Two Degree Initiative (2DI) for Food and Agriculture Regional Grand Challenge (RGC) 1 “One-Health platform for climate-driven pests and diseases in West Africa”

A farm settlement at Tamale, Ghana.

Background

The “Two Degree Initiative” is the spearhead of the CGIAR’s efforts to address the risks of climate change and allow the world’s food systems and small-scale agricultural producers to adapt at the speed and scale needed.

The leap forward needed in agricultural and food systems requires CGIAR and partners’ ability to provide radical innovations in technology and practice. CGIAR has focused greatly on technological research. Yet making new technology available will not suffice. Achieving climate-smart solutions from agriculture rapidly and at scale will require hundreds of millions of autonomous decisions and investments. Recognising this reality, each Regional/Sub-Regional Challenge is structured around three interlinked implementation strategies: (i) improving access to climate- smart technologies and agroecological practices, (ii) enhancing climate-informed digital+ advisories, services and decision support, and (iii) supporting policy and institutional reforms for transformational change, including those linked to the UNFCCC (e.g., NAPs, NDCs).

Technology-focused R4D is a “given” for CGIAR; thus in this Initiative, particular attention will be placed on (ii) and (iii), where CGIAR will step up research and action, through developing global thematic groups that link to all the Regional/Sub-Regional Challenges: learning lessons, promoting South- South learning on these topics, and linking to global processes.

Rationale

One-Health is a collaborative, multisectoral, and transdisciplinary approach – working at the local, regional, national, and global levels – with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment. Pests, diseases and other biotic stresses are major threats to the health of crops, livestock, humans and ecosystems, now convoluted by the current coronavirus pandemic (COVID-19). Climate change will affect the distribution and dynamics of such pests and diseases. It will also disrupt complex interactions and tradeoffs between different ecosystems, with huge adverse economic implications.

Our advanced Climate-informed One-Health approach builds on CGIAR’s track records in this area, framing the nexus of crop, livestock,

human and ecosystem health, pest and disease epidemiology and control, food production, safety and nutrition, and climate change as a complex public health issue. We are working towards a field-grounded, conceptually refined response to the scale of this global challenge. The holistic One-Health approach enables our contributions to plant and soil health for improved agricultural productivity, resilience, and community livelihood.

Goal

Support to agricultural producers' management of biorisks, cross-government approaches to address climate-driven food-health risks, institutionalized capabilities for early detection of emerging threats and rapid response, and new technologies for biocontrol. This region will serve as a model for what can be achieved, prior to scaling to other regions.

Strategic priorities (SP)

SP1- Horizon scanning and building Early Warning & Rapid Response Systems

The overall objective is to provide seasonal and long-term forecast and management options for biorisks affecting plants, animals, people and the environment in West and Central Africa. Specific objectives are:

a) Data infrastructure on climate and environmental variables and biorisk characteristics

b) Prevention, surveillance, diagnostic, and ICT tools at local, national, and regional level.

SP2- Managing climate-driven biorisks

The overall objective is to prioritize and manage the most serious existing and emerging biorisks in agriculture.

Specific objectives are:

a) Common tool set for assessing and managing biorisks

b) Biopesticides, biofertilizers, and biological control agents developed and deployed against current and high-risk future biotic stresses including agricultural land degradation.

SP3- Harnessing high throughput technologies for food safety and health for mega- cities in West Africa

The overall objective is to improve food safety and health for mega-cities in West Africa under a climate change context.

Specific objectives are:

a) Climate-smart and biorisk resilient cropping systems and crop varieties

b) Enhanced human health in relation to water, soil, plant and animal health for sustainable quality food production.

SP4- Mainstreaming biorisk management into national and regional development programs The overall objective is to establish a platform for sharing information on climate change- related biorisks and to influence policy dialog and advocacy.

Specific objectives are:

a) Updated regulatory framework on biorisk management

b) Strengthened capacity of national and regional bodies on the framework and on the use of biorisk management techniques.

Photo by Arnstein Staverløkk & NIBIO