RSPO Roundtable on Sustainable Palm Oil
RT10
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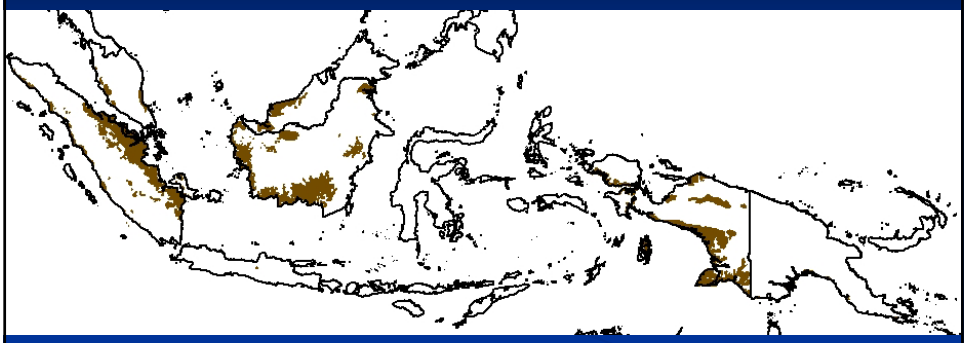
RSPO BMP Manuals on Oil Palm Cultivation on peat

Faizal Parish, Rosediana Soeharto
Peter Lim, Si Siew Lim,
Balu Perumal

Tropical Peatlands cover 40million ha with 25 million ha in Se Asia



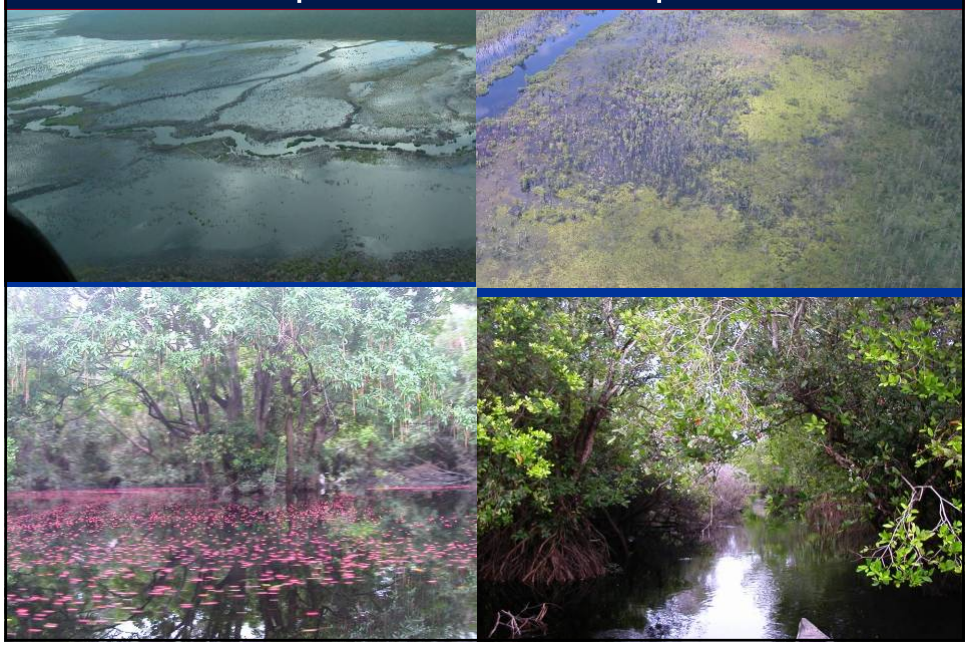
Source: Sarvision

RPEA : Global Environment Centre

ASEAN Peatland Forests Project (APFP)

Peatlands are naturally covered with tropical forest

Peatlands provide water and prevent floods



Peatlands have high Biodiversity

Peatlands Feed communities

Peatlands in SE Asia store 70 billion tonnes of carbon twice as much as all forest biomass

Increasing oil palm cultivated on peat (2.4 Million ha – 26% Malaysia/73% Indonesia) = 20% of Oil palm area

Sustainability of oil Palm cultivation on peat

- Without adequate investment and good management – oil palm on peatland can have low yields and can lead to subsidence, flooding, fires and GHG emissions
- RSPO P&C propose minimization of plantations on fragile soil (including peatlands) as well as adoption of BMP and measures to reduce GHG emissions.
- RSPO General Assembly November 2009 – approved establishment of a Working Group to provide guidance on **existing** oil palm cultivation on peat

RSPO PLWG – established April 2010 - Objectives

- **Objective 1:** Identify the environmental and social impacts related to oil palm plantations on peatlands.
- **Objective 2:** Identify best practices for managing existing oil palm plantations on peat soils in order to minimize GHG emissions and enhance sustainability.
- **Objective 3:** Identify practical methodologies for assessing and monitoring carbon stocks and key GHG emissions from oil palm plantations established on peat soils
- **Objective 4:** Evaluate options and constraints for the rehabilitation of degraded peatlands.

Members

Name	Organization	Country
Rosediana Soeharto	IPOC	Indonesia
Peter Lim Kim Huan	PT.TH Indo Plantations,	Indonesia
Mukesh Sharma	Asian Agri	Indonesia
Fahmuddin Agas	GAPKI/RSPO GHGWG 2 WS3	Indonesia
Chong Wei Kwang	HSBC	Malaysia
Franki Anthony/Dr Ruslan /Siti	Sime Darby Plantations.	Malaysia/Indonesia
Jimmy Tan / Adrian Suharto	Neste Oil Singapore Pte Ltd	Singapore
Alue Dohong	University of Palangka Raya	Indonesia
Jean-Pierre Caliman	PT SMART (part)	Indonesia
Marcel Silvius/Arina Schrier	Wetlands International	Netherlands
Gurmit Singh	UP/Pantropical	Malaysia
Faizal Parish/Balu Perumal/David Lee	Global Environment Centre	Malaysia
Cherie Tan/ Ivy Wong/Thomas Barano	WWF	Singapore/Malaysia/Indonesia
Sue Page, Al Hooijer	University of Leicester /Deltares (review)	UK/NL
Olivier Tichit	SIPEF	Indonesia
Dr Gusti Anshari	University of Tanjungpura,	Indonesia

Meetings

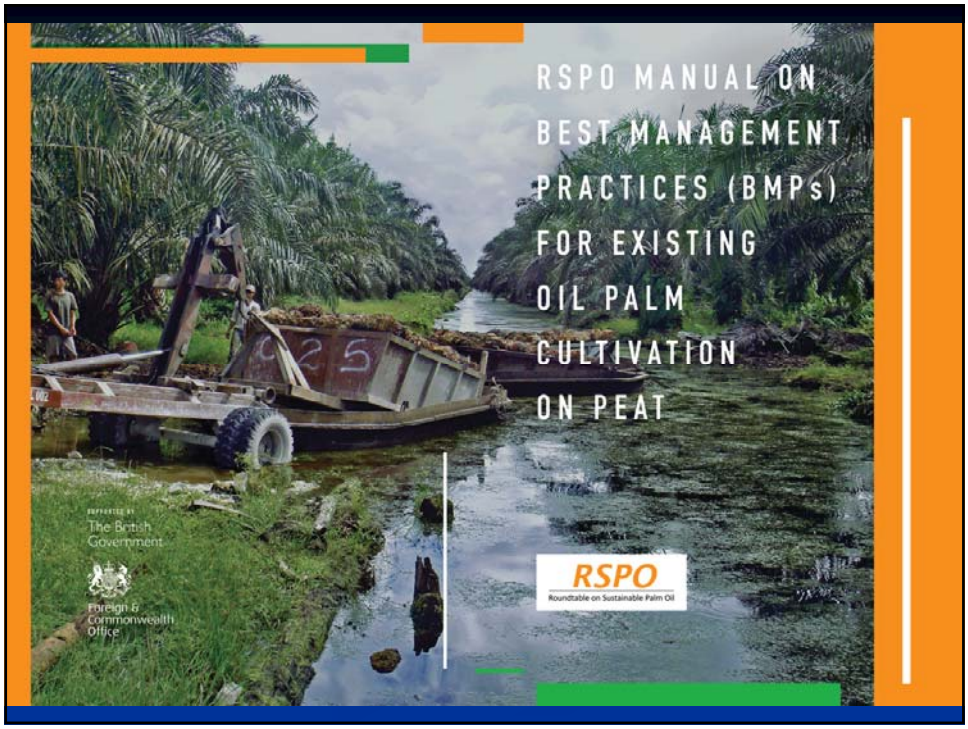
- 22-23 April 2010 1st meeting – Jakarta
- 22-24 September 2010 – 2nd meeting - Kuala Lumpur
- 18-20 January 2011 – 3rd Meeting – Sibu
- May 19-21 Pekanbaru, Riau 4th Meeting
- August 22-24 Kuala Lumpur 5th Meeting
- September 27-28, Kuala Lumpur 6th Meeting
- Site visits: Malaysia (Selangor and Sarawak) and Indonesia (Riau)
- Stakeholder workshops, Sarawak, Riau and Kuala Lumpur January – August 2011 (200 participants)

Key outputs

- 1. BMP Manual for Oil palm cultivation on peat. Published August 2012
- 2. BMP Manual on maintenance and rehabilitation of natural vegetation associated with Oil Palm cultivation on peat. Published October 2012
- 3 .Review of Environmental and Social Impacts – in Finalised March 2012.
- 4. Options for monitoring of GHG emissions from peatlands Finalised March 2012

Sustainability of oil Palm cultivation on peat

- Challenges for oil palm production on peat
  - Subsidence/palm leaning
  - Water management
  - Fertility, Agronomy
  - Peat and diseases
  - Fire prevention
  - Minimising Environmental and social Impacts
  - GHG emissions
- Maintaining vegetation in and around OPP on Peat (eg HCV and buffers)
  - Maintenance – fire prevention, water management
  - Rehabilitation of degraded areas



RSPO Manual on BMP for existing Oil Palm Cultivation on peat

- Introduction
- Nature and Characteristics of Tropical peat
- BMP oil palm cultivation
- BMPs Operational Issues
- BMPs Environmental and Social issues
- BMPs R&D Monitoring and Documentation
- Smallholders on peat


Fibrists
'98 12 19
Photo: Lulie Melling


FFB yield < 10 mt/ha/year on woody fibrists

Accumulated subsidence

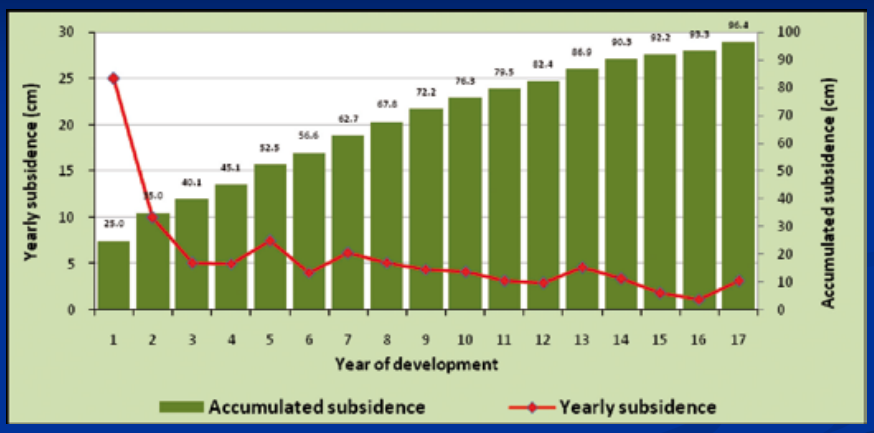
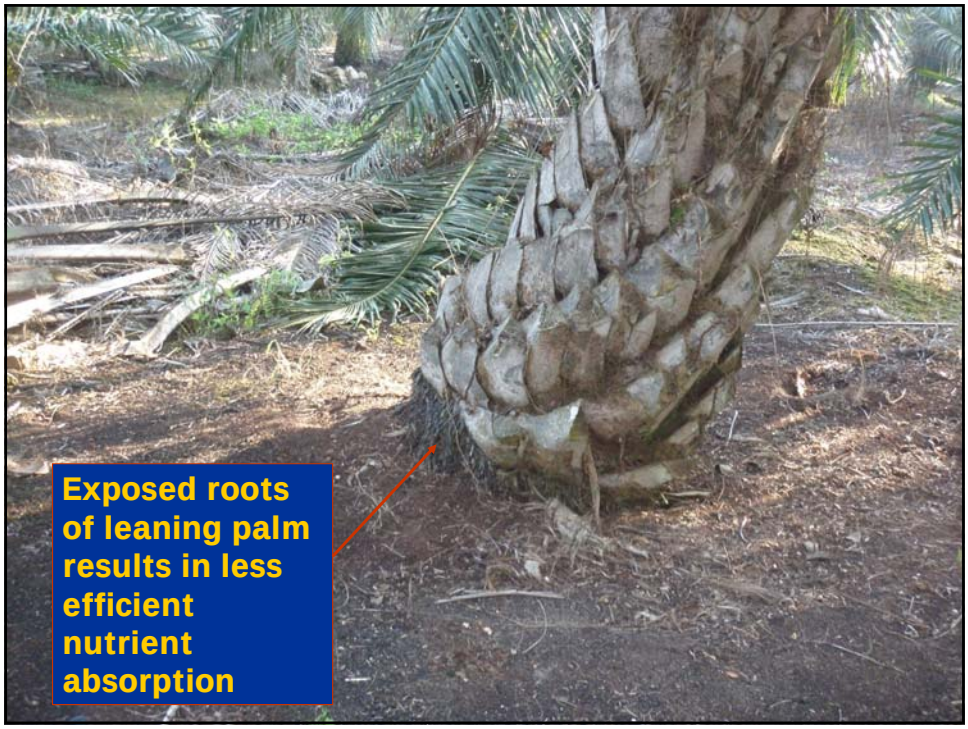
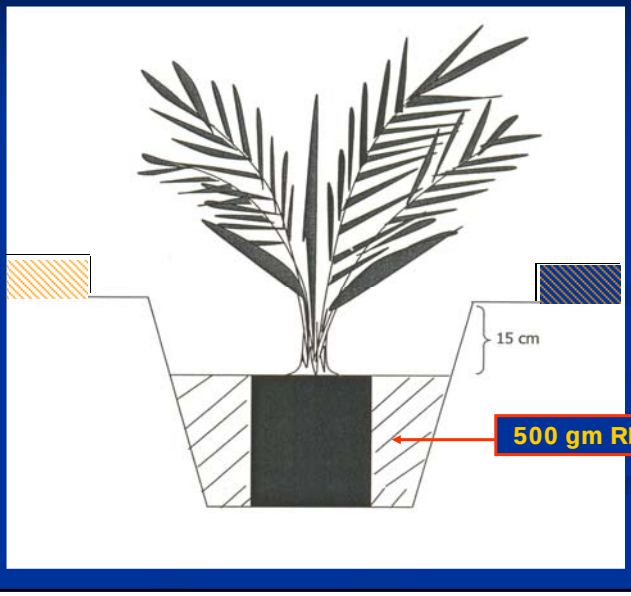


Figure 6. Yearly average and accumulated peat subsidence in the study area.


Exposed roots of leaning palm results in less efficient nutrient absorption

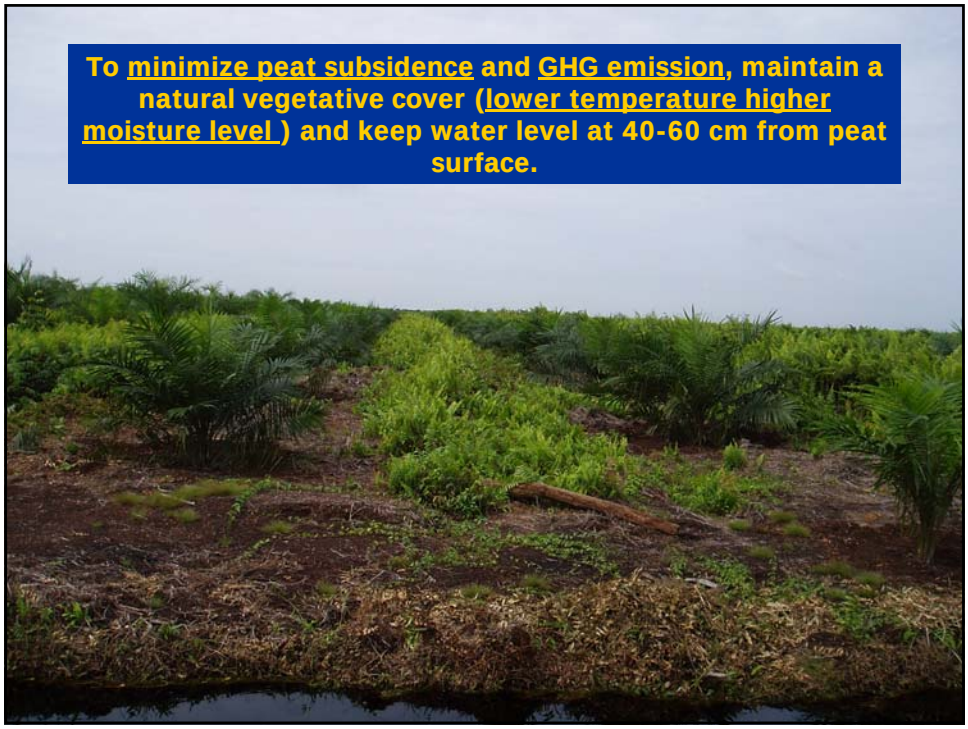

Soil mounding of exposed roots

Hole-in-hole planting

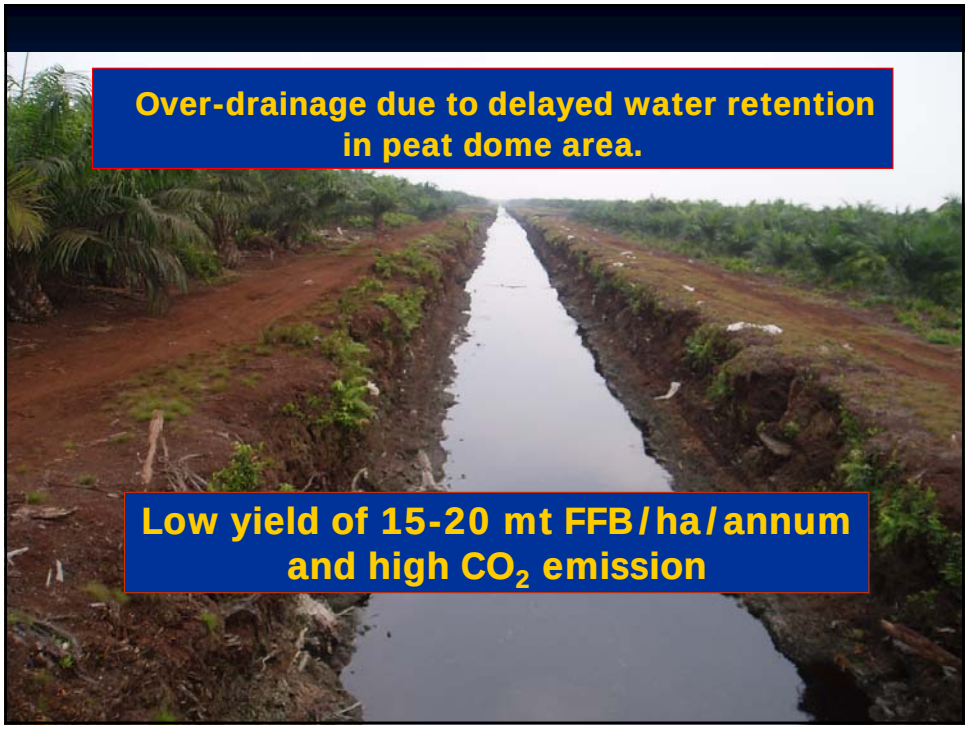



15 cm from solid peat surface
Hole-in-hole planting (Deep planting)


With soil compaction, deep planting, good water management and maintaining adequate soft vegetation / moss palm leaning is minimal.


To minimize peat subsidence and GHG emission, maintain a natural vegetative cover (lower temperature higher moisture level) and keep water level at 40-60 cm from peat surface.

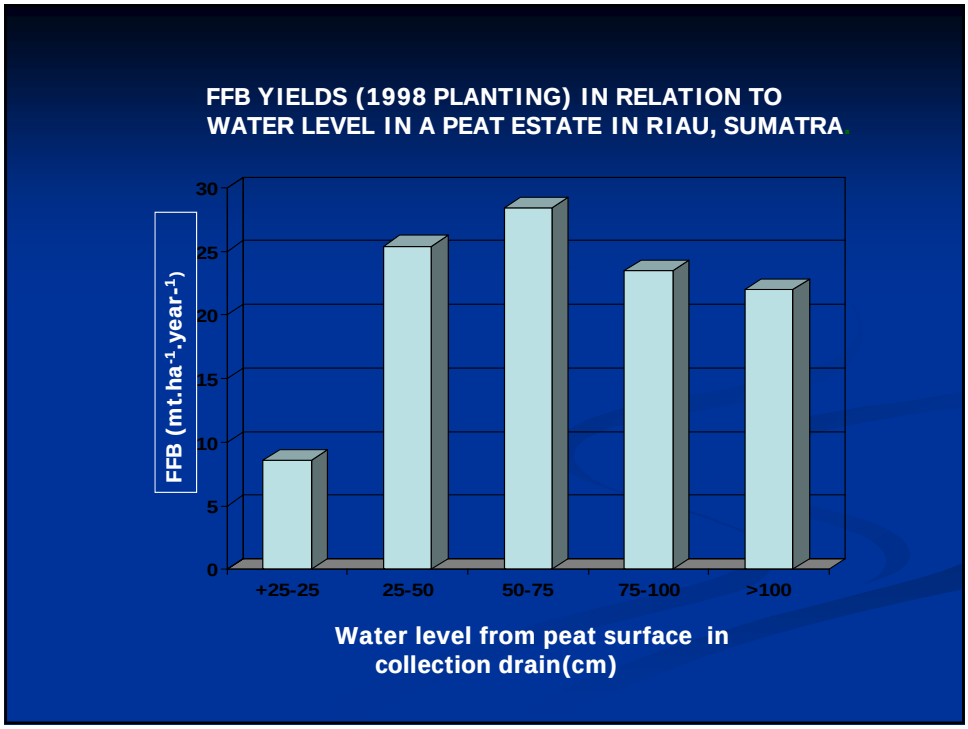

Good Water Management
is the key to high peat productivity
50-70 cm

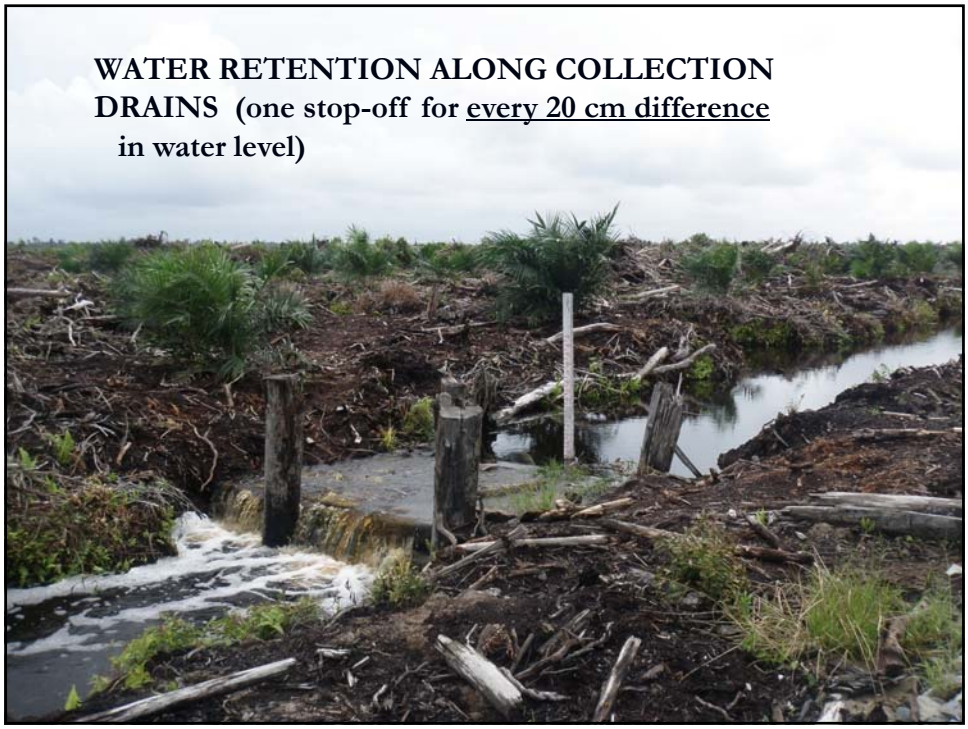


WATER MANAGEMENT PRACTICES

- Site specific, influenced by topography and **local rainfall condition.**
- **Good water management is the prerequisite for the implementation of other BMPs.**
- Maintain water at 40-60 cm from peat surface or 50-70 cm in the collection drain.

Avoid flooding and over-drainage by a controlled drainage system.


FFB YIELDS (1998 PLANTING) IN RELATION TO
WATER LEVEL IN A PEAT ESTATE IN RIAU, SUMATRA
FFB (mt.ha-1.year-1)
30
25
20
15
10
5
0
+25-25
25-50
50-75
75-100
>100
Water level from peat surface in collection drain(cm)


WATER RETENTION ALONG COLLECTION DRAINS (one stop-off for every 20 cm difference in water level)


Water control system at United Plantations, Malaysia


Recommend one stop-off for every 20 cm difference in water level
Water level
Stop-off

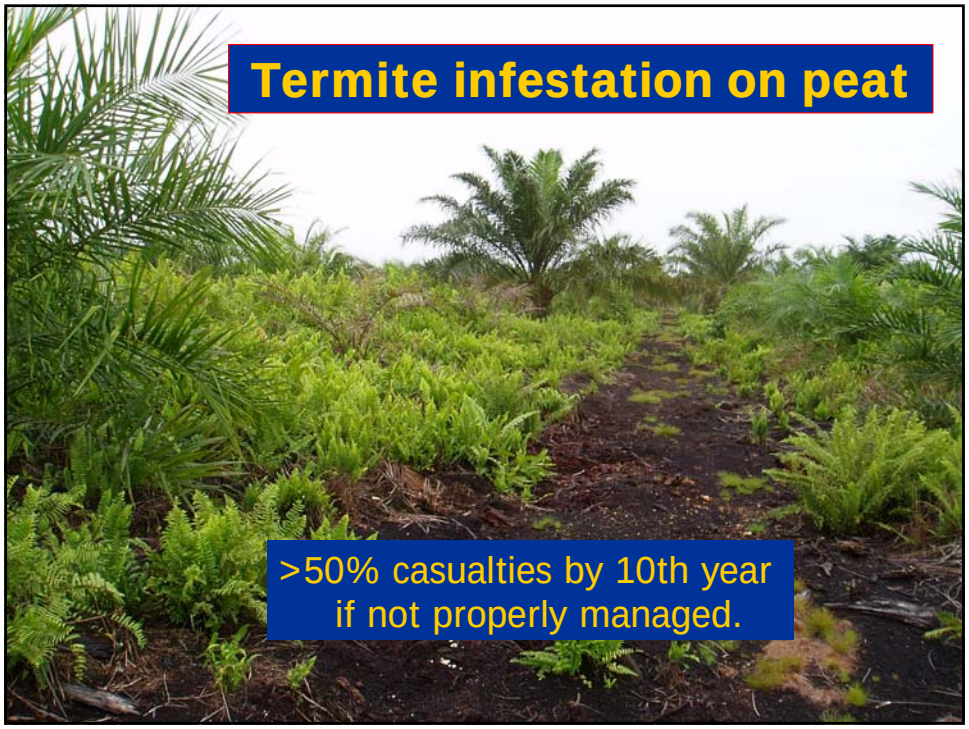

WATER LEVEL GAUGE
50
25
0
– 25
ZERO (planted surface)
When water level raises to ≤ 20 cm from peat surface, prepare for drainage
When water level drops to ≥ 60 cm from peat surface, prepare for water retention


A flooded field will hinder all estate operations
N_2O and CH_4 emission

FERTILIZER MANAGEMENT ON PEAT

Constitute about 60 % upkeep costs

- 0-10 months - Controlled release fertilizer in planting hole + Cu & Zn fertilizers.
- 12-28 months - Compound fertilizer with B and Cu & Zn.
- > 28 months (mature) - MOP, Urea, Borate, RP, Cu & Zn. (dosage based on foliar analysis, trial results and visual observations).



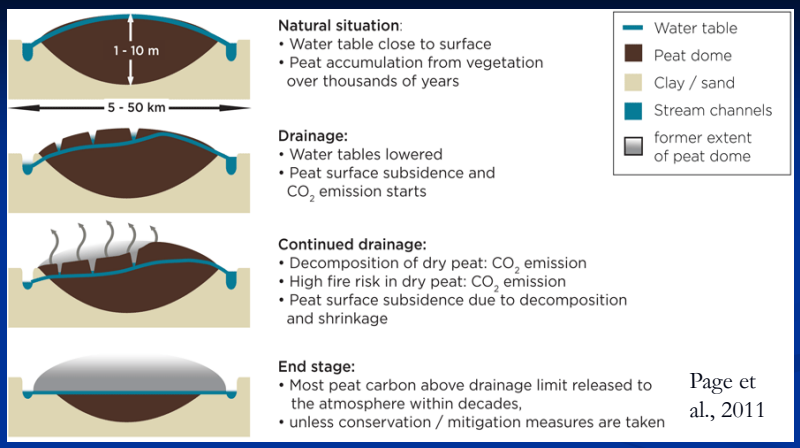
Ganoderma Stem Rot

Presently no effective cure

Fire in plantation development and operation is major emission source and also risk to sustsainability

Peatland Fire, North Selangor, Malaysia

Long term drainage impacts – replanting



Page et al., 2011

- With current drainage many coastal sites may become un-drainable within 25-75 years. Other sites may be underlain with acid-sulphate soils
- Pre-replanting assessment to determine optimal plan
- Possible switch to altrernative crops eg wet agroforestry

4. Manual on Management and Rehabilitation of Natural vegetation associated with Oil Palm Cultivation on Peat

- Introduction
- Peat swamp ecosystems
- Management of Existing Peat Swamp Forest Areas
- Rehabilitation of Peat Swamp Forests in Degraded Sites
- Implementation of Peat Swamp Forest Rehabilitation
- Research and development
- Partnership Mechanisms

Why to maintain natural vegetation in and around plantations?

- High Conservation value areas
- Flood control
- Groundwater maintenance/Supply
- Water quality protection
- Riverine Buffer zone
- Wildlife Habitat/Corridor
- Fish habitat
- Fire prevention
- Regulations
- Emission reduction/offset

Challenges

- Preventing fire
- Maintaining natural water levels
- Encroachment by other parties
- Conflict with other developments
- Poor regeneration
- Connectivity

Fire prevention

- Maintain natural (high) water level
- Restrict entry
- Avoid encroachment
- Rehabilitate formerly burnt areas
- Regular monitoring
- Establish control capability (company/ community)

Root Cause: Linkage between Drainage and Fires

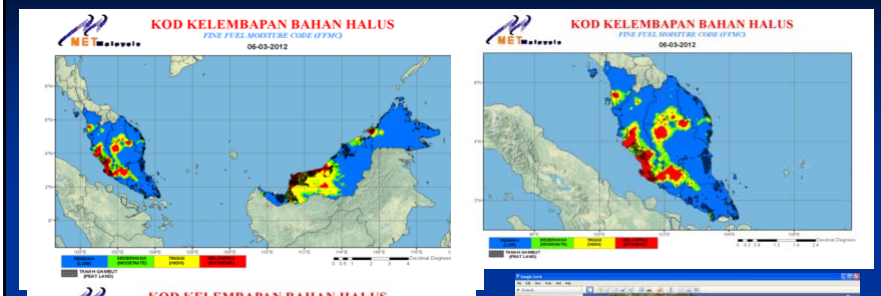
Peat fires burn deep and lead to los of peat layert and significant emissions (potential emission 3000tCO2/ha if 1m of peat is

Rapid Response Capabilities

- Specially trained Fire Management staff in each Estate
- Specialized, lightweight, high-pressure water-handling equipment
- **Ground-based Initial Attack**
- **Aerial support**
- Estate personnel, contractor equipment, & sustained logistic support…

4.9 Initial Attack / Action

http://www.met.gov.my/fdrs/



- Zoom to Peninsular & East Malaysia
- Google Map
- Peatland area

Community fire prevention and control

Water management and forest maintenance

- Essential to maintain a natural or near natural water regime.
- Avoid drainage or blocking of natural surface/subsurface flow
- Maintain connectivity to rivers and streams
- Adequate width for river corridors
- Conserve deep peat/domes to support maintenance of groundwater levels.
- Block abandoned drains and canals

Maintain high water table between plantations and adjacent peatlands

Replanting of degraded sites

- Nursery establishment
- Seed/wilding/cuttings
- Land preparation
- Planting
- Maintenance

Nursery Technique

Wilding

From seed

Community Engagement

Engage communities in rehabilitation and management of forest degraded areas

Link to community welfare

- Non-timber forest products
- Fisheries

Minimise encroachment and fire through joint action

Conclusions

Main conclusion

- 60% of tropical peat is in Se asia and is of global significance for Biodiversity and climatre regulation.
- Conversion of intact peat swamp forests to oil palm plantations area leads to carbon losses, GHG emissions, loss of biodiversity and disruption of hydrology.
- Oil palm plantations generate significant economic and sopcial benefits espacially when land use rights are respected and benefits are equitably shared

Main conclusions

- To minimise future environmental impacts:
- Avoid/minimise new plantation development on intact, forested peatlands

For existing plantations on peat:

- Use BMP to enhance yield per ha (ie Reduce GHG/tCPO)
- To minimise GHG/other impacts focus on water table (as high as practically possible), decreasing fire risk, maintaining vegetation cover, avoiding flooding,, minimise inorganic fertiliser use, proper compaction, maintance of HCVF and buffer zones

Recommendations

- All RSPO members should use the best practice guidance for all existing plantations on peat
- Changes/improvements in practice should be documented and impacts monitored and reported
- Good practice demonstration sites should be designated to benchmark standards
- Training materials should be developed and training programmes conducted
- Further guidance should be developed for smallholders
- Further development of oil palm plantations on intact peatlands should be avoided

Next steps

- Continuation of PLWG to support and monitor BMP implementation.
- Promotion of BMP – training and outreach materials
- Implementation of BMP in Pilot/Demo plantations – volunteers welcome
- Monitoring of emissions and emission reductions through BMPs
- Linkage to other processes – ASEAN, UNFCCC

Thank you