

# NEWSLETTER



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## EDITORIAL

Dear friends,

This seventh edition of our newsletter looks back on highlights that illustrate WAVE's ongoing commitment to research, training and capacity building in Central and West Africa.

From the first edition of RABIAS in Abidjan to the inauguration of the Plant Health Innovation Laboratory in Benin, via the closing of CIBiG 2025 and the thesis defences of young researchers, this issue highlights concrete actions to support the structuring of scientific communities and food security. We invite you to discover these advances, which are the result of collective work and strong partnerships in the service of regional scientific development.

We hope you enjoy reading it.



## A RESOUNDING SUCCESS: THE FIRST EDITION OF RABIAS 2025!



Held from 15 to 17 December 2025 in Abidjan, the first edition of **RABIAS (Réseau d'Afrique de l'Ouest de Bioinformaticiens et Administrateurs Systèmes)** was a great success, marking a milestone for the community in the sub-region.

Taking place at Félix Houphouët-Boigny University in Bingerville with the support of the WAVE Regional Centre of Excellence and its partners, RABIAS 2025 brought together researchers, bioinformaticians, biologists, system administrators, teacher-researchers and students from several West African countries and around the world, all sharing the goal of **strengthening consultation, collaboration and structuring around bioinformatics and system administration at the sub-regional level.**

This edition was enhanced by the participation of the **French Institute of Bioinformatics (IFB)**, the **Institut de Recherche pour le Développement (IRD)**, the **Pan African Bioinformatics Network (H3ABio-Net)**, the **National Research Institute for Agriculture, Food and Environment (INRAe)**, the **French Society for Bioinformatics (SFBI)**, the **Master's in Bioinformatics of Montpellier University** and the **i-Trop Platform**.

### A unique, unifying exchange framework

In a context characterised by an ever-increasing volume of sequencing data and the diversification of genomics applications, bioinformatics plays a pivotal role in scientific research. RABIAS addresses the need for an exchange forum that brings together all the professions involved in the value chain, from data production to analysis and interpretation.

The first edition of RABIAS fostered dialogue between the steering teams of the bioinformatics platforms in Burkina Faso, Côte d'Ivoire and Senegal, as well as between representatives and focal points from Mali, Niger, Togo, Benin, Ghana and Nigeria. It thus strengthened networking momentum across West Africa.



## High-level scientific and institutional dialogue

The RABIAS 2025 schedule included scientific seminars, experience-sharing sessions, professional workshops and institutional presentations. These offered a comprehensive overview of the current challenges facing bioinformatics in the region. Discussions focused particularly on the management of computing infrastructure, skills development, and the challenges faced by those working in the field.

The participation of African and international institutional partners enriched the discussions by providing insights into organisational models, resource sharing and the structuring of scientific communities adapted to local realities.

## Concrete achievements and a shared roadmap



After three days of work, RABIAS 2025 achieved several major goals. Participants established a **shared vision for the development of bioinformatics in West Africa and identified priorities in terms of training, scientific collaboration and network governance.**

The sessions devoted to **drawing up a roadmap** paved the way for the implementation of practical collaboration tools, particularly with regard to network communication, skills development and resources mobilisation for joint projects.

## Perspectives and sustainability

Beyond this first edition, **RABIAS is establishing** itself as a strategic tool for the long-term structuring of the regional bioinformatics community. The discussions held in Abidjan have laid the groundwork for strengthening existing collaborations, encouraging the development of new joint initiatives, and integrating West African bioinformatics into the broader scope of international scientific research.

The success of RABIAS 2025 demonstrates the commitment of partner institutions, scientific teams and participants to working together to establish a lasting framework for consultation to support training and research for scientific development in West Africa.





# INAUGURATION OF THE WAVE PLANT HEALTH INNOVATION LABORATORY AT THE UNIVERSITY OF ABOMEY-CALAVI

On **4 December 2025**, WAVE officially opened the **Plant Health Innovation Laboratory** at the University of Abomey-Calavi in Benin. The ceremony was attended by representatives from academia, public institutions and the scientific community, marking an important step in **strengthening national capacities in plant health**.



## A laboratory dedicated to research, diagnosis and training.

The Abomey-Calavi Plant Health Laboratory is a research, diagnosis and training facility that will focus its activities on several priority areas, including:

- the study of pathogens affecting Benin's main crops;
- the development and use of rapid diagnostic methods;
- capacity building through the training of researchers and technicians;
- collaboration with agricultural producers to disseminate appropriate and sustainable practices.

These activities aim to **improve the prevention, detection and management of plant diseases** in close connection with the realities of agricultural field.

## Significant benefits at the national and regional levels

At a national level, establishing this laboratory offers **several strategic advantages**. It **strengthens food security** by **improving the surveillance** and control of emerging pathogens. It also promotes the country's scientific autonomy by providing a local platform for diagnosing and managing plant diseases.

Furthermore, healthier crops stimulate economic development by improving producers' incomes and strengthening the potential for agricultural exports. Healthier crops also stimulate economic development by improving producers' incomes and strengthening agricultural export potential. At the regional level, the Abomey-Calavi laboratory is part of a collaborative system that draws on the **WAVE** network of laboratories. This promotes the sharing of expertise and scientific cooperation between countries.

## An institutional recognition

Speaking at the ceremony, **Professor Corneille Ahanhanzo**, Country Director of WAVE-Benin, welcomed Benin's selection as the host of this strategic laboratory. He emphasised the importance of this facility in developing local scientific expertise and consolidating national plant disease surveillance and management systems.



Meanwhile, **Professor Justin Pita**, Executive Director of the WAVE Regional Centre of Excellence, highlighted that the opening of this laboratory is part of a wider initiative to establish a network of regional reference laboratories dedicated to plant health. Through this initiative, WAVE is further demonstrating its commitment to sustainable agriculture, food security and building scientific capacity in Central and West Africa.

Following the inauguration ceremony, Professors Justin Pita and Corneille Ahanhanzo met with the **Beninese Minister of Agriculture, Livestock and Fisheries**, His Excellency **Gaston Cossi Dossouhoui**.

The Minister reiterated the central role of laboratory infrastructure in ensuring the quality of plant material and safeguarding agricultural production systems.

According to the Minister, *'Plant health control necessarily relies on robust laboratory capabilities, which are an essential indicator of the reliability and credibility of agricultural systems in Benin and across Africa.'*



The Minister highlighted the expanded scope of the new laboratory, which will enable the verification of the compliance of imported and locally distributed plant material with national plant health standards. His Excellency Gaston Cossi Dossouhoui also emphasised that the laboratory's activities would contribute directly to crop protection, improved agricultural yields and the creation of economic value for producers. By doing so, the Beninese government is reaffirming its commitment to strengthening scientific capacities as a means of ensuring agricultural security, improving economic performance, and making production systems more sustainable.





## WRAPPING UP CIBiG 2025!

After four weeks of intensive in-person training, the 2025 edition of the International Certificate in Bioinformatics and Genomics (CIBiG) came to a close, marking the end of a **programme packed with learning, exchange and scientific collaboration**.

Organized by the **WAVE Regional Centre of Excellence** and its partners, CIBiG 2025 brought together researchers from around the world who were united by a common goal: to enhance their proficiency in bioinformatics, sequence data analysis, and genomic applications for agriculture and health in Africa.

### A closing ceremony characterised by gratitude.

The end of the training programme provided an opportunity to celebrate the successes and progress made in the presence of **Professor Justin Pita, Executive Director of WAVE**, and **Fabrice Courtin, Country Director of the Institut de recherche pour le développement (IRD)** in Burkina Faso and Côte d'Ivoire.

In his speech, Mr Courtin reminded participants of the privilege of receiving such training, encouraging them to apply their newfound knowledge in their professional careers and build on this experience for the future.



**Professor Justin Pita**, speaking on behalf of the **president of Félix Houphouët-Boigny University**, praised the commitment of everyone involved in CIBiG. He emphasised that CIBiG 2025 had delivered on all its promises thanks to the **trainers' remarkable commitment** and the participants' **rigour, dedication and courage** throughout the training.

## Shining a spotlight on participants' excellence

CIBiG 2025 also recognized the **diligence and commitment** of some participants. **KY Nènè Sthella**, a student from Burkina Faso, was honoured as the **best student of this edition**.

Visibly touched, she said:

*'At first, I didn't think I fit the profile because I thought the training focused more on plant health. However, encouraged by Dr Ezeckiel Tibiri, I finally decided to participate. Today, I would like to thank all the participants from different backgrounds who have become like a family to me thanks to CIBiG.'*



## Partnerships are key to success

The success of CIBiG 2025 also hinges on robust partnerships, particularly with the **Institut de Recherche pour le Développement (IRD)** and the **University of Joseph Ki-Zerbo**, whose contributions have enhanced the academic and scientific calibre of this training programme.

Following the intensive residential phase, which concluded with widespread satisfaction, CIBiG 2025 will officially close with the validation of the participants' supervised projects..





## TWO DOCTORAL STUDENTS FROM THE WAVE REGIONAL CENTRE OF EXCELLENCE HAVE SUCCESSFULLY DEFENDED THEIR THESES ON THE MANAGEMENT AND EPIDEMIOLOGY OF CASSAVA MOSAIC DISEASE.

The **WAVE Regional Centre of Excellence** has achieved two significant academic milestones with the successful defence of two doctoral students, who are now doctors: **Dèwanou Kant David Ahoya** and **Yoboué Aya Ange Naté**.

Despite having different scientific backgrounds, they are united by a common goal: **strengthening the sustainable management of viral diseases affecting cassava, a strategic crop for food security and producer incomes in West**



### 📍 **University of Parakou (Benin): Understanding and promoting the uptake of innovations to fight cassava mosaic disease**

On **December 2025**, at the **University of Parakou (UP)**, **Dr Dèwanou Kant David Ahoya**, Doctor of **Agronomy specializing in Plant Protection with a focus on Plant Science and Plant Improvement**, successfully defended his thesis entitled:

**'The evaluation of the adoption of innovations in the management of cassava mosaic disease (CMD) in Benin'.**

The study was conducted in a context characterised by the ongoing presence of CMD as a significant phytosanitary constraint affecting cassava production systems and having a substantial impact on food security and the income of farming households.

- The research was structured around four main areas:
- Characterising cassava production systems to understand their diversity and agricultural dynamics in affected areas
- Identifying the factors determining the adoption and intensity of adoption of CMD management innovations
- Evaluating the effect of WAVE's awareness campaigns on farmers' knowledge and ability to implement best practices
- Analyzing the impact of adopting innovations on farmers' yields and incomes.



Methodologically, the study employed robust analytical tools, such as mixed data factor analysis (MDFA), to develop a typology of production systems. Binary logit and Tobit models were used to analyse the factors influencing adoption and its intensity, while propensity score matching (PSM) was employed to evaluate the impact of awareness campaigns and innovation adoption.

The results highlight three distinct types of cassava producer. They also demonstrate that participation in awareness campaigns, level of education, knowledge of the disease and ownership of an Android smartphone are key factors in promoting innovation adoption. Awareness campaigns improved producers' knowledge by **32.5%**, increased the adoption of management strategies by **36.17%**, and significantly reduced the incidence of CMD. Ultimately, adopting at least one innovation resulted in a **12.2% increase** in fresh root yield and a **7.86% increase** in gross income.

These results emphasize the pivotal role of integrating knowledge dissemination, producer support, and socio-economic analysis in combatting plant diseases.

### 📍 **Scientific and Innovation Centre: deepening our understanding of the epidemiology of viral diseases affecting cassava**

On Saturday 29 November 2025, Ms Yoboué Aya Ange Naté successfully defended her doctoral thesis on the **status of viral diseases in cassava**, the identification of associated viruses and alternative hosts, and viruses carried by whitefly vectors at the **Pôle Scientifique et d'Innovation of Bingerville**.

**l'état des lieux des maladies virales du manioc, l'identification des virus associés, des hôtes alternatifs et des virus véhiculés par les mouches blanches vectrices.**

The research was based on three-year surveys (**2016, 2017 and 2020**) of smallholder cassava plots and the germplasm of the National Centre for Agricultural Research, particularly at the **Bouaké** and **Man** sites. Epidemiological data were collected alongside samples of cassava leaves, potential host plants and adult whiteflies, which were then subjected to in-depth molecular analysis.



Following DNA extraction, conventional PCR, RCA amplification and cloning operations were performed to characterise the viral agents present. The results revealed that cassava mosaic disease (CMD) remains the only viral disease affecting the smallholder plots and germplasm studied, with no evidence of CBSD being present.

The prevalence of CMD varied according to the agro-ecological zone and the year of observation. The disease was found to be more prevalent in germplasm at the Bouaké site than at the Man site. Molecular analyses identified two begomoviruses infecting cassava: African cassava mosaic virus (**ACMV**) and East African cassava mosaic Cameroon virus (**EACMCMV**). Cases of single and double infections were observed in smallholder plots. In germplasm, however, only single **ACMV** and double **ACMV/EACMCMV** infections were observed.



In addition, four alternative hosts for CMD begomoviruses have been identified, including two weeds (*Asystasia gangetica* and *Centrosema pubescens*) and two crops associated with cassava (*Solanum melongena* – aubergine, and *Capsicum annuum* – chilli pepper). Other begomoviruses have also been characterised, including **SbCBV** in *Centrosema pubescens*, as well as **WAAV1**, **WAAV2** and alphasatellites in *Asystasia gangetica*, including a new alphasatellite named Asystasia yellow mosaic alphasatellite (**AYMA**). These results indicate that certain alternative hosts, particularly *Asystasia gangetica*, pose a significant threat to cassava cultivation. Finally, the detection of **ACMV** and **EACMCMV** begomoviruses in whiteflies confirms the key role of vectors in the spread of CMD.

## Interdisciplinary research for food security

Through these two thesis defences, WAVE has reaffirmed its vision of integrated research, combining socio-economic analysis, field surveys and cutting-edge virological approaches. The work of Drs Ahoya and Naté highlights the importance of collaboration between researchers, academic institutions, technical partners and producers in strengthening plant health systems in West Africa.

This research aims to strengthen the resilience of agricultural systems, prepare them better for biological risks, and sustainably support regional food security by deepening knowledge of the dynamics of viral diseases in cassava and identifying levers that promote the adoption of management practices.

As the year draws to a close, we would like to express our sincere thanks to all WAVE employees, partners and stakeholders for their commitment and contribution throughout 2025. We wish you a wonderful end to the year, filled with rest, serenity and new prospects for the year ahead.