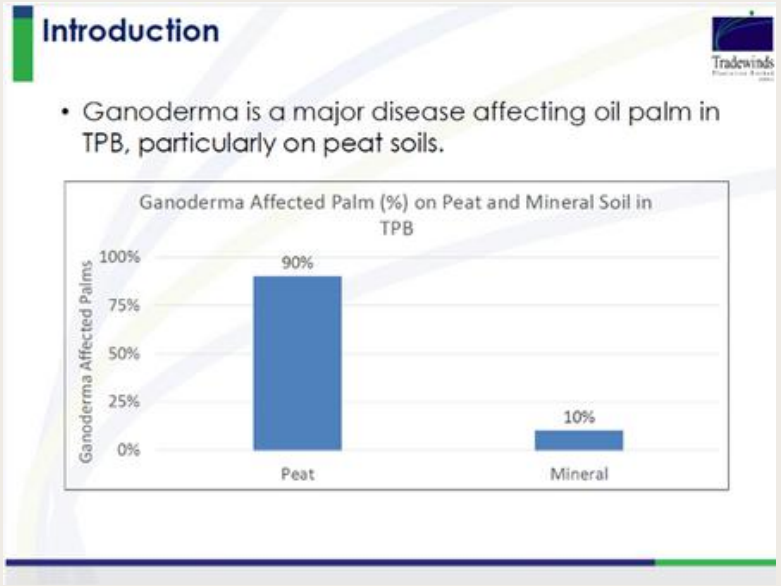
- 100% deboling of old stumps and roots during replanting, followed by a 2-4 weeks fallow period to allow sunlight exposure and soil drying.

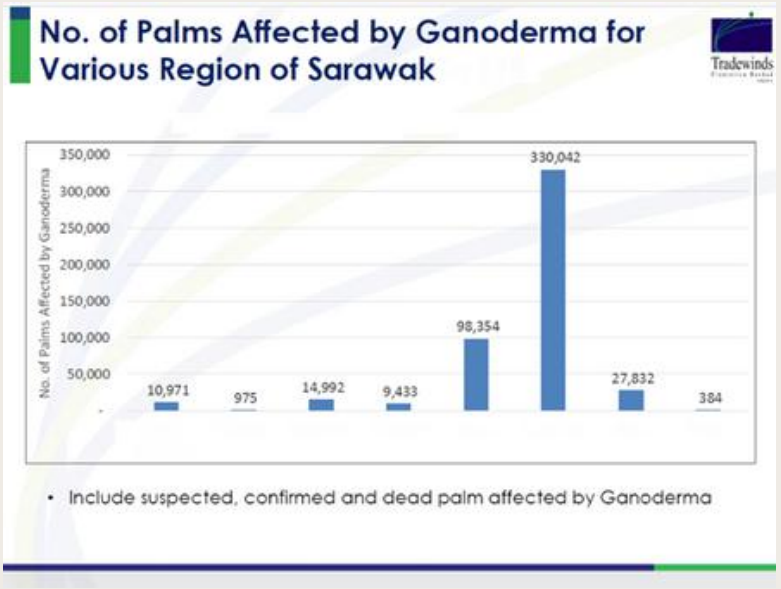
- Shifting planting points between old rows to avoid reusing previously infected sites.

- Use of AMF-treated seedlings in nurseries, aimed at reducing infection risk and promoting stronger early root development.

Future Directions

Looking ahead, TPB plans to expand its use of biological control agents (BCA) by introducing AMF or microbial inoculants directly into planting holes, beginning trials in 2025. Other initiatives include reducing soil acidity through liming and adopting drones and GIS technologies for advanced Ganoderma mapping and early detection.





Paper 7: Breeding for the Future – MPOB's Progress in Developing Ganoderma-Resistant Oil Palm Materials

Presenter: Dr. Shamala Sundram, Head of Plant Pathology & Biosecurity, MPOB

Dr. Shamala shared an in-depth update on MPOB's long-term efforts to breed and identify oil palm varieties with tolerance or resistance to Ganoderma BSR.

The Urgent Need for Resistance Breeding

Dr. Shamala explained that BSR disease kills over 80% of palms by mid-cycle, drastically shortening plantation lifespan and profitability. Historical data show that BSR incidence has risen steadily across Malaysia since the 1930s, affecting young, mature, and even replanting cycles.

She emphasized that developing resistant or partially resistant planting materials is most sustainable long-term solution, reducing both yield and replanting losses. "By identifying resistant progenies at the nursery stage, we can save years of evaluation time and significant field resources," she said.

MPOB's Screening Program: A Decade of Progress

MPOB established a dedicated Ganoderma Screening Facility at its Keratong Research Station, Pahang, in 2016. This facility supports large-scale screening of commercial and pre-breeding progenies under controlled conditions using inoculation and disease assessment protocols.

"Development of Ganoderma-resistant planting materials represents a strategic investment for Malaysia's palm oil industry. The future of sustainable oil palm cultivation lies in genetics."

The screening process involves two main techniques:

- Seed Germinating Technique, where oil palm seed are germinated and exposed to Ganoderma-infected rubber woodblocks.
- Seedling Sitting Technique, where two-month-old seedlings are placed on infected inoculum and monitored for symptom development.

Each seedling is assessed monthly for disease incidence (DI), disease severity (DSI), bole infection index (DSBI), and epidemic rate to quantify infection rate and tolerance levels.

Screening Results and Promising Progenies

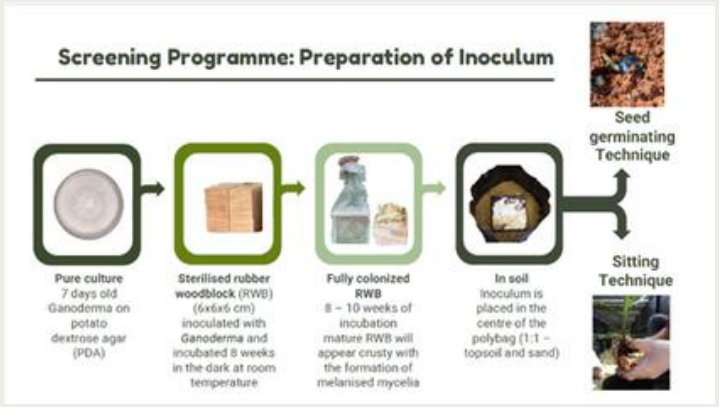
Over the years, MPOB has conducted extensive screening of various oil palm planting materials from different breeding backgrounds to identify those with better tolerance to Ganoderma. The screening aims to pinpoint oil palm varities that can withstand infection and continue growing productively even under disease pressure.

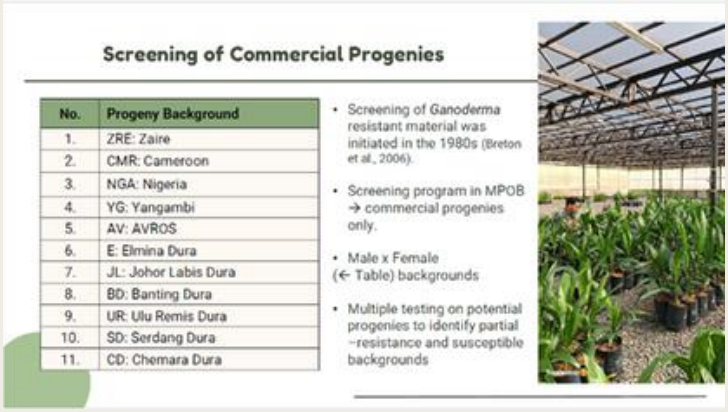
Early findings from the program have identified several promising breeding lines showing signs of partial resistance. These materials are now undergoing further evaluation in field trials located in disease-prone areas to confirm their performance under actual plantation.

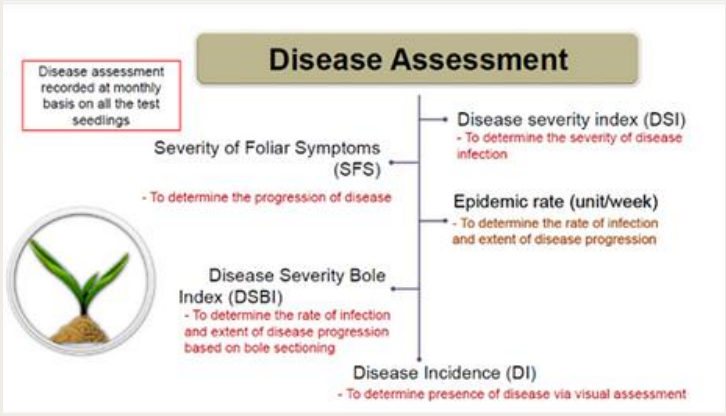
Next Steps in Breeding and Validation

The breeding and screening program is now moving into its next phase, focusing on evaluating a new generation of promising crosses. These selected materials will be tested in controlled research stations and in commercial plantations to assess their performance and adaptability.

Field trials are continuing in areas heavily affected by Ganoderma to observe how these improved palms perform over time. The early results have been encouraging, with several planting materials showing strong growth and minimal signs of infection.







Paper 8: TrichoTec® – Harnessing Beneficial Fungi to Combat Ganoderma in Oil Palm

Presenter: Wong Siew Eee, Mygro Sdn. Bhd.

Ms. Wong showcased how a naturally occurring fungus is being used to strengthen palm health and suppress Ganoderma infection.

A Biological Ally Against Ganoderma

Ms. Wong explained that Trichoderma is a beneficial fungus that lives in harmony with plants and has long been recognized for its ability to suppress harmful soil-borne pathogens. Through years of collaborative research between MPOB and Mygro Trading Sdn. Bhd., this knowledge led to the development of TrichoTec®, a bio-based product containing the active strain Trichoderma viren 159C.

TrichoTec® works in several ways – it outcompetes Ganoderma for nutrients and space, produces natural antifungal compounds, and stimulates the palm's internal defence system. In addition, it enhances soil health, promotes root growth, and rejuvenates the surrounding soil ecosystem through increased microbial activity.

"TrichoTec® represents a shift towards nature-baed disease management," she explained. "Rather than relying on chemicals, we are using biology to restore the soil's natural balance and strengthen the palm's ability to defend itself."

Proven Field and Laboratory Performance

Laboratory and field studies have demonstrated that palms treated with TrichoTec® show significant lower level of Ganoderma infection compared to untreated palms. Microscopic observations revealed that Trichoderma actively attacks the Ganoderma fungus by releasing enzymes and antifungal compounds that deform and destroy its hyphae.

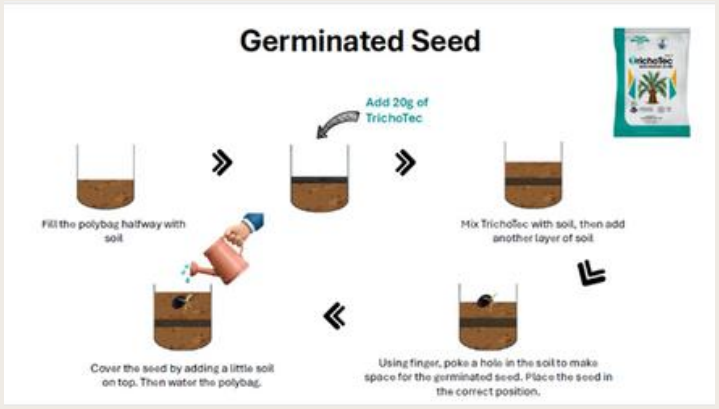
Beyond its antifungal effect, TrichoTec® also boost overall plant vigour. Treated palms typically exhibit stronger root systems, better nutrient uptake, and improved growth performance. In nursery and field trials, these benefits translated into healthier palms and reduced replanting losses.

Recognized Innovation and Sustainable Practice

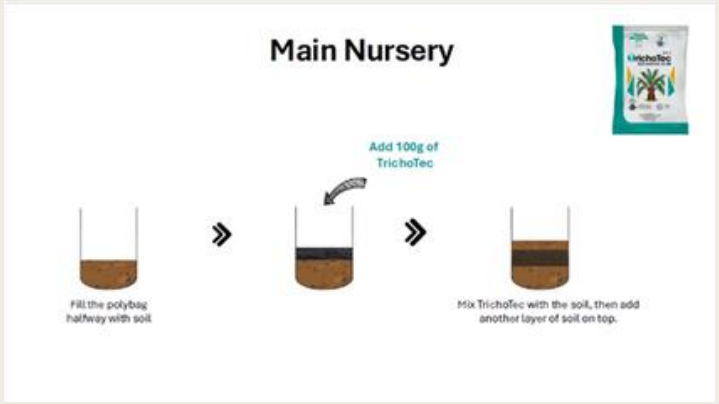
The development of TrichoTec® has earned several national and international awards, as well as patent for its novel antimicrobial properties. This recognition demonstrates Malaysia's leadership in sustainable R&D for oil palm disease management.

As an environmental friendly product, TrichoTec® support Malaysia's commitment to green technology and sustainable plantation practiced, aligning with the goal of MSPO certification standards. It provides a cost-effective, non-toxic, and scalable solution suitable for both estate and smallholder applications.

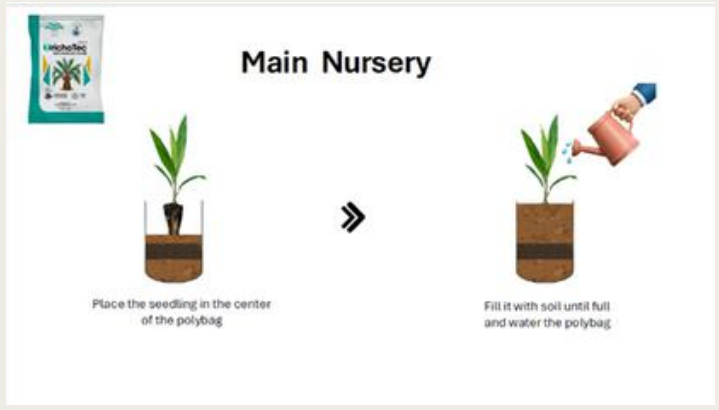
"Effective management of Ganoderma requires an integrated approach, combining biological agents liken TrichoTec® with proper sanitation, good agronomic practices, and timely disease monitoring."

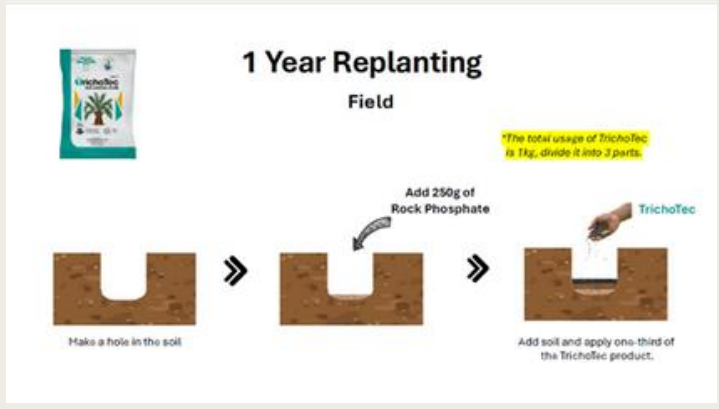

Germinated Seed
Add 20g of TrichoTec
Fill the polybag halfway with soil
Mix TrichoTec with soil, then add another layer of soil
Cover the seed by adding a little soil on top. Then water the polybag.
Using finger, poke a hole in the soil to make space for the germinated seed. Place the seed in the correct position.


1 Year Replanting
Transplant the one-year-old oil palm seedling into the prepared hole. Then, apply another one-third of the TrichoTec product around the hole
Cover the hole with soil. The remaining one-third of the product should be spread on top of the soil, close to the base of the seedling


Main Nursery
Add 100g of TrichoTec
Fill the polybag halfway with soil
Mix TrichoTec with the soil, then add another layer of soil on top.


Field application at 6 monthly interval up to 3 years


Main Nursery
Place the seedling in the center of the polybag
Fill it with soil until full and water the polybag


1 Year Replanting
Field
*The total usage of TrichoTec is 1kg, divide it into 3 parts.
Add 250g of Rock Phosphate
TrichoTec
Make a hole in the soil
Add soil and apply one-third of the TrichoTec product.

Paper 9: Emerging Diseases in Oil Palm – Strengthening Biosecurity for a Sustainable Future

Presenter: Dr. Madihah Mohd Zain, Research Officer, MPOB

Dr. Madihah presentation highlighted that while Ganoderma BSR remains the major threat to productivity, other lesser-known diseases are beginning to surface, potentially affecting yield, sustainability, and trade of not properly managed.

Understanding Emerging Diseases in Oil Palm

Emerging diseases refer to plant diseases that are newly identified, increasing prevalence, or expanding in geographic range. These can be caused by viroids, viruses, bacteria, fungi, nematodes, or even physiological and environmental factors such as climate change, land-use shifts, and global trade.

Examples of Emerging Diseases Observed

Dr. Madihah outlined several diseases that have recently been observed or reported to MPOB:

- Orange Spotting Disease, associated with variants of the Coconut cadang-cadang viroid (CCCVd), causes distinctive orange discoloration on leaves and stunted palm growth. While still rare, affected palms can experience severe yield reduction.

- Algae Leaf Spot (ALS), first reported in Malaysia in 2017, has become more widespread in recent years. It is characterized by reddish-brown spots on fronds and is linked to humid conditions and high rainfall. Although currently regarded as minor, its increasing spread calls for attention to possible environmental triggers.

- Leaf Spot Dzisease, mainly affecting nurseries, is caused by several fungal species. It leads to discoloration and necrotic patches on leaves, reducing seedling vigor and, if unmanaged, potentially affecting replanting quality.

- Sooty Mould, linked to mealybug infestation, leaves black fungal growth on leaf surfaces, reducing photosynthesis efficiency. Outbreaks have been observed in Sabah and Peninsular Malaysia.

- Other disease such as Marasmius bunch rot, stem wet rot, spear rot, and charcoal rot were also discussed, each showing varied distribution and severity across different plantation regions.

"The palm oil industry must not only focus on known challenges like Ganoderma but also stay vigilant against new and emerging disease."

TRUNK DISEASES

- A disease showing symptoms similar to stem wet rot has been reported in Ulu Tiram, Johor, and Klang, Selangor.
- The disease has been observed mostly on young oil palms, though a few cases (1–2 palms) were also recorded in mature palms (Ulu Tiram): Klang (8-10 years old palms)
- Field observations indicate that disease incidence is most likely initiated by rhinoceros beetle infestation.
- Trunk tissues: Healthy parts feel firm, while infected tissues are spongy, soft, water-soaked, and emit a foul odor.
- Fronds and petioles bend softly when snapped (not brittle).
- On young palms:
  - Severe infestation damaging the heart of palm often leads to palm death
  - Less severe cases, where the heart of palm is only partially damaged, affected palms may gradually recover as they mature

TRUNK DISEASES

Crown / Spear rot Disease

- Disease development:
  - Necrotic lesions form on spear leaf leaflets
  - Young leaves appear shorter and distorted
  - Rot develops but does not progress towards the meristem
  - Parts of the spear show rotting and drying.
  - The rachis bends characteristically at its central portion
  - In severe cases, all leaves surrounding the spear bend downward (Suwandi et al., 2012)
- Management:
  - Maintain good soil aeration
  - Promote healthy root development
  - Apply nitrogen fertilizer at a suitable ratio
  - Implement breeding programs by discarding progenitors that confer susceptibility

Symptoms of common spear rot of oil palm. A) Emergence of spear rot on 3-years-oil palm. B) Cross-section of oil palm basal area, revealing the fibrous infected tissues at the inner part.

TRUNK DISEASES

1

- **Disease: Stem wet rot**
- Pathogen: unknown (symptoms of bacteria?)
- Symptoms: young leaf shoots wilts & die, wet stem tissue at base of stem, basal tissues destroyed & fibrous bodies
- Effect: tree dies
- Distribution: Malaysia, Indonesia

- Externally characterized by sudden and simultaneous death of all unexpanded spears and surrounding young leaves, followed by wilting and death of the crown.
- Advanced stage: trunk hollowing, watery oozing that later dries, secondary infection, and fibrous structure remains before palm death.

TRUNK DISEASES

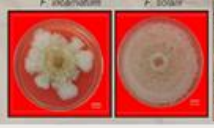
2

- **Disease: Crown / Spear rot**
- Pathogen: unknown; caused by physiological or genetic factors / nutrient/ fungi?
- Symptoms: 'crowning-like' where the leaf fronds bend downwards
- Effect: stunted tree growth, affecting early yield
- Distribution: Malaysia, Indonesia

- The disease was first reported in North Sumatera in the 1920s (Turner, 1981)
- Affecting young oil palm (*Elaeis guineensis* Jacq.) 12- 18 months after field transplanting
- Occur in dry season followed by rainy period after replanting (Suwandi et al., 2012)
- In Malaysia, incidences rarely exceed 1%

- Predisposing factor:
  - Poor root system development
  - Altered water balance
  - Low potassium availability
  - Imbalance in nutrient

The tissues at the tips of the youngest leaves appear rotting or known as wither tip (Turner, 1981)



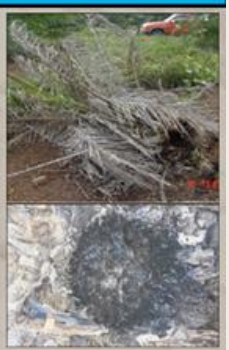
TRUNK DISEASES

3

- **Disease: Charcoal rot**
- Pathogen – *Thielaviopsis paradoxa* (fungi) (syn. *Cerotocystis paradoxa*)
- Symptoms: leaves 'yellow on one side'/ stem tissue – rot at the base of the stem, black as charcoal
- Effect: tree dies
- Distribution: Malaysia

- A minor disease with only a few reported cases in Malaysia
- Usually infects young palms through wounds on the trunk, crown, or roots
- Symptoms: dark brown to black rotting tissues at the infection site; tissue becomes dry, brittle, and covered with black powdery masses (chlamydospores) resembling charcoal
- In severe cases, basal stem infection causes crown collapse and palm death
- Survival: Fungus survives in soil and plant debris through resistant chlamydospores

- Management:
  - Minimize injuries during harvesting and pruning
  - Remove and destroy infected tissues
  - Practice sanitation and good field hygiene



LEAF / FOLIAR DISEASES

1

- **Disease: Orange spotting**
- Pathogen: Variants of Coconut cadang-cadang viroid (CCCVd)
- Spread: vertical transmission
- Symptoms: orange spotting on the leaf, no-necrotic orange spots on leaflets, water-soaked leaf, growth stunted, smaller fruit bunches or no fruit bunch
- Effect: photosynthetic process disrupted, yield reduction up to 50% in a single palm compared to healthy adjacent palm
- Distribution: Philippines, Solomon Islands (CCCVd), Malaysia (CCCVd-variants)

(Forde & Leyritz, 1968; Hanold& Randles, 1991; Randles, 1998)

- Discovered 30 viroids as crop pathogen
- Low molecular weight, single stranded, circular RNAs
- Transmitted mechanically
- Some are seed & pollen transmissible

LEAF / FOLIAR DISEASES

2

- **Disease: Algae leaf spot**
- Causal: algae- species- *Phycopeltis* sp. (non-pathogenic algae) (Malaysia), *Cephaleuros virescens* (pathogenic algae) (Indonesia)
- Spread: spores via high humidity & wind
- Symptoms: 'reddish-brown' colonies on the surface of leaves/fronds
- Effect: pathogenic algae- photosynthetic process disrupted, yield affected if infestation is severe
- Distribution: Malaysia, Indonesia

- The first case was reported to MPOB in 2017, where light spot intensity was observed on the lower fronds of mature palms.
- By 2024, more reports were received, with symptoms extending from the lower to the middle fronds.
- Epidemiology: associated with frequent rainfall (2000 – 4000 mm), high humidity, and warm conditions. Initially, found near milling and biogas areas, but it is now commonly observed along roadsides and has spread a few rows into the plantation.
- A survey on Invasive Alien Species (IAS) was conducted in 2022-2023, recording 49 cases of ALS since 2023 (385 responses from 4000 registered estates)
- A meeting between MPOB and stakeholders to discuss the status of ALS incidence was held on 19 March 2025
- To date, no economic impact has been associated with ALS incidence
- Ground survey & sampling- ALS in Johor, Kelantan, Melaka, Negeri Sembilan, Pahang, Perak, Terengganu, Sabah and Sarawak.

LEAF / FOLIAR DISEASES

3

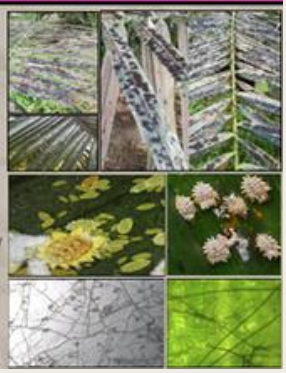
- **Disease: Leaf Spot Disease (Nursery)**
- Pathogen: fungi
- Spread: conidiospores, spores
- Symptoms: water-soaked lesions with black, yellow, brown, reddish-brown or grey discoloration
- Effect: yield affected if infestation is severe
- Distribution: Malaysia, Indonesia, Thailand, China and Africa

- One of the most common diseases infecting oil palm foliar in the nursery, and several reports in the field
- Leaf spot disease is minor disease and not fatal
- Influenced by environmental conditions notably relative humidity, water stress, genetic composition of the seedlings & fungi infection
- Molecular identification confirmed the presence of *Pseudopestalotiopsis*, *Curvularia*, and *Colletotrichum*, with potential roles in disease progression
- Associated fungi- *Cercospora* sp, *Pestalotiopsis* sp., *Neopestalotiopis* sp. and *Phyllosticta* sp.
- Leaf spot disease survey was conducted in collaboration with the Code of Practice Certification Unit (CoPCU), as of July 2025, 31 nurseries participated, with 55% reporting a low infection rate (<10%)

LEAF / FOLIAR DISEASES

4

- **Disease: Sooty mold**
- Cause: mealybug insect
- Symptoms: black mycelium, growing on and under the surface of the leaves
- Effect: disruption of the photosynthesis process, yield affected if the infestation is serious severe
- Distribution: Malaysia, Thailand, Indonesia



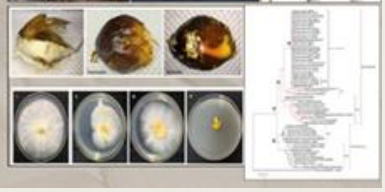
- Sooty mold was observed in Peninsular Malaysia & Sarawak, but in control conditions. Report found outbreak in Tawau, Sabah.
- Causal by mealybug infestation, producing honeydew, sticky, sugary liquid (waste) during feeding on plant sap
- Attract vectors- ants , whitefly
- Sooty mold is an epiphytic fungal growth on honeydew causing blackening leaves, black mold, signs of hidden mealybug colonies nearby
- Sampling done in Lahad Datu & Tawau (Sabah)
- Fungi identification using molecular approach found *Capnodium* sp., *Cladosporium* sp., *Aureobasidium* ep., *Lasiodiplodia theobromae*, *Cyanoporus fuligo*, *Pestalotiopsis sp.*, *Aspergillus sp.*, *Nigrospora sphaerica*, *Trichoderma sp.*, *Penicillium sp.*
- Management: Pesticides to combat mealybug, will reduced sooty mold

FRUIT/ BUNCH DISEASES

1

- **Disease: *Marasmius* bunch rot**
- Pathogen: *Marasmius palmivorus* (fungus)
- Spread: mycelium & spores through contact with infected fruit/ rainwater/ wind/ insects
- Symptoms: white mycelium grows on the surface of overripe/rotten fruit, mesocarp becomes soft & foul smelling
- Effect: low oil quality
- Distribution: Malaysia, Indonesia, Thailand, SEA

- In Malaysia, during the early period of the oil palm expansion & COVID19 pandemic, several outbreaks of the disease were recorded, causing some economic losses
- Isolation and Koch's postulates confirmed *Marasmius palmivorus* as the causal agent of bunch rot (BR)
- Fungus characteristics
  - Small basidiocarps with white spores
  - Naturally saprophytic fungi
  - Decomposers that recycle nutrients by breaking down forest litter



Paper 10: Strengthening Bioscerity to Protect Malaysia's Oil Palm Industry

Presenter: Ts. Dr. Maizatul Suriza Mohamed, MPOB

Dr. Maizatul highlighted the critical importance of a robust biosecurity framework to safeguard Malaysia's oil palm sector from invasive pests and pathogens that could threaten productivity and sustainability.

What is Plant Biosecurity?

Dr. Maizatul explained that biosecurity encompasses the measures, protocols, and strategies implemented to prevent, manage, and respond to biological threats – ranging from plant pests and diseases to invasive species. In Malaysia, biosecurity is enforced through agencies such as the Department of Agriculture (DOA) and the Malaysian Quarantine and Inspection Service (MAQIS), working under the Plant Quarantine Act 1976 and Plant Quarantine Regulations 1981.

These regulations ensure that all plant materials entering or leaving the country are inspected, treated, or quarantined where necessary to prevent the introduction of exotic pests and diseases that have not yet been recorded in Malaysia.

The Need for a Biosecurity Plan for the Palm Oil Industry

With more than 40 oil palm-growing countries worldwide and over 600 pests and diseases associated with the crop, Malaysia faces increasing exposure through trade, travel, and climate change. Dr. Maizatul noted that the Oil Palm Industry Biosecurity Plan, launched by MPOB in 2018, serves as a national guide for protecting the sector through exclusion, eradication, and control of biological threats.

The plan identifies 25 high-priority pests and diseases from a global list of 120 potential threats that are not yet present in Malaysia but have caused major losses in other producing countries. Among the most serious risks are Bud Rot, Vascular Wilt, and Cadang-Cadang Viroid Disease, all which have devastated plantations elsewhere.

Biosecurity is a share responsibility among regulators, researchers, and the industry. Preventing the entry and spread of exotic pests and diseases requires cooperation, awareness, and proactive measures at every level – from national borders to estate management.

Exotic Disease Threats and Their Impact

Diseases such as Bud Rot (caused by Phytophthora palmivora), Vascula Wilt (Furarium oxysporum), and Cadan-Cadang Viroid Disease have been classified as extreme risk threats due to their rapid spread and destructive potential. In severe cases, entire plantation blocks have been lost within a few years.

Although these diseases have not been detected in Malaysia, Dr. Maizatul emphasized that continuous vigilance is vital. Once introduced, such pathogens are extremely difficult to eradicate. Regular monitoring, early detection, and swift containment are therefore critical components of the country's plant biosecurity strategy.

Malaysia's Biosecurity Network and Entry Points

Malaysia maintains an extensive network of 174 entry points nationwide, including land, sea, and air checkpoints in Peninsular Malaysia, Sabah, and Sarawak. These are the first lines of defence, where plant materials, machinery, and goods are inspected and treated to prevent the accidental introduction of harmful organisms.

Biosecurity operations function across three levels:

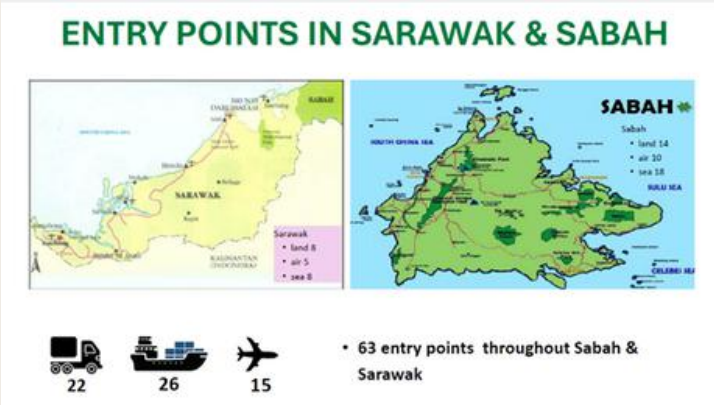
- Pre-border - Identifying potential risks and setting import requirements.
- Border - Conducting inspections, quarantines, and surveillance at checkpoints.
- Post-border – Ensuring early detection, containment and response in plantations and nurseries.

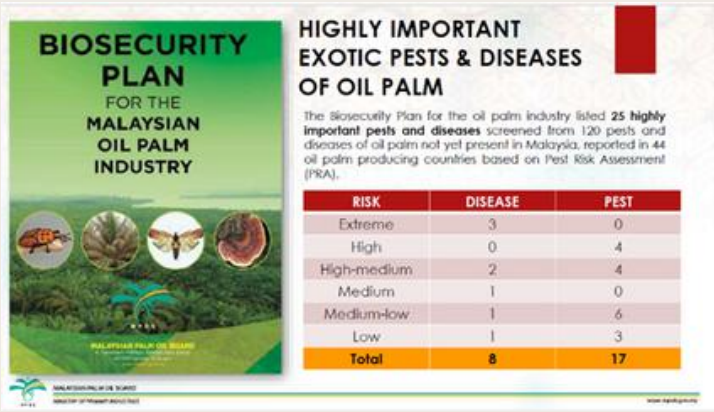
This multi-layered approach involves close collaboration between government agencies, research institutions, and plantation operators.

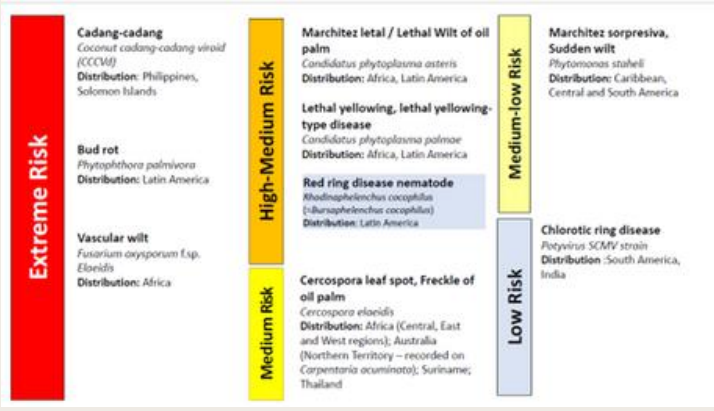
Updating the National Biosecurity Plan

Dr. Maizatul shared that the Oil Palm Industry Biosecurity Plan is currently being updated to incorporate new information, legislation, and emerging threats. The revision includes updated pest and disease fact sheets, revised risk assessments, and clear guidelines for industry implementation.

The update is being carried out through a series of four national workshops led by MPOB and the DOA. The first workshop, held in November 2024, focused on revising the plan's framework, while subsequent workshops in 2026 will refine risk identification, mitigation, and final stakeholder review.







by Dorothy Mitchell

SELF-ASSESSMENT OF MALAYSIA'S NATIONAL ACTION PLAN ON FORCED LABOR 2021-2025 ON 30 OCT

1. What is Forced Labor

Force Labor is defined by the International Labor Organization (ILO) as any work or service performed involuntarily under the threat of penalty. It includes practices such as withholding wages, debt bondage, passport retention, restriction of movement, coercion, and deceptive recruitment. These situations often affect migrant workers, who form a significant portion of Malaysia's workforce in labor-intensive sectors such as plantations, manufacturing, and construction.

2. Malaysia' National Action Plan on Forced Labor (NAP-FL) 2021-2025

Background

In response to growing concerns over worker exploitation, Malaysia launched its first National Action Plan on Forced Labor (NAP-FL) in 2021 under the Ministry of Human Resources (MOHR). The plan aligns with the nation's commitment to the Sustainable Development Goals (SDG 8.7) – to eradicate forced labor by 2030.

Objective

The NAP-FL provides a coordinated framework for government, industry, and civil society to eliminate forced labor through four strategic goals:

- Increasing awareness and knowledge about forced labor.
- Strengthening legal compliance and enforcement.
- Improving migration management and recruitment practices.
- Enhancing protection and access to remedies for victims.

3. The Self-Assessment

Background

As the plan approaches its conclusion in 2025, the government, led by the MOHR, conducted a self-assessment to evaluate its progress, identify implementation gaps, and guide the design of the next action plan for 2026-2030.

Goals and Oversight

The assessment aims to review achievements, document best practices, and recommend policy improvements. The process is part of the ILO's ADVANCE Project, supported by Employment and Social Development Canada, which assists Malaysia in addressing forced and child labor issues through research, capacity building, and stakeholder engagement.

4. Methodology Used for Self-Assessment

The assessment combined desk research, key informant interviews (KIIs), and a validation workshop.

- Data sources included government reports, ILO publications, NGO studies, and sectoral input from employers and workers' organizations.
- Stakeholder engagement involving over 40 respondents from 29 organizations – including government agencies, employer and worker groups, and civil society – participated.
- Workshops were held in Kuala Lumpur to validate findings and strengthen national capacity in monitoring and evaluation.

5. Status and Progress of NAP-FL Implementation

Overview

The NAP-FL outlines 15 outcomes and 105 activities under its four strategic goals. Implementation efforts have focused on awareness, legal reforms, fair recruitment, and victim support.

Progress

- Awareness: National campaigns and community programs have reached thousands of workers and employers, while unions and NGOs continue ground-level engagement on workers' rights.
- Legal Reforms: Forced labor has been criminalized under the Employment Ac t and Labor Ordinance in Sabah and Sarawak. The Trade Unions Act was amended to expand freedom of association, and Malaysia ratified key ILO conventions, including the 2014 Protocol on Forced Labor.
- Recruitment Practices: Bilateral agreements (MOUs) with labor-sending countries now include ethical recruitment clauses, while the use of registered agencies and "zero recruitment fee" principles are gaining traction.

- Victim Protection: The Ministry of Women, Family and Community Development expanded shelter services, while MOHR's Working for Workers app introduced a digital channel for complaints, through accessibility and trust remain challenges.

6. Impact of NAP-FL

The NAP-FL has strengthened Malaysia's legal and institutional frameworks, increased awareness of labor rights, and enhanced inter-agency collaboration. Many employers have adopted stricter compliance systems and internal audits to prevent forced labor. However, the greatest impact has been establishing a shared understanding of the problem and promoting dialogue between government, industry, and workers.

7. Challenges and Gaps in Implementation

Despite progress, several challenges remain:

·Limited enforcement capacity due to resource and manpower constraints.
·Fragmented data systems, with no unified national database on forced labor cases.
·Inconsistent victim protection, particularly for undocumented worked workers.
·Recruitment abuses, such as excessive fees and debt bondage, persist in some sectors.
·Low awareness in rural and remote areas, including among enforcement personnel.

8. Recommendations

To strengthen the next phase of the NAP-FL (2026-2030), the report recommends:

- Establishing a central coordination unit within MOHR to oversee implementation.
- Enhancing joint inspections across high-risk industries.
- Creating a centralized national database on forced labor cases.
- Expanding victim support mechanisms, including dedicated shelters and access to legal remedies.
- Strengthening Zero Recruitment Fee enforcement and regulating private recruitment agencies.
- Developing a Child Labor Sub-Plan under the NAP-FL to address overlapping issues.

Conclusion

Malaysia's commitment to eliminating forced labor has yielded notable progress, particularly in legal reforms and industry awareness. However, continued effort, stronger coordination, and greater inclusion of industry and civil society partners will be essential to ensure that reforms are translated into real change on the ground.

BRIEFING ON THE SARAWAK IMPACT REPORT ON 3 NOV

1. Background

The Sarawak Impact Report was developed under a special fund allocated by the Government of Malaysia for the purpose of promoting the palm oil industry in Sarawak. The fund is administered by the Malaysian Palm Oil Council (MPOC), which serves as its guardian and implementing agency.

Two major initiatives were approved under this fund – the first being a "Human Story of the Industry" video production by TV Sarawak, and the second being the Sarawak Impact Study, conducted by PricewaterhouseCoopers (PwC) in collaboration with MPOC and SOPPOA.

The Impact Study aims to provide a comprehensive assessment of the economic, social and environmental contributions of the Sarawak palm oil sector. Several meetings were held between SOPPOA, MPOC, and PwC to refine the methodology and data used in the report to ensure accuracy and relevance.

During the recent meeting, PwC presented the progress of the Sarawak Impact Report to MPOC management and SOPPOA Council members, outlining key findings, challenges, and next steps.

2. Progress of the Study

The meeting discussion focused on the findings and direction of the Sarawak Impact Report, which examines the sector's impact beyond statistics – highlighting trends, progress, and industry transformation over time.

The report seeks to demonstrate how Sarawak's palm oil sector contributes to economic growth, community development, and environmental management, while also addressing public perceptions regarding deforestation and peatland use.

Key Highlights:

I. Economic and Social Contributions:

The study identifies the palm oil industry as a major driver of Sarawak's agricultural GDP, with strong linkages to employment, income generation for smallholders, and contributions to state revenue. It also recognizes industry-wide efforts to improve smallholder livelihoods, training, and community engagement.

II. Environmental and Sustainability Dimensions:

The report highlights significant reductions in forest conversion and peatland development in recent years, reflecting stronger compliance with sustainability standards. Although data on emissions and yields remain limited, findings indicate a notable improvement in peat management and land-use practices since 2020.

III. Challenges and Data Gaps:

Limited access to reliable data – particularly on emissions, yield, and land-use mapping – continues to be a challenge. PwC noted that while Sarawak's production levels are high, incomplete national datasets sometimes create misconceptions that disadvantage the state's performance relative to Peninsular Malaysia.

IV. Narrative Refinement:

Participants agreed on the need for a stronger, evidence-based narrative that accurately reflects Sarawak's sustainability progress. The discussion emphasized that emissions and land-use data should be contextualized, supported by comparative analysis across regions and industries.

V. Sustainability Practices:

SOPPOA members highlighted existing industry initiatives such as biomass recycling, waste-to-energy conversion, and mulching in mills and plantations – practices that are often underreported but make tangible contributions to environmental stewardship.

Recommendations for Sector Development:

The report encourages Sarawak's palm oil industry to evolve from a commodity-based model into a high-value, innovation-driven ecosystem. This includes:

- Strengthening research and development (R&D) and technology adoption.
- Expanding downstream processing to capture greater value.
- Enhancing ESG (Environmental, Social & Governance) governance and reporting.
- Improving logistic and addressing labor shortages, which remain major barriers to expansion.

3. Next Steps

The meeting concluded with a clear path forward for finalizing and enhancing the Sarawak Impact Report.

Perpetua George informed members that the report will be updated to incorporate the latest available data and inputs from recent MPOC and SOPPOA discussions. Additional feedback from MPOC's Board will also be integrated before final submission.

Firdaus Tarmizi of MPOC highlighted the importance of ensuring the report not only presents factual analysis but also serves as a branding too to elevate the visibility and reputation of Sarawak's palm oil industry at both national and international levels.

Dr. Felix Moh requested a follow-up meeting to review the next iteration of the report once the updates are complete. Members agreed that final version should showcase Sarawak's unique strengths, sustainability journey, and socio-economic impact, setting a clear foundation for future promotion and policy dialogue.

4. Conclusion

In summary, the Sarawak Impact Report is shaping up to be an important reference document that will strengthen the narrative of Sarawak's responsible and forward-looking palm oil sector, providing evidence-based insights into its economic, social, and environmental contributions while identifying pathways for continued improvement.

MSPO HIGH CONSERVATION VALUE (HCV) INTERNAL ASSESSOR TRAINING ON 11-13 NOV

Background

During a meeting with the Malaysian Sustainable Palm Oil (MSPO) management, SOPPOA was informed that MSPO has allocated funding to support capacity building and training programs with the palm oil industry. Recognizing this opportunity, SOPPOA became the first industry association to apply for and propose several training programs for its members.

These proposed programs aim to upgrade the competencies of existing personnel responsible for sustainability in member companies, enabling them to become qualified and competent professionals in line with MSPO requirements.

Among the proposed programs, the MSPO HCV Internal Assessor Training received approval from MSPO, was successfully conducted the MSPO HCV Internal Assessor Training from 11-13 November 2025 at Kingwood Hotel, Sibu.

This program marks a significant milestone at the first nationwide MSPO-endorsed training focused on HCV assessment and management, specifically organized for SOPPOA member companies. The training was attended by 50 participants representing various plantation and mill companies, with the aim of building internal capacity for credible HCV identification, assessment, and reporting in compliance with MSPO 2.0 requirements.

Opening Remarks

In his address, Dr. Felix highlighted that the palm oil industry continues to face critical challenges, including labor shortages, negative public perception, and rising sustainability expectations. These issues, he noted, underline the importance of continuous capacity building to ensure the industry remains resilient and competitive.

He further explained that MSPO 1.0 laid the foundation for Malaysia's sustainability framework by promoting traceability, environmental protection, and social responsibility, while MSPO 2.0 builds upon that foundation with the inclusion of new and important elements such as HCV assessment, climate change considerations, and enhanced compliance mechanisms.

HCV IS DEFINED AS BIOLOGICAL, ECOLOGICAL, SOCIAL OR CULTURAL VALUES WHICH ARE CONSIDERED OUTSTANDINGLY SIGNIFICANT OR CRITICALLY IMPORTANT AT THE NATIONAL, REGIONAL OR GLOBAL LEVEL.

UNDER THE MSPO STANDARD (MS 2530:2022), THE HVC CONCEPT IS INCORPORATED UNDER PRINCIPLE 5 (ENVIRONMENT, NATURAL RESOURCES, BIODIVERSITY & ECOSYSTEM SERVICES) AND SPECIFICALLY ADDRESSED IN CRITERION 6: ENVIRONMENTAL CONSERVATION AND PROTECTION.

“Compliance with MSPO 2.0 is no longer just a certification requirement – it has become a fundamental business necessity to maintain market confidence and operational excellence,” he said.

Dr. Felix also reaffirmed SOPPOA’s strong commitment to supporting members in achieving MSPO compliance. SOPPOA has been actively engaging with MSPO to tap into available funding support for industry capacity building and has submitted several training proposals, including programs on internal auditing, traceability best practices, and HCV management.

“We are grateful that MSPO has approved this HCV Internal Assessor Training, which will help equip plantation sustainability personnel with the necessary knowledge and practical skills to carry out credible HCV assessments, he added.

The three-day program combined theoretical learning with practical field exercises, enabling participants to gain a deeper understanding of HCV concepts, assessment methodologies, and reporting requirements. The initiative marks an important step forward in strengthening industry readiness for MSPO 2.0 implementation and demonstrates the strong partnership between MSPO and SOPPOA in advancing sustainability standards across Sarawak’s palm oil sector.

Objectives of MSPO HCV Internal Assessor Training

1. Build internal capacity within plantations and mills to conduct High Conservation Value (HCV) assessments in accordance with the MSPO requirements.

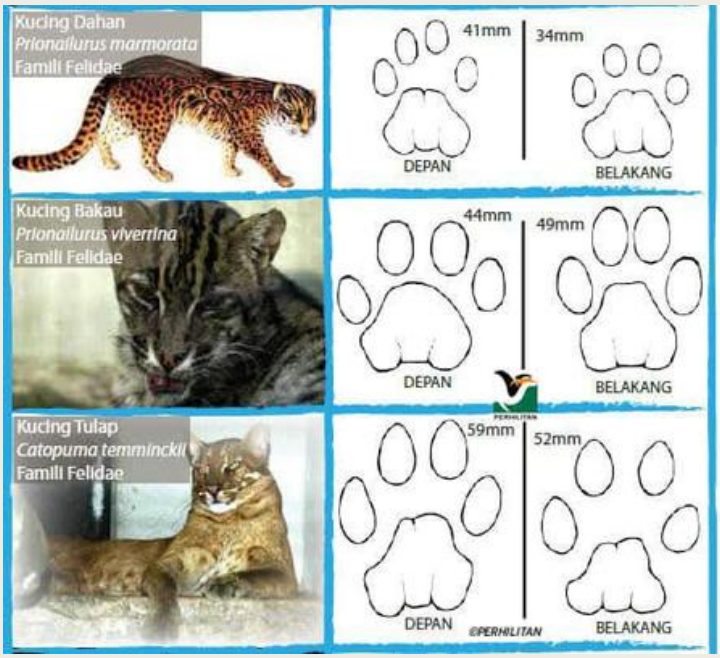
2. Equip participants with knowledge and practical skills to identify, assess, manage, and monitor HCV areas within existing oil palm operations following the MSPO HCV Assessment Guidelines (Existing Plantings).

3. Ensuring compliance with the MS 2530:2022 MSPO standards, particularly the sustainability and environmental conservation elements relating to biodiversity, ecosystem services, and social values.

4. Promote consistent implementation of HCV management and monitoring plans across the organization to support continual improvement and audit readiness for MSPO certification.

5. Reduce dependency on external consultants for routine HCV assessments by developing qualified internal assessors capable of leading internal evaluations and preparing documentations required for MSPO audits.

6. Strengthen sustainability governance by fostering awareness and accountability among plantation managers, sustainability officers, and compliance personnel in protecting ecological and community values within operational areas.



INTERNATIONAL PALM OIL CONGRESS AND EXHIBITION (2025) ON 18-20 NOV

PIPOC 2025

The International Palm Oil Congress and Exhibition (PIPOC) is a biennial flagship congress and exhibition of the Malaysia palm oil industry, organized by MPOB. It is widely regarded as one of the world's largest and most influential gatherings for stakeholders across the entire palm oil value chain.

The 2025 edition, themed "Transforming Today, Empowering Tomorrow Through Innovation," continues to serve as a central point for discussing the latest scientific breakthroughs, technological innovations, sustainability standards, and market strategies shaping the global palm oil landscape.

Scheduled for 19-20 November at the Kuala Lumpur Convention Center (KLCC), the event was officiated by the Deputy Prime Minister of Malaysia, YAB Datuk Amar Haji Fadillah Yusof.

The event draw more than 2,000 delegates, including around 100 expert speakers, 200 poster presenters, and hundreds of exhibitors from across the globe – underlining its stature as a major international platform for the palm oil industry.

Highlights from PIPOC

In his keynote address, Deputy Minister emphasized Malaysia's strategic role in ensuring global food security and in producing palm oil sustainably and responsibly. He highlighted Malaysia position as the world's second-largest palm oil producer, contributing 24% of global output in 2024 and commanding 35% of global palm oil exports. These achievements, he noted, reflect Malaysia's strength in an industry that remains crucial to the national economy and rural development.

The opening ceremony was further graced by the presence of the Minister of Plantation and Commodities, Datuk Seri Johari Ghani, who expressed his appreciation for MPOB's commitment ro driving technological innovation. During the event, he launched six new innovation products developed by MPOB – five of which are non-food products designed to replaced petroleum-based chemicals, and one innovative food-grade product, Nano Tocotrienol, which provides higher vitamin E absorption.

MPOB Chairman, Datuk Mohamad Helmy Othman Basha, also shared significant milestones, noting that over the past 25 years MPOB has successfully commercialized more than 200 technologies and hold over 394 patents. He emphasized that MPOB's research now spans the entire industry value chain – from agronomy and biotechnology to downstream processing and the development of palm-based bio-products – firmly positioning MPOB as one of the world's leading oil and fats research institutions.

Datuk Dr. Ahmad Parveez Ghulam Kadir,k Director-General of MPOB, emphasized the congress's role in bringing together global expertise to share groundbreaking research, technological innovations, and sustainable practices – spanning from upstream plantation science to downstream value-added products and bio-refinery solutions.

Another highlight of PIPOC 2025 was the Henri Fauconnier Lecture, delivered by Tan Sri Datuk Seri Lee Oi Hian of Kuala Lumpur Kepong Berhad (KLK). His lecture focused on advancements in digitalization, sustainability-driven innovation, and emerging technologies that are strengthening the competitiveness of Malaysia's palm oil industry and reinforcing its position in global markets. This session served as one of the key platforms at PIPOC for sharing insights and strategies on the future direction of the palm oil sector.

PALM OIL INDUSTRY NETWORKING DINNER 2025 ON 19 NOV

MALAYSIA-CHINA "TWO COUNTRIES, TWIN PARKS" OIL PALM INDUSTRY PROMOTION CONFERENCE ON 20 NOV

Malaysia-China Two Countries, Twin Parks

The Malaysia-China Two Countries, Twin Parks initiative represents one of the most significant bilateral industrial collaborations between Malaysia and the People's Republic of China. The initiative establishes two complementary industrial parks – the Malaysia China Kuantan Industrial Park (MCKIP) in Pahang and the China-Malaysia Qinzhou Industrial Park (CMQIP) in Guangxi – forming a cross-border ecosystem designed to strengthen trade, investment, and industrial development between both nations.

Th concept was developed in the early 2010s as part of a broader effort to deepen Malaysia-China economic cooperation. Officially launched through government-to-government collaboration, the twin-park model was inspired by earlier successful partnerships such as the China-Singapore Suzhou Industrial Park.

Malaysian-China Palm Oil Industry Promotion Conference

The Ministry of Plantation and Commodities (KPK), through the Malaysian Palm Oil Board (MPOB), in collaboration with the Administrative Committee of the China-Malaysia Qinzhou Industrial Park, organized the Malaysian-China Palm Oil Industrial Promotion Conference under the Two Countries, Twin Parks' initiative on 20 November 2025, at InterContinental Kuala Lumpur to strengthen bilateral cooperation in promoting palm-related industrial activities.

Speaking on behalf of the Minister of Plantation and Commodities, KPK Secretary-General Datuk Yusran Shah Mohd Yusof, who officiated the conference, emphasized that the Two Countries, Twin Parks initiative marks a new phase pf Malaysia-China collaboration under the Belt and Road economic framework. The initiative aims to boost sustainable palm oil trade, encourage investment in downstream industries, and drive innovation-led growth through research and commercialization.

The cooperation links the China-Malaysia Qinzhou Industrial Park in Guangxi and the Malaysia-China Kuantan Industrial Park in Pahang, supported by the Green Channel for Oil Palm connecting Kuantan Port, Port Klang and Qinzhou Port. This dedicated channel enables more efficient logistics, strengthen traceability and sustainable certification, and promotes bilateral investment in downstream processing.

"Palm-based oleochemical products are foundational components for the personal car, home cleaning, textile and lubricant industries, contributing high value to the consumer markets in China and ASEAN," he said.

Attended by more than 150 participants, including government officials, industry leaders, and representatives from Malaysian and Chinese companies involved in palm oil, oleochemicals and renewable energy, the conference created opportunities for deeper, long-term collaboration. It aims to foster the development of green oleochemical industry clusters and stimulate economic growth, particularly among micro, small and medium enterprises (MSMEs).