

Goal

The Postharvest Quality Laboratory of the Cassava Program conducts research on cassava genotypes, including both native and improved varieties, to evaluate their quality parameters and nutritional value according to their intended use: fresh consumption, starch and flour production, animal feed, and industrial processing. These assessments are essential to meet market demands, consumer preferences, and culinary quality standards, while optimizing crop efficiency and maximizing its market value.



How we do it

The laboratory specializes in analyzing the quality attributes of cassava in its different forms, using advanced methodologies to measure the following characteristics:



Cassava root and pulp

- Postharvest physiological deterioration (PPD) and coumarins.
- **Culinary quality:** Total content of cyanogenic compounds, optimal cooking time, analysis of textural properties, trained sensory panel of boiled cassava and determination of water absorption.
- Dry matter content, beta-carotene and total carotene in the field and in the laboratory using NIRS methodology.
- Hyperspectral imaging to predict quality traits.



Native starch

- **Evaluation of physicochemical properties:** amylose/amylopectin content, microscopy of starch granules.
- **Functional and thermal properties:** Gel clarity, solubility and swelling, viscosity profiles, gelatinization parameters and in vitro digestibility.
- **Industrialization:** Ethanol production.



Sour or fermented starch

Analysis of physicochemical and functional properties, such as expansion power (specific volume), pH and lactic acid.



Cassava flours

- **Quality measurement:** starch content, organic acids, soluble sugars, pectins, soluble protein and viscosity profiles.
- **Nutritional properties:** total phenolic compounds, total carotenoids and phytates



Applications

- Formulation and development of food products made from cassava flour (glutenfree) and cassava starch.
- Analysis of cassava genotypes based on consumer profiles and market trends.

The impact



Cassava is a key crop for food security and economic development in many tropical regions. The work of the Postharvest Quality Laboratory contributes to improving the value chain of this crop, from the field to its use in the industry, ensuring quality genotypes and promoting innovation in its processing.

Capacities

The Cassava Postharvest Quality Laboratory offers analysis and evaluation capacities for different actors in the cassava production chain, such as farmers, processors and industrial companies. Capacities include:



Evaluation of the culinary quality of boiled roots.



Formulation and development of products from cassava, flour and starch.



Quality evaluation of starches and flours for industrial uses.



Consulting and technical advice on postharvest and industrialization processes of cassava.

Analytical technologies and equipment

- Near-infrared reflectance spectroscopy (NIRS)
- Hyperspectral imaging (HSI)
- Rapid Viscosity analyzer (RVA)
- Texturometer
- Field dry matter measurement scale
- High Performance Liquid Chromatography (HPLC)
- Pilot plant for flour and starch production
- Industrial Flash Dryer
- Differential scanning calorimetry (DSC)
- Optical and polarizing light microscope
- Three Gas Analyzer (CO₂, O₂, C₂H₄)



Our Partnerships



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