



BIOCHAR FOR AVOCADO

Turn a soil investment into a decade of higher value fruit yield

WHAT IS BIOCHAR & ITS BENEFITS?

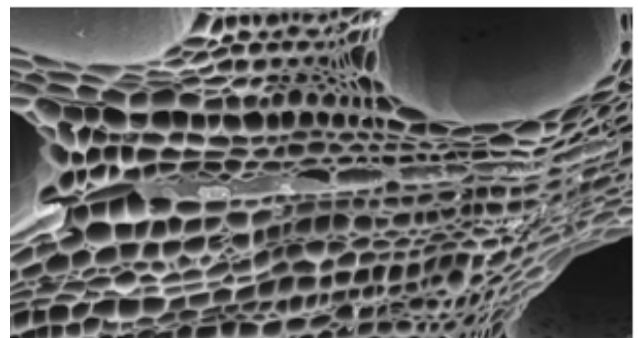
Uganda's Hass avocado is grown largely on deeply weathered soils - acidic, low in exchange capacity, phosphorus-fixing and heavily leached by the bimodal rains. PrimeBiochar is a **high-carbon, porous soil amendment** produced in Western Uganda from sustainably grown bamboo. It helps keep nutrients and water in the root zone, making your existing nutrient inputs work harder. This brief is the starting point for a conversation about a tailored application programme and business case for your plantation.

WHAT IS BIOCHAR?

- **Big surface area.** A porous carbon honeycomb that opens the soil and improves aeration where fine roots feed.
- **A sponge for water.** Holds 2–3 litres of water per kg of dry material and releases it slowly through dry spells.
- **A magnet for nutrients.** Holds potassium, calcium and nitrogen against leaching and raises the soil's cation exchange capacity (CEC).
- **A home for soil life.** Micro-pores shelter beneficial bacteria and mycorrhizal fungi from predators and drought.
- **Lasts for decades.** Manure and fertilizer are consumed within a season; one biochar application keeps working for years.
- **Not a fertilizer.** Biochar must always be charged with nutrients before use - it makes your existing inputs work harder.

WHY IT WORKS FOR AVOCADO

An independent, peer-reviewed survey of 112 Ugandan avocado fields with laboratory analysis found low CEC in two-thirds of fields, locked phosphorus in over four-fifths and low nitrogen in three-quarters (Sseruwagi et al. 2025). What is missing is exchange capacity and nutrient availability - exactly biochar's mechanism. Avocado feeder roots have no root hairs and depend on mycorrhizal fungi to feed; biochar's pores are a purpose-built home for that partner, and its porosity drains the standing water root rot needs.



A microscopic view of biochar shows its porous structure. An ideal storage space for nutrients, water and beneficial microbes.

AVOCADO YIELD OPPORTUNITY

Avocado's biochar opportunity rests on scientific evidence:

- **Yield in tropical acidic soils.** **+35%** average crop yield across 286 tropical studies (Zhang et al., 2025) and **+38%** yield from 1,889 paired observations (Aurangzeib et al., 2025).
- **The mycorrhizal partner.** Mycorrhizal avocado plants have grown up to 250% faster than non-mycorrhizal ones. In a woody perennial system biochar raised mycorrhizal root colonisation by 54–94% (Sales et al., 2020).
- **Root-rot pressure.** Better porosity and drainage shorten the water saturation events. Phytophthora zoospores need to swim and flooding is the dominant stress for avocado trees. Biochar is a soil amendment that lowers disease pressure.
- **Proven on the target soil.** On a Ferralsol at Nkozi, central Uganda, biochar significantly raised pH, available phosphorus, CEC, potassium and calcium, out-performing compost and NPK applied without biochar, with benefits persisting into later seasons (Apori et al., 2021).

Full references, dose tables and application protocols are provided in the PrimeBiochar Avocado Application Guide, available on request.

YOUR RETURN ON INVESTMENT

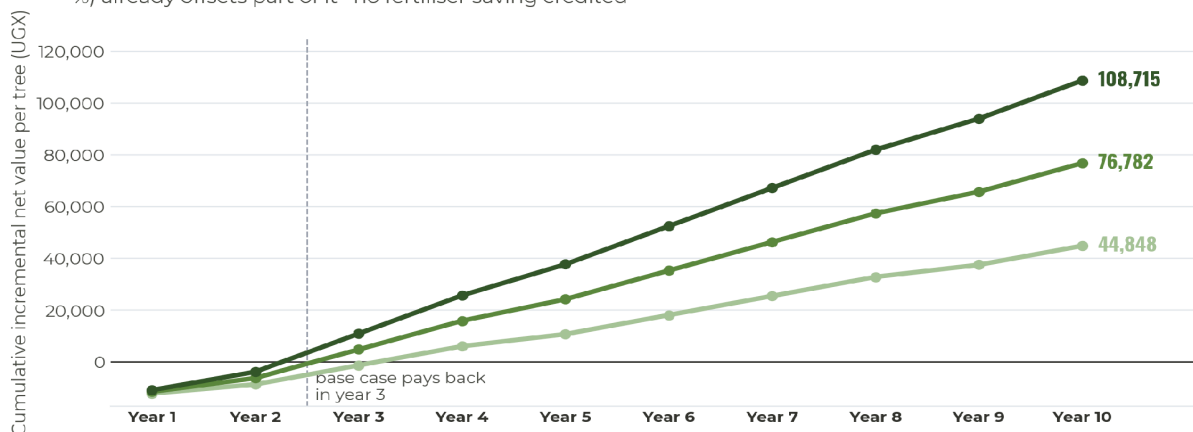
PrimeBiochar is a soil investment, not a recurring cost. For a bearing Hass tree we model a recommended 7.5 kg per tree foundation dose blended with your NPK and placed as a surface band under the mulch, with a light top-up every four years. We assume a **yield response of only 10–20%**. We do not value the potential reduction in fertilizer cost at all: any saving is upside.

On that basis, **biochar application returns more than five times compared to year-1 biochar investment** over ten years, with **payback in year 3** in the 15% yield uplift base case scenario. Even with minor yield increases, the biochar investment generates an incremental multiple revenue compared to the investment (refer to illustration below).

We will run our avocado calculator on your plantation's own age, density, fertilizer programme and farmgate price - and show you the numbers.

ONE HASS AVOCADO TREE – ROI AT 10–20 % YIELD RESPONSE

Year-1 biochar investment 7.5 kg = 13,585 UGX per tree (top-up 1.5 kg every 4 years included in the net values) · year-1 cash flow is smaller than the investment because the first extra harvest (1,991 UGX at +15 %) already offsets part of it · no fertiliser saving credited



Illustrative example, not a guarantee.

■ +10 % yield ■ +15 % yield ■ +20 % yield

MADE IN HOIMA, UGANDA

PrimeBiochar Materials Ltd. produces biochar in Hoima District, Western Uganda, from sustainably grown bamboo supplied by our partners Kontiki Bamboo Works Ltd., a clean, single, local feedstock.

The bamboo is pyrolysed at ~600 °C in a controlled, oxygen-limited process. Quality is verified by an independent accredited European laboratory against the World Biochar Certificate framework.

NEXT STEPS

We do not sell biochar just by the bag - we design an application programme around your farm. The path from this brief to a first delivery is short:

1. A short call or fill a short questionnaire: We map your fertilization pathway (manure, mineral or both), plantation age and planting density and consider your soil status - the factors that decide the right dose and biochar application route.

2. Your ROI analysis and proposal. We run our calculator on your yields, prices and inputs, estimate your ROI and hand you a farm-specific biochar delivery proposal.

3. Trial or first delivery. A demonstration block on your own land - or a first foundation delivery, with our application advisory supporting the mixing and application guidance.



Contact

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in cooperation with
our bamboo-biomass
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