Doctor Vida Pocket Device: Mobile virus detector for sweetpotato

Low-cost, portable, detect sweet potato viruses—anywhere!

SmartLAMP SPOT is a smartphone-operated molecular diagnostic device using Loop-Mediated Isothermal Amplification (LAMP) to detect three key sweetpotato viruses: SPCSV, SPFMV, and SPLCV. It delivers laboratory-grade accuracy (100% agreement with Genie III) without requiring lab infrastructure, skilled personnel, or electricity. Each test takes ~40 minutes and can be performed on-site using a power bank.

International Potato Center & Doctor Vida
Helena Gonçlaves

This technology is **not yet validated**.

7·5 Scaling readiness: idea maturity 7/9; level of use5/9

Inclusion assessment 4

Climate impact 3

Problem

- Sweetpotato viral diseases severely impact food security and seed system health in tropical countries.
- Diagnostic techniques such as PCR and ELISA require specialized labs and trained personnel, which are scarce in rural or remote areas.
- Delays in virus detection hamper timely certification and disease control, limiting effective national surveillance and seed certification programs.

Solution

The DoctorVida Pocket LAMP device provides an affordable, field-ready solution for timely and accurate detection of major sweetpotato viruses, strengthening national plant health programs.

- Demonstrated 100% concordance with laboratory-grade virus testing equipment.
- Portable and operable via smartphones and power banks for rural and remote deployment.
- Reduces per-test costs by about 40%, enabling broader and more frequent virus monitoring.

Key points to design your project

Key activities to consider:

- Equip regional inspection units or labs with testing kits
- Develop or update SOPs for field testing and data handling
- Train inspection teams and integrate test results into existing seed certification databases
- Coordinate with IITA/CIP for supplies, training, and software
- Include DoctorVida in clean seed and phytosanitary regulations

2 years	**4** years	IP
warranty period	Lifespan	Open source / open access

Commodities

Sweet Potato

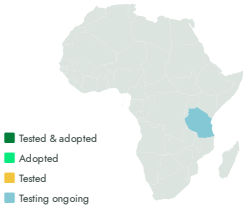
Sustainable Development Goals

1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
8 DECENT WORK AND ECONOMIC GROWTH

Categories

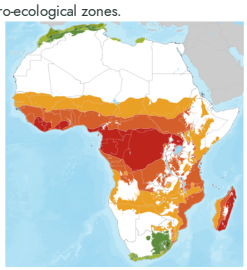
Production, Pre-production, Equipment, Pest control

Tested/adopted in



Where it can be used

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



Target groups

Governments, Seed companies, Researcher center, Advisory and Extension Services