

# IAVAO

## Innovation and plant breeding in West Africa



- Animating a community of researchers and actors involved in dryland cereal and legume breeding programs in West-Africa
- Strengthening capacity building of scientists and reinforcing links between breeding programs and high education
- Coordinating and animating a regional crop evaluation network
- Building and coordinating research and development projects related to crop improvement

A platform in partnership for research and training (dP in French) is a long-term strategic alliance made up of a critical mass of partners and researchers around a shared program and portfolio of projects. Managed collectively, the Platform is open to members of civil society to facilitate its impact and also interacts with public policy decision makers in order to generate changes and transformations.

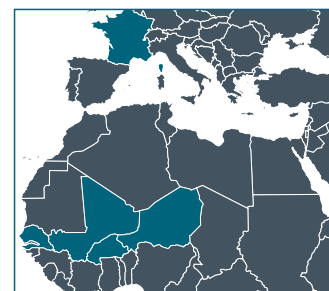


@ Ousmane Ndiaye, Coraf

Plant breeding needs to address the complexity and multiplicity of issues and contexts agriculture has to face: feeding a rapidly growing population without degrading the environment, but also providing ecosystem services, while being part of diverse cultures and societies. In this context, the IAVAO partnership platform (dP IAVAO) proposes the integration of an interdisciplinary approach in the design and effective implementation of agile and innovative breeding programs responding to the complexity of agro-ecological systems encountered in the sub-Saharan zone.

### IDENTITY CARD

- Date of creation: 26/05/2016
- 10 partner institutions
- 70 researchers
- 5 professors
- 20 PhD students and post-docs
- Between 15 and 30 publications per year



### PARTNERS



Senegalese Institute of Agricultural Research (ISRA)  
[www.isra.sn](http://www.isra.sn)



Regional Research Center for crop improvement and Adaptation to drought (CERAAS)  
[ceraas.org](http://ceraas.org)



CORAF : Western and Central African Center for Agricultural Research and Development  
[www.coraf.org](http://www.coraf.org)



Rural Economy Institute (IER)  
[www.ier.ml](http://www.ier.ml)



Iba Der Thiam Thiès University (UIDT)  
[www.univ-thies.sn](http://www.univ-thies.sn)



National Institute of Agronomy research in Niger  
[inrannouvelles.blogspot.com](http://inrannouvelles.blogspot.com)



Environmental Institute for Agricultural Research (INERA)  
[www.cnrst.bf/index.php/inera](http://www.cnrst.bf/index.php/inera)



French Agricultural Research Centre for International Development (CIRAD)  
[www.cirad.fr](http://www.cirad.fr)



The French National Research Institute for Sustainable Development (IRD)  
[www.ird.fr](http://www.ird.fr)



Montpellier Agro Institute  
[www.institut-agro-montpellier.fr](http://www.institut-agro-montpellier.fr)

### ASSOCIATED PARTNERS

The dP IAVAO collaborates with research and educational initiatives and institutions worldwide for better coordination at the regional level



LMI LAPSE  
[www.lapse.ird.fr](http://www.lapse.ird.fr)



Integrated Breeding Platform (IBP)  
[www.integratedbreeding.net/](http://www.integratedbreeding.net/)



Feed the Future Innovation Labs (PIL and SMIL)  
[www.feedthefuture.gov/feed-the-future-innovation-labs](http://www.feedthefuture.gov/feed-the-future-innovation-labs)



International Crop Research Institute for the Semi-Arid Tropics (ICRISAT)  
[www.icrisat.org](http://www.icrisat.org)



Cheikh Anta Diop University (UCAD)  
[www.ucad.sn](http://www.ucad.sn)



Joseph KI-ZERBO University  
[www.ujkz.bf](http://www.ujkz.bf)



Dan Dicko Dankoulodo University  
[www.uddm.edu.ne](http://www.uddm.edu.ne)

### EXPERTISES ET TECHNICAL CAPACITIES

- ➔ Breeding methods: molecular genetics and marker-assisted selection, participatory selection.
- ➔ Crop adaptation to abiotic and biotic constraints.
- ➔ Use of modeling to characterize target environments (TPE) and traits of interest for breeding.
- ➔ Digitalization of breeding programs, data management, and bioinformatics
- ➔ Genotyping methods for the characterization, quality control and analysis of breeding material.
- ➔ Phenotyping methods in controlled environments, in experimental stations and in farmers' environments.

## ■ A REGIONAL CROP NETWORK FOR THE EXCHANGE AND EVALUATION OF GENETIC MATERIAL

The dP IAVAO aims at a better integration of breeding programs in the dry zone countries. This regional integration was designed as a response to the fact that breeding programs in individual countries lack human resources and are generally too isolated to take advantage of existing resources, to mobilize significant funding and to benefit from and implement innovative approaches. For this purpose, this regional network provides breeders with a working framework favouring and organizing regular interactions for planning and reporting their activities. They can therefore take into account regional priorities, exchange germplasm that could be of interest for different programs, and test germplasm in a wide range of environments. This material can be used to develop better adapted varieties and to fill a regional variety catalogue. Currently, more than 100 varieties of sorghum, millet, fonio, groundnut, cowpea and sesame are being tested in about 30 environments in Burkina Faso, Mali, Niger, Nigeria, Senegal and Togo. The results of these trials are centralized in a regional instance of the Breeding Management System (BMS) accessible via a dedicated server. This action of regionalization of breeding programs is supported since 2019 by the DeSIRA ABEE project.

## ■ RECENT AND ONGOING PROJECTS

### ABEE (2019-2024)

Strengthening of networks and institutional capacities in Plant breeding for the development of resilient crops meeting the needs of farmers in West Africa (EU).

### Sorghum Genomics Toolbox (2016-2019)

Re-sequencing one thousand African sorghum accessions genomes and analysing the genetic control of drought adaptation through detailed field and platform phenotyping (BMGF).

### Sawagen (2013-2022)

Improving Sorghum Adaptation in West Africa with a Genomics-Enabled Breeding Network (USAID - FtF - SMIL)

### PIL - Enhancing genetic potential of peanut production in Western Africa (2018-2023)

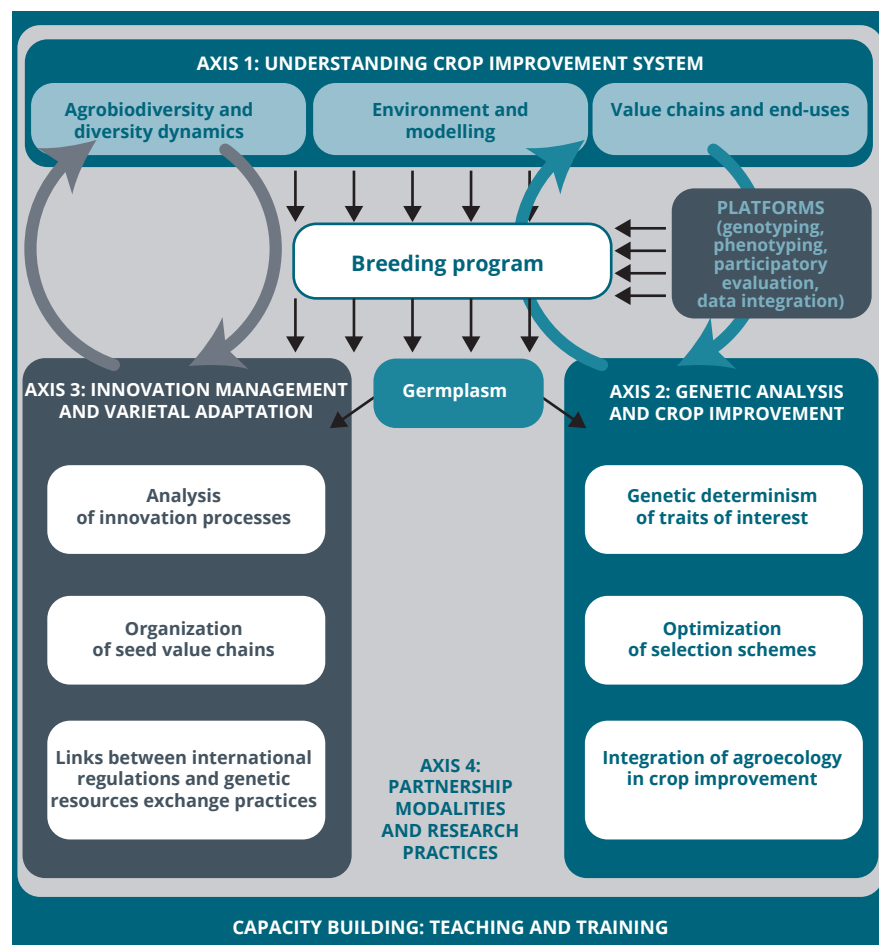
Assembling and genotyping a collection of peanut varieties from 10 African breeding programs. Defining a core collection and phenotyping it in different countries to dissect the genetic control of traits of interest and develop markers that can be used in breeding programs (USAID - FtF - PIL).

### CIWA (2020-2024)

Innovations in West Africa crop breeding for genetic gain and for rapid development of varieties of sorghum, pearl millet and cowpea (USAID - FtF - ILCI).

### EBCA (2019-2021)

Enhancing institutional breeding capacity in Ghana, Senegal and Uganda to develop climate resilient crops for African smallholder farmers (IFAD).



## TRAINING

Education and training are essential components of dP IAVAO in helping to train a new generation of breeders. 16 PhDs are in progress and 26 have been supported since the beginning of the dP. Modular training courses are organized annually on some of the themes of the dP (i.e. phenotyping, use of molecular markers in breeding, genome sequencing and bioinformatics).



@ Daniel Foncéka, Cirad