

NEWSLETTER



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EDITORIAL

Dear friends,

The start of 2026 marks a significant milestone for WAVE.

The global technical recognition granted by the Food and Agriculture Organisation of the United Nations on the occasion of its 80th anniversary is the culmination of over a decade of scientific dedication to sustainable plant production and protection in Central and West Africa.

In Côte d'Ivoire, national prospecting missions illustrate this commitment in practice, focusing on the early detection, rigorous documentation and effective containment of infection outbreaks.

Meanwhile, research conducted in Benin on the spatial dynamics of Banana Bunchy Top Disease highlights the importance of advanced analytical approaches for better anticipating disease spread.

2026 is more than just an achievement for WAVE; it marks a phase of deepening and increased responsibility.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS (FAO) RECOGNISES WAVE



GLOBAL TECHNICAL RECOGNITION

SUSTAINABLE PLANT PRODUCTION AND PROTECTION

Central and West African Virus Epidemiology (WAVE)

the Republic of Côte d'Ivoire

For the development, validation and dissemination of practices for the active Participatory Surveillance system for cassava viral diseases in West and Central Africa using the PlantVillage App, "Nuru".

The **WAVE Regional Centre of Excellence** has received global technical recognition from the FAO for its work in **sustainable plant production and protection**.

This distinction is part of the FAO's identification of institutions whose technical approaches significantly contribute to food security, sustainable development and the transformation of agrifood systems.

An International Recognition on the 80th anniversary of the FAO.

The technical recognition ceremony was held on 15 October 2025 at FAO headquarters in Rome, Italy, as part of the organisation's 80th anniversary celebrations.

Through this initiative, the FAO promotes exemplary practices and structured approaches capable of delivering concrete responses to contemporary agricultural challenges.



A structural contribution to food security in Central and West Africa

WAVE's selection in the "Sustainable Plant Production and Protection" category acknowledges twelve years of scientific and institutional commitment dedicated to:

- strengthening the plant health ecosystem and enhancing plant disease detection through the use of the NURU application;
- Building the technical and operational capacities of researchers in Central and West Africa through targeted training initiatives.
- Promoting participatory surveillance and decentralised diagnostic systems to address phytosanitary threats.
- Consolidating a regional scientific ecosystem capable of anticipating, detecting and containing epidemics affecting crops.

A recognition that is aligned with global strategic priorities

This distinction is fully aligned with the FAO's "Four Betters" framework.



A renewed commitment

For WAVE, this technical recognition is both an honour and a responsibility. It reaffirms the relevance of its regional cooperation model, grounded in science, capacity building and strategic partnerships.

More meaningful than just an endorsement; this recognition sends a clear message: **sustainable plant protection is a central pillar of food security in Africa and worldwide**. Alongside its national, regional and international partners, WAVE will continue to foster robust and resilient plant health systems across Sub-Saharan Africa.

NATIONAL EPIDEMIOLOGICAL SURVEILLANCE OF DISEASES AFFECTING CASSAVA: WAVE TEAMS ARE CONDUCTING A SURVEY THROUGHOUT THE COUNTRY

WAVE teams are currently conducting a **nationwide survey to monitor cassava diseases**. This one-month operation is part of a phytosanitary monitoring strategy to strengthen the resilience of agricultural systems in Côte d'Ivoire.



Field deployment for phytosanitary oversight

Phytosanitary surveillance is a central pillar of crop epidemiological surveillance systems. It enables you to:

- early detection of potential crop diseases;
- assess their impact and severity in production areas;
- record their geographical distribution;
- collect samples for extensive laboratory analysis.

In the case of cassava, a strategic crop for millions of producers and consumers, phytosanitary monitoring is a priority. Some diseases can cause significant yield losses and affect tuber quality, thereby compromising farmers' incomes.

Extensive territorial coverage

The prospecting mission covers a wide range of cassava-growing regions across Côte d'Ivoire. WAVE's teams work in autonomous districts, forest regions, savannah areas, and the main peri-urban production basins.

This territorial coverage will enable us to:

- obtain an up-to-date map of the phytosanitary situation;
- identify areas under high viral pressure;
- And compare epidemiological dynamics.

In each locality visited, the teams evaluate the plots, observe symptoms, take systematic samples and collect georeferenced data. This approach ensures a rigorous and representative analysis of the national situation.



WAVE's expertise is at the heart of the system

WAVE is established as a leading player in the surveillance, local diagnosis and management of plant diseases in Central and West Africa. Its approach is based on:

- harmonised prospecting and sampling protocols;
- advanced laboratory analysis capabilities;
- a regional coordination network covering several countries.

This combination of scientific expertise, territorial presence, and collaboration with national stakeholders enables structured and effective phytosanitary monitoring.

The current mission demonstrates this systematic intervention capacity, which is based on high scientific standards and in-depth knowledge of local realities.

Through this prospecting mission, WAVE reaffirms its commitment to disease-free agriculture and sustainable food security for all.



Group A research team with farmers in the Anyama area



Researchers from Group B in the town of Agboville



Group C Research team with a farmer IN Lakota village



Researchers from Group D in Sassandra



EACMV-Ug: A CLEAR THREAT TO CASSAVA PRODUCTION IN AFRICA

Cassava is a strategic pillar of food security in Central and West Africa. A highly resilient crop, it feeds millions of rural households and supports critical local value chains.

However, the crop is under significant phytosanitary pressure from the African cassava mosaic virus, particularly the highly virulent **EACMV-Ug strain (East African Cassava Mosaic Virus – Uganda variant)**.

Understanding the EACMV-Ug

EACMV-Ug is an aggressive variant of the African cassava mosaic virus. It belongs to the begomovirus group and is mainly transmitted by whiteflies (*Bemisia tabaci*) and infected cuttings.

Initially identified in East Africa in the 1990s, this strain is characterised by:

- The severity of the induced symptoms
- Its ability to spread rapidly
- The significant yield losses it causes.

Today, it represents a serious phytosanitary risk for cassava production areas on the continent.

Symptoms and agronomic consequences

Infected plants have:

- chlorotic mosaics on the leaves
- leaf deformities
- Stunted growth
- A marked reduction in tuberous root development

When infection occurs in the first weeks after planting, yield losses can reach 50–70%, exceeding 80% in the most severe cases.



At the farm level, this represents a significant decrease in marketable production and poses a direct threat to local food security.

Source: https://www.fao.org/fileadmin/templates/fcc/documents/CaCESA_FR.pdf

Impact beyond the field

The EACMV-Ug poses a threat that goes beyond agriculture, its impact is multidimensional:

- Food security: declining availability of cassava, a staple crop in several countries.
- Farm incomes: a decrease in marketable volumes and economic losses for producers.
- Stability of agricultural systems: weakening of family farms that depend on this crop.

In agroecological contexts characterised by high climate variability, the impact of the disease is weakening the strategic role of cassava in farm resilience.

Prevention and management leverage

The EACMV-Ug management is based on an integrated approach combining research, prevention, and producer support, through:

- **dissemination of resistant varieties:** the development and availability of resistant or tolerant varieties is essential for long-term control.
- **production and distribution of healthy plant material:** Propagation and certification of virus-free cuttings is essential to limit the spread.
- **phytosanitary surveillance:** Regular monitoring of plots and early identification of symptoms help to contain outbreaks.
- **vector management:** control of whitefly populations, combined with good cultural practices, helps reduce viral transmission.



Wave's commitment

Through its national platforms and regional network spanning 14 countries in Central and West Africa, Wave contributes to **strengthening phytosanitary surveillance, disseminating scientific knowledge, and supporting seed systems.**

The fight against cassava viral diseases, including EACMV-Ug, requires regional coordination and the assimilation of good cultural practices through training, as well as continuous investment in research. In the presence of this threat, a structured, collaborative, scientific approach is essential for the sustainable protection of cassava production and the strengthening of the resilience of African agricultural systems.



Spatial dynamics and hidden spread of Banana Bunchy top Disease in Benin

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ABSTRACT

Introduction:

Banana Bunchy Top Disease (BBTD), caused by the Banana Bunchy Top Virus (BBTV) and transmitted by the aphid *Pentalonia nigronervosa*, poses a growing threat to banana production in West Africa, often resulting in 100% yield loss in infected plantations. Yet its epidemiological dynamics remain poorly known. Current management in Benin relies on visual symptom identification and informal seed networks, both of which are vulnerable to the pathogen's prolonged latency.

Methods:

We conducted a structured cross-sectional survey of 176 banana farms across 12 departments of Benin between December 2024 and February 2025, complemented with archival surveillance data from 2018–2020. Apparent disease incidence was estimated from visual inspection and corrected for diagnostic error using a hierarchical Bayesian misclassification model.

Results and Discussion:

Extreme gradient boosting (XGBoost) identified wind speed in April, sucker density, and September maximum temperature as the primary drivers of symptom expression (AUC = 0.913). Bayesian adjustment for imperfect sensitivity ($Se \approx 0.78$) and specificity ($Sp \approx 0.92$) revealed that true incidence exceeded field estimates by a median factor of 2.1 (95% CrI 1.6–2.8), exposing substantial under-detection of infection in southern agroecological zones. Integration of bias-adjusted posterior incidence across years reconstructed the epidemic wavefront, indicating a northward expansion from Akpro-Misséré (6.6° N) to ~ 9.8° N by 2025. Linear regression of front displacement on time yielded a mean spread rate of 37.8 km yr⁻¹, with residual patterns suggesting acceleration during 2020–2022, likely due to secondary introductions or intensification of local transmission. This study provides the first spatially explicit quantification of BBTD spread in Benin, demonstrating that visual field assessments substantially underestimate the true burden of the disease. The integration of Bayesian bias correction and wavefront modeling provides a robust framework for mapping and forecasting the spread of plant diseases under imperfect detection conditions.

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SCIENTIFIC CONFERENCE: 'YAMS IN WEST AFRICA: PAST AND FUTURE'

On 19 January 2026, WAVE hosted a scientific conference on the theme **'Yams in West Africa: Past and Future'** in the auditorium of the Innovation Laboratory for Plant Health. The conference was moderated by **Dr Nora Scarcelli**, Research Fellow at the Institut de Recherche pour le Développement (IRD Montpellier).

She emphasised the strategic importance of the yam (*Dioscorea rotundata*) for West African agriculture and food systems.

Discussions focused on the origin and domestication of cultivated yams, their genomic vulnerability to climate change, and prospects for conservation and varietal improvement.



WAVE AT PAG33: GENOMIC SEQUENCING AND SURVEILLANCE OF CASSAVA VIRUSES



The **WAVE Regional Centre of Excellence** contributed in the 33rd edition of the Plant and Animal Genome Conference, showcasing its efforts in detecting and monitoring viruses that affect cassava in West Africa.

Represented by Professor Fidèle Tiendrébéogo, WAVE presented its use of in-house Oxford Nanopore Technologies sequencing to identify major viral variants, including **EACMV-Ug**, and to improve diagnostic tools deployed in 14 countries in Central and West Africa.

VISIT BY THE UNIVERSITY OF TOULOUSE CAPITOLE DELEGATION TO THE WAVE REGIONAL CENTRE OF EXCELLENCE.

On 21 January, **Professor Hugues Kenfack (President of the University of Toulouse Capitole)** and **Professor Abdoulaye Sangaré (Vice-President for Research and Technological Innovation at the University Félix Houphouët-Boigny, UFHB)** paid an official visit to the **WAVE Regional Centre of Excellence**.

During the tour of the laboratories, Professor Kenfack expressed his admiration for the quality of the technical platform and the work carried out at WAVE, emphasising the importance of such initiatives for scientific research. This visit was part of an initiative to strengthen academic and institutional partnerships, supported by the UFHB, to promote collaborative research grounded in African realities and open to an international audience.



DOCTORAL THESIS DEFENCE OF DR PAKYENDOU ESTEL NAME AND DR SEYDOU SAWADOGO

WAVE Burkina Faso celebrates two new academic successes with the doctoral thesis defences of Dr. Pakyendou Estel Name and Dr. Seydou Sawadogo, who are now PhDs in Applied Biological Sciences.



WAVE congratulates the two PhD graduates on their significant contributions to applied scientific research and sustainable agricultural development.