SAH: Semi-Autotrophic Hydroponics for yam multiplication

Multiplying Seeds, Securing Harvests, Ensuring Food Security!

International Institute of Tropical Agriculture (IITA)
Pelemo Olugboyega Success

SAH is a low-cost licensed technology designed for mass multiplication of yam through leaf nodal cuttings, which are grown in a sterile planting medium such as peat moss, decomposed sawdust, rice husk, or cocopeat. These cuttings are placed in transparent plastic containers under controlled conditions, where they develop roots, shoots, and eventually tubers.

⚠ This technology is **not yet validated**.

9·3 Scaling readiness: idea maturity 9/9; level of use 3/9

Gender assessment 2

Climate impact 5

Problem

- **Insufficient Seed Supply**: The production of seed yam is inadequate to meet national food security needs.
- **High Seed Costs**: Seed yam accounts for up to **50% of total production costs**, making it unaffordable for many farmers.
- **High Seed Consumption from Previous Harvests**: Farmers typically **use up to 33% of their previous year's harvest** as seed, reducing food availability for consumption and sale.

Solution

- **High Multiplication Rate**: A **single box of 25 seedlings** can yield up to **500 plants in 90 days**, and over **1,000 plants** when transplanted into pots for further multiplication.
- **Space Efficiency**: **1 million planting materials** can be produced within **60 square meters**, ensuring year-round supply.
- **Scalability**: The technology is adaptable for **formal seed systems and commercial seed enterprises**, supporting the growth of the yam seed sector.

Key points to design your project

Semi-Autotrophic Hydroponics (SAH) enables year-round, cost-effective yam seed multiplication, addressing seed shortages and high production costs. To integrate this technology,

- Estimate plantlet needs (50,000 for 16 hectares), factor in delivery and import costs, and include training for successful implementation.
- Collaborate with agricultural institutes and seed companies to ensure sustainable integration and increased food security.

2250 USD
Cost of producing 50,000 SAH seedling

33 %
Return on investment on seedling sales

60,000 USD
Construction or acquisition of the fixed assets

10,000—25,000 USD
Labor cost in West Africa per year

20,000 USD
Laboratory setup including shelving

15,000 USD
Consumables (Substrates, plastic box, nutrients and non-consumables and maintenance)

IP
Open source / open access

Commodities

Yam

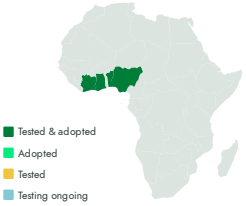
Sustainable Development Goals

1 NO POVERTY · 2 ZERO HUNGER · 8 DECENT WORK AND ECONOMIC GROWTH · 13 CLIMATE ACTION

Categories

Production, Practices, Yield improvement, Seed system

Tested/adopted in



Where it can be used

This technology can be used in the colored agro-ecological zones.