



Where Restoration Meets Routine: AHC Field Trials Begin at PT Andika

Plantations rarely change in a single day. **Trees grow slowly; soils shift quietly; water tables rise and fall according to their own rhythm**—though in some plantations, they are deliberately lowered to sustain productivity. And yet, in **early December**, something unmistakably new entered the landscape at **PT Andika Permata Sawit Lestari**, the project’s **key collaborator**.

Across **three distinct sites—mineral soils, shallow peat, and deep peat**—the **LULUCF Project team**, working jointly with **BRIN** and the company, began placing **carefully prepared AHC organic sacks** around selected oil palm trees. The act itself was **simple**; its **significance was not**.

With this step, **AeroHydro Culture (AHC)** moved from **research discussion** to **operational practice** within a **commercial plantation**. The transition marks the start of a **long-anticipated journey**: observing how a **biologically driven cultivation method** performs when asked to coexist with the **daily realities of plantation management**.

From Theory to Touch: Preparing the AHC Sacks

Before any sack reached the field, the team spent **dedicated time** preparing the **organic medium** that lies at the heart of **AHC**. The process involved **blending composted materials with selected biological inputs**, shaping each sack to serve as a **micro-environment** where **roots, microbes, moisture, and air** can meet.

This preparation phase was **more than logistical—it was conceptual**. It translated **AHC’s principles** into something **tangible**: a unit of **living material** designed to encourage **new root growth at the soil surface**, where **oxygen and microbial activity** can flourish.

Only after **dozens of sacks** were prepared did the team carry them to the field for **placement**. The technique was **gentle and deliberate**, reflecting the **ecological intention** behind AHC itself.



Preparation of AHC sacks



A Quiet Intervention with Large Implications

Each **AHC sack** contains an **organic blend** designed to prompt roots to **explore upward instead of downward**—a **reversal of conventional expectations**. Rather than relying on **drained soils**, AHC offers plants the conditions to engage with their environment in ways long observed in **peat-swamp forests**.

The principle is **straightforward**:

If roots can breathe, microbes can function.

If microbes function, soils can recover.

If soils recover, productivity can stabilize.

By placing the sacks at the **base of each tree**, the team has given the landscape a **subtle prompt**—an **ecological nudge** rather than a **mechanical intervention**.

Establishing the Starting Line

Before the sacks were positioned, teams from **JICA**, **BRIN**, and **PT Andika** carefully selected **representative trees** across the experimental plots and collected **targeted samples**. The intention was not to catalogue every detail, but to capture an **initial sense of each landscape's condition**.

This included taking selected **soil, compost, and leaf samples** for **laboratory analysis**. These samples will serve as the project's **baseline figures—pre-trial**

indicators that will later be compared with **post-trial results** to reveal how the **trees, soils, and microbial communities** respond to AHC over time.

Together, these observations and samples create the **reference point** from which all future change can be measured—allowing the team to evaluate not just **whether AHC works**, but **how the landscape evolves in response**.



Collection of samples, including soil and leaf materials.



A Monitoring Plan Shaped by Practicality

As the **AHC experiment** unfolds, monitoring will follow a rhythm aligned with plantation operations:

- **Weekly observations** on **fresh fronds, yield patterns, groundwater depth, and early signs of aerial root emergence.**
- **Periodic measurements** of **canopy color** and **general physiological condition.**
- **Seasonal checks** on **trunk development** and **overall vigor.**

Rather than chasing every variable, the monitoring plan focuses on what matters for **long-term adoption: Does AHC support plant resilience and productivity while maintaining peat-friendly hydrology?**

Three Landscapes, One Question

The experiment spans **three different environments** within the plantation. Each landscape poses its own challenge:

Mineral soils

Can AHC enhance **biological function** where **peatland hydrology** is not a factor?

Shallow peat

Can the method help stabilize soils with a history of **disturbance?**

Deep peat

Can cultivation proceed **without lowering the water table** or **compromising ecosystem function?**

The trees will answer these questions **gradually**—through **measurable changes** that **accumulate over time.**



Why This Launch Matters

The significance of this moment is not just **scientific—it is strategic.**

Indonesia’s **climate architecture** places **peatlands** at the center of its **national commitments**. Approaches that maintain **high groundwater levels** while supporting **livelihoods** are essential to achieving **long-term resilience**.

This field experiment represents one of the **first attempts** to embed such an approach within an **everyday production system**. If successful, it will offer **new options** for plantation operators seeking to align **climate responsibility** with **operational realities**.

This is **not a showcase**. It is a **working landscape** undergoing a **careful trial of a new logic**.

Looking Ahead

The **sacks have been prepared**.

The **sacks have been placed**.

Baseline assessments will be analyzed.

Monitoring has begun.

From here, the story of **AHC at PT Andika** will unfold **tree by tree, root by root**—slow enough to require **patience**, but clear enough to reveal whether **nature’s own strategies** can be brought into **routine plantation practice**.

In the months ahead, **the LULUCF Project** will continue to **observe, document, and learn** from this landscape—not as an **experiment isolated from reality**, but as a **practical step** toward a **new kind of cultivation**, where **restoration and routine** reinforce a **shared future**.



AHC treatment: four AHC sacks placed around the tree