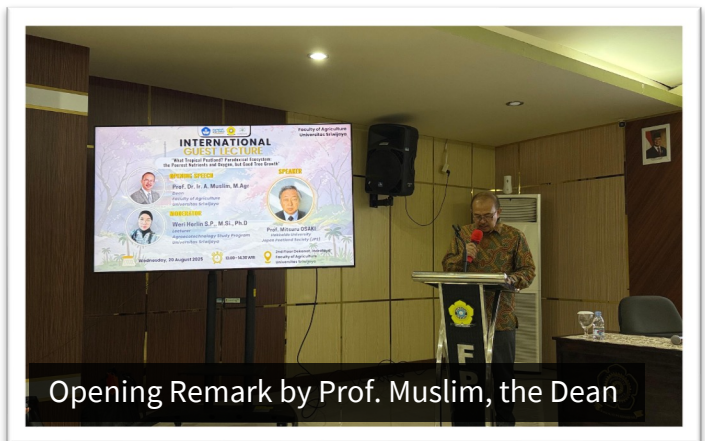


Paradox and Possibility: Rethinking Peatland Restoration

As part of the **LULUCF Project's outreach activities**, a special lecture was held on August 20, 2025, at **Universitas Sriwijaya** in Palembang. Nearly 100 students and faculty gathered with curiosity and energy to hear Dr. Mitsuru Osaki, Professor Emeritus of Hokkaido University and JICA Short-Term Expert, speak on **the paradoxical nature of tropical peatlands**.

The **Dean of Agriculture** opened the session by reminding participants that South Sumatra itself is a **peatland frontier**. The paradox under discussion was not distant—it was their own **landscape**, shaping both **livelihoods** and **ecological futures**.



Opening Remark by Prof. Muslim, the Dean

Fragile yet Fertile

Tropical peatlands seem **inhospitable: acidic soils, scarce nutrients, and limited oxygen**. Yet paradoxically, they sustain **dense forests, diverse wildlife**, and some of the planet's **richest carbon reserves**.

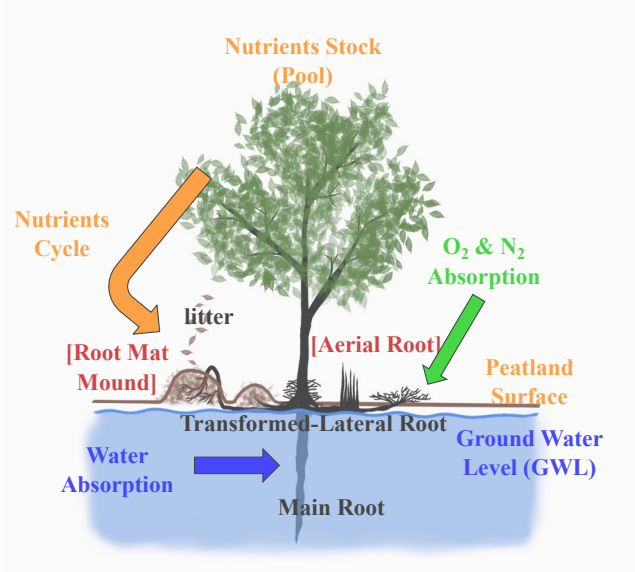


Figure 1: Nutrient Cycle in Peatland Ecosystems

This apparent contradiction is explained by **adaptation**. Peatland plants develop **aerial-like roots** to capture oxygen, **root mats** to recycle nutrients, and **microbial partnerships** that fix nitrogen. In conditions where conventional crops fail, life has evolved to thrive.

The TREE Model

The lecture introduced the **TREE Model**, connecting four ecological spheres:

- **Geo-sphere** – mineral foundations of soil
- **Rhizo-sphere** – roots and microbial activity
- **Hydro-sphere** – water storage and regulation
- **Aero-sphere** – atmosphere and greenhouse gas dynamics

Viewed through this model, peatlands are not **wastelands** but **living systems**, regulating **rainfall**, balancing **water tables**, and stabilizing **climate**. Their paradox—**fragility** and **resilience** coexisting—becomes the very principle of their survival.



Figure 2. Water Cycle in Peat Swamp Forests

Dialogue with the Students

The **Q&A session** revealed the concerns of a **new generation of scientists**:

- **On governance:** How does **Indonesia's approach** compare with countries that impose strict **water management**? The answer stressed that Indonesia must balance **conservation** with **livelihoods**, requiring solutions such as **ecotourism** and **AeroHydro Culture (AHC)**.
- **On sustainability:** How can ecosystems remain stable without constant **replanting**? The key lies in the **water cycle**, not in planting frequency.
- **On fire prevention:** What prevents **peatland fires**? Maintaining **high water tables** is essential, with **AHC** enabling plant growth even in wetter soils.
- **On soil fertility:** How can crops grow in **acidic, nutrient-poor soils**? By combining **microbial stimulants** with **AHC**, nutrient availability and **root resilience** are greatly improved.

These exchanges underscored **the paradox of peatlands**: they are **difficult to manage**, yet **rich with solutions** when understood properly.

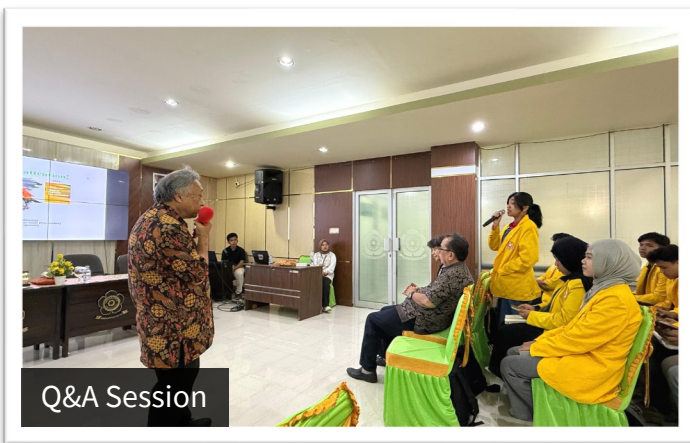


Turning Paradox into Practice

The Sriwijaya lecture was not only a **scientific presentation**—it was an **invitation** to rethink how we view **ecosystems**. The paradox of peatlands is not a **weakness** but a **source of innovation**.

For the **LULUCF Project**, this means applying lessons from **nature**—through **AHC**, **microbial innovations**, and **Nature-based Culture (NbC)**—to transform **fragility into resilience**, and **scarcity into sustainability**.

The soil speaks in paradox. The future depends on how we choose to listen.



Q&A Session



Group photo with participants