Strengthening Coordination in Rice Pathology Through Global BioNET

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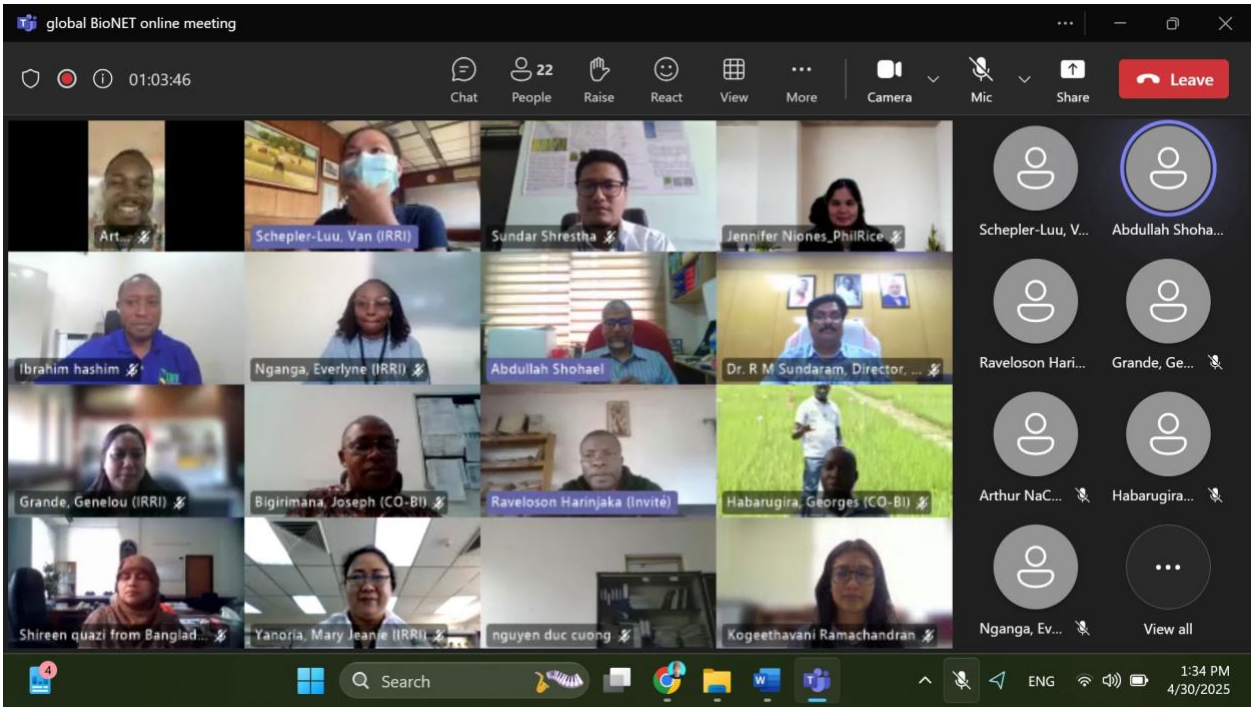
April 30, 2025 -- BioNET leads from **16 countries** across Southeast Asia, South Asia, and East and Southern Africa met virtually to align and accelerate activities across the **Global BioNET network.** The global BioNET network is a coordinated cluster of national BioNETs, each composed of rice pathologists and entomologists working on diseases and pests affecting rice systems in their respective countries.



This latest meeting marks another step forward in BioNET's collaborative journey. Since its first meeting in Vietnam in 2022, hosted by the VinFuture Prize Foundation, the network has expanded regionally with official launches and coordination meetings in Bangladesh and India in 2023, as a part of OneRice breeding network funded by BMGF, and most recently in Ivory Coast in 2024,

hosted by AfricaRice Center, providing a great reference point for an African rice pathology network (AfRice Health).These national nodes now form part of a growing Global BioNET, structured to respond swiftly and collaboratively to regional and transboundary threats.

What is global BioNET?

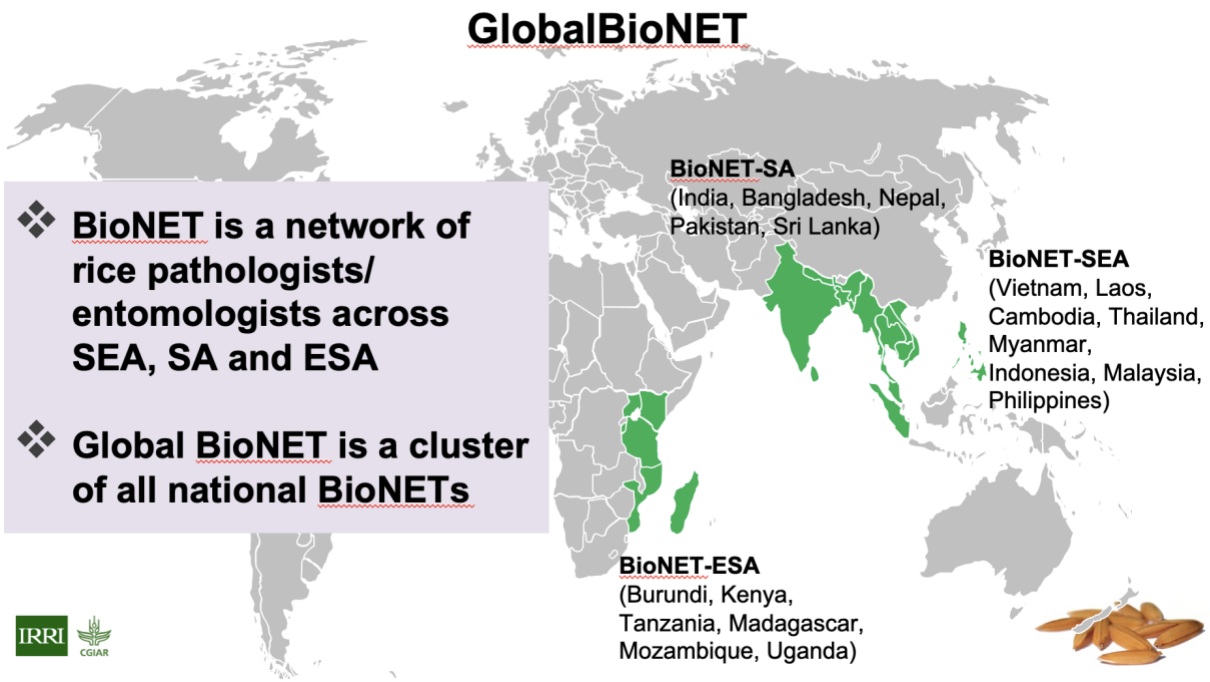
Global BioNET is a global Biotic stresses monitoring and screening Network. It is a knowledge-sharing and action-oriented platform focused on three key technical areas:

- **Surveillance and monitoring** of rice diseases and insect pests
- **Evaluation of biotic stress resistance** in field and controlled environments
- **Discovery of native resistance traits** in diverse rice germplasm

While each national BioNET addresses its local priorities and constraints, the Global BioNET provides a unifying structure for coordination, shared protocols, and mutual support.

The network is built on five guiding principles:

1. Local pathogens and pests stay local.
2. Capacity is built in-country, close to where the problems arise.
3. Standardized protocols ensure consistent, comparable data across regions.
4. Sustainability is driven by collaboration, not dependency.
5. Participation is voluntary, based on trust and mutual benefit.



Sharing Resources, Data, and Responsibility

At the April 30 meeting, IRRI pathologists reaffirmed their commitment **to** contribute the following to the global community:

- Standardized phenotyping and monitoring protocols
- Differential lines and near-isogenic lines (NILs) for virulence evaluation
- Novel resistance donors and mapping populations, aimed at resistance trait discovery
- Pre-breeding lines for partners interested in advancing resistance breeding

In turn**,** BioNET partners committed to sharing real-time pest and pathogen information by providing surveillance and monitoring data, which supports regional forecasting, and proactive management. This mutual exchange of materials and data empowers each country to prepare for outbreaks, mitigate risks early, and help neighbors through shared diagnostics, insights, and extension strategies.

Flexible Structure, Targeted Response

The Global BioNET conducts regular technical meetings for updates and capacity building, deep-dive sessions on specific pathogen/pest issues or technical bottlenecks, and emergency meetings triggered by new outbreaks or the emergence of novel threats.

Each national BioNET lead is expected to coordinate a national network of plant pathologists and entomologists, facilitate in-country responses, and link them to global resources when needed.

BioNET in Action: A Rapid Response to SRBSDV

A tangible example of BioNET's value occurred in 2023, when partners in India reported the emergence of Southern Rice Black-Streaked Dwarf Virus (SRBSDV). Through BioNET's rapid communication channels, protocols for detection and management were shared quickly across the network. With active coordination between institutional leads, local pathologists, and extension services, India was able to keep the virus under control, preventing wider spread and crop damage.

On the horizon

The Global BioNET continues to evolve as a model for **science-based**, **decentralized coordination in plant health**. It is more than a network; it is a community of practice, building resilience in rice systems through shared knowledge, open communication, and collaborative action.

We look forward to deeper engagement, more inclusive participation, and expanding our capacity to detect, understand, and respond to biotic threats in rice farming systems worldwide.

Voices from the Network

Dr Arthur Wasukira from NaCRRI, Uganda, stated, "The shared strategy for collaboration is quite good and builds capacity with the regional networks. The

proposed monitoring and surveillance, combined with access to differential lines, will go a long way in updating Uganda's pathogen inventory."

Dr Ibrahim Hashim from TARI, Tanzania, said, "The Bionet initiative is good and we are ready for further collaboration."

Dr Sundar Shrestha from NARC, Nepal, also committed, " We are ready for further collaboration."

For more updates on BioNET and our collaborative efforts in plant pathology, follow IRRI Pathology and stay connected with our growing community of national and regional experts.

Key words

#BioNET #IRRI #PlantPathology #RiceResearch #CropProtection #Surveillance #BioticStress #ResistanceDiscovery #SRBSDV #PlantHealth #AgriculturalResearch #GlobalCollaboration #Entomology #RiceDiseaseMonitoring

References

IRRI South Asia hub organized a series of events for rice breeding networks. https://news.irri.org/2023/05/irri-south-asia-hub-organized-series-of.html

A disease-surveillance network in Africa will accelerate detection and actions to prevent the spread of major rice diseases. https://www.irri.org/news-and-events/news/disease-surveillance-network-africa-will-accelerate-detection-and-actions

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