

Elaboration of Additional Modules on Climate Smart Agriculture and Climate Information System for Staff, Students, and other Stakeholders in Universities in Africa

RUFORUM- WASCAL AICCRA Curriculum Review Workshop
Report

Dakar, Senegal

- 12th -15th July 2022

**Francis Otto | William Amponsah |Majaliwa Mwanjolo
Gilbert |Florence Nakayiwa**

Elaboration of Additional Modules on Climate Smart Agriculture and Climate Information System for Staff, Students, and other Stakeholders in Universities in Africa

Workshop Report

Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA)

July 2022

**Francis Otto
William Amponsah
Majaliwa Mwanjolo Gilbert
Florence Nakayiwa**

To cite this workshop report

Otto F., Amponsah W, Majaliwa Mwanjolo G. Nakayiwa Mayega F Development of Elaboration of Additional Modules on Climate Smart Agriculture and Climate Information System for Staff, Students, and other Stakeholders in Universities in Africa, Workshop Report. Accelerating Impacts of CGIAR Climate Research in Africa (AICCRA).

About AICCRA reports

Titles in this series aim to disseminate interim climate change, agriculture, and food security research and practices and stimulate feedback from the scientific community.

About AICCRA

The Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) project is supported by a grant from the International Development Association (IDA) of the World Bank.

Contact us

Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA). Email: aiccra@cgiar.org

Acknowledgments

This report is prepared by the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) in partnership with the West African Science Service centre on Climate Change and Adapted Land Use (WASCAL). RUFORUM is a partner under the The Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) project is supported by a grant from the International Development Association (IDA) of the World Bank. IDA helps the world's poorest countries by providing grants and low to zero-interest loans for projects and programs that boost economic growth, reduce poverty, and improve poor people's lives. IDA is one of the largest sources of assistance for the world's 76 poorest countries, 39 of which are in Africa. Annual IDA commitments have averaged about \$21 billion over circa 2017-2020, with approximately 61 percent going to Africa.

About the authors

Francis Otto is the Manager Knowledge Hub at the RUFORUM Secretariat.

William Amponsah is a professor and Scientific Coordinator of WASCAL, Kwame Nkrumah University of Science and Technology, Ghana

Majaliwa Mwanjololo Jackson is the Manager Regional Anchor universities and technical lead for the AICCRA programme at the RUFORUM Secretariat

Florence Nakayiwa is the Deputy Executive Secretary and coordinator of the AICCRA program at RUFORUM Secretariat

Contents

Background	5
Location and period of the workshop	6
Objectives	6
Workshop Welcome – Prof. Daouda Kone	7
Opening Remarks – Dr. Florence Nakayiwa, Dep. Exec. Secretary, RUFORUM	7
Opening Remark – Dr. Robert Zougmore, Coordinator, AICCRA	7
Opening Remark – Dr. Savadogo Moumini, Executive Director, WASCAL	7
Expectation of the meeting – Prof. KONE Daouda	8
General Discussion	8
Comments by Dr Robert Zougmore, AICCRA Coordinator	8
Overview of the meeting in Nairobi – Prof. Majaliwa	9
Completed Module Presentation and Discussion	10
Overview of the meeting in Nairobi – Prof. Betty Ezati	10
Curricula development – Prof. Betty Ezati	11
IRI’s CSA and CIS knowledge products and services – Dr. Amanda Grossi	11
Policy documents and advocacy areas of focus – Dr. Portia Adade Williams	12
Implementing ToT– Prof Betty Ezati	16
Refined Curriculum – Curricula developers	16
Artificial Intelligence – Tool for climate and crop Production - Prof Maïssa Mbaye	16
Roadmap validation - Prof Majaliwa - Prof Koné	17
Field visit to show case on the use of CSA and CIS at Daga-Brian in Fatik region (~ 500 km from Dakar)	18
Annex 1: Participants	21
Annex 2: Workshop Program	22

Background

The Accelerating Impacts of [CGIAR](#) Climate Research for Africa project ([AICCRA](#)) working through [CCAFS](#), intends to make CGIAR-led cutting-edge science practices/technologies/tools available throughout Africa; especially in Sub-regions extremely vulnerable to climate change. The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), a network of 150 universities in 38 countries spanning the whole African continent is a partner in the AICCRA project. RUFORUM's contribution in the AICCRA project is focused on mobilising African universities, create awareness and enhance the use of Climate Smart Agriculture (CSA) and Climate information services (CIS) knowledge and products developed by the CGIAR Centres and other research institutions engaged in CSA and CIS. Enhancing the use of CSA and CIS involves capacity, knowledge and technology audits at national and institutional level, mobilise CGIAR and other research centres to provide CSA and CIS knowledge, technology and skills and training of faculty to deploy the CSA and CIS products in training, research and outreach. Knowledge transfer and capacity building activities therefore form the central part of RUFORUM's participation in the AICCRA project.

RUFORUM undertook a national and institutional scoping study to identify gaps in CSA and CIS in Benin, Democratic Republic of Congo, Ethiopia, Kenya, Uganda, Zambia, and Zimbabwe. Further, the study focused on review and compilation of an inventory of existing academic programmes & courses related to CSA / CIS and the potential resource persons in the universities. The study revealed that CSA clusters vary from one country to another, but the dominant ones include Land Restoration and Agroforestry system (LRA) as the priority area number one, followed by Crop diversification CD, Water Harvesting and Management-Small scale irrigation (WHM) and Livestock & Aquaculture Management-LAM. The team thus, through consultation with different stakeholders identified seven (7) priority areas for the development of training materials to create awareness and build capacity at the university level. The initial steps were taken to identify resource persons and the drafting of course outlines and course materials where feasible.

RUFORUM organised the first workshop in Nairobi Kenya in July 2022 to develop and refine of CIS/CSA training materials to be used across the RUFORUM Network. The Nairobi workshop focused on 7 modules as shown below.

#	Modules
1	CSA and CIS-oriented technologies and extension strategies
2	Cost-effective renewable energy and biogas production,
3	improve policy review and coordination and strengthen local, national and regional institutions to support implementation of CSA and CIS
4	Climate information service and real-time agricultural data
5	Crop-livestock aquaculture integration
6	Nutrients and water management in crop production.
7	Indigenous and local trees based agroforestry systems involving*

The Dakar- Senegal Workshop was a follow on engagement that envisaged to work on additional courses identified from West Africa which complete the modules already developed during the last meeting organized by RUFORUM. The meeting brought on board other west African countries beyond the core countries to facilitate the spill over action and application through the university system.

Location and period of the workshop

The workshop was held in Dakar Senegal October 11 – 14, 2022.

Objectives

The overall objective of workshop was to elaborate additional Climate Smart Agriculture and Climate Information System Relevant Modules for Staff, Students, and other stakeholders

The specific objectives of the workshop were:

The meeting was designed to

1. Elaborate five additional modules developed as courses content to complete the 7 already developed during the meeting in Nairobi
2. Harmonize structure of different courses to be delivered using a map of the targeted actors,

3. Harmonize way forward on the implementation through the testing of curricula,
4. Develop a common roadmap for the operationalization for the actors embarked in the process
5. Design and enrich the format of training materials to be adopted for the university community and next users; and,

Workshop Welcome – Prof. Daouda Kone

- Arrival and Registration of the participants – Selasi Weto, WASCAL.
- A brief description of the meeting and presentation of the agenda – Prof. KONE Daouda.
- Welcomed participants and acknowledged the representation from various countries who have come to support the people of West Africa on the issue of Climate Change.

Opening Remarks

1. Dr. Florence Nakayiwa, Dep. Exec. Secretary, RUFORUM

- Greetings from Prof. Adipala (Exec. Secretary, RUFORUM).
- Recognized all participants present.
- Impacts of the AICCRA programme on all sectors of the economy.
- Universities are tasked to impact knowledge throughout the communities.
- Universities should impact generational knowledge on the impacts of climate change and the concept of CIS and CSA.
- The practical in their action.
- Stressed on the important collaboration with WASCAL on this project.
- Wished us a fruitful deliberation.
- Welcomed participants to RUFORUM AGM in Harare.

2. Dr. Robert Zougmore, Coordinator, AICCRA

- Thanked everyone for being here and being committed in this programme.
- AICCRA is about connecting things, partners, not about creating new knowledge, but accelerating action and impact.
- Training modules should be beneficial to every student, staff and communities on the continent – targeting 1.5 million farmers.
- Every partner should work to achieve this goal while using best practices of climate smart agriculture.
- Experience from Countries outside West Africa, like Ethiopia is helpful to the WASCAL.
- Demonstrate to the donor how AICCRA benefited the entire African continent and not just the target countries.

3. Dr. Savadogo Moumini, Executive Director, WASCAL

- Appreciated the role of the Universities collaborating with WASCAL.
- Thanked AICCRA for the excellent leadership in climate smart agriculture and information service in Africa.
- Appreciated RUFORUM for good leadership and partnership and opportunity to team up for joint effort for delivering AICCRA programme.
- Reiterated that this is as a result of the commendable achievement of the CGIAR project.
- Assured AICCRA that WASCAL and RUFORUM cherish partnership and network that goes beyond Africa – a true work of AICCRA for adopting and sharing information on CSA.
- Seven (7) modules have already been developed to help Universities to effectively impact the society.
- Confident in the quality and diversity of international partners and stakeholder to develop curricula on CSA and CIS.
- Students and staff will be aware of and be at easy to talk about CSA.
- Curricula on climate change and environmental issues that fits the purpose – identification of gaps.

- Curricula that train students as fast and as effective as possible.
- Thanked all for the presence in this meeting.

Expectation of the meeting – Prof. KONE Daouda

- COP26 includes commitment to integrate sustainability and climate change in curricula of formal education systems.
- African institutions and commissions are working towards realising this commitment.
- Phase 1: Creation of the course contents.
 - Eight (8) steps from May – Nov, 2022
 - Curricula pilot with 100,000 students by Sept/Nov, 2022
 - English, French, Arabic, Swahili, Portuguese and other African languages
- Phase 2: Large scale course deployment
 - Seven (7) steps from Dec, 2022 – Dec, 2023)
- Accelerating impacts of CGIAR climate research for Africa (AICCRA) project builds on CGIAR research programme on CCAFS in Africa
- Technology focus:
 - Sustainably increase production (productivity)
 - Reduce/remove GHGs (mitigation)
 - Enhance resilience (adaptation)
 - Economic/cost analysis (tangible benefits)
 - Potential positive effect on the farmer
- Example: AgInfo package developed by CoC and partners.
- Specific issues
 - Identify partners of universities as stakeholders
 - Need assessment
 - Partners' needs
 - Develop training materials
- Expected results
- Methodology of collaboration with host universities
- Expected outcomes
- Proposed course modules
- Out reach beyond West Africa
- Methods and approaches of model development
- Cascade training for CSM and CIS in Universities curricula
- Expected deliverables
- Perspectives (short term content finalization, validation of material, mid-term)

General Discussion

- How to disseminate of results and information to the 100,000 participants?
- Integrate 50% of the contents in the university curricula. What will be the methodology?
- Integration in already existing programmes or stand-alone programmes?
- Integration with already existing programmes will be at the mercy of these programmes.

Comments by Dr Robert Zougmore, AICCRA Coordinator

- AICCRA perspectives and orientation on CSA and CIS into University Curricula.
- Gender mainstreaming and empowerment activities (at least 30 % for female to access the course modules)
- AICCRA phase one is 3 years (closing in 2023)
- We have to show that there is success (outcome) from the partnership for the World Bank to renew its support to the activities
- The need to have a strategy for implementation.
- Consider institutional and administrative engagement and strategies.
- WASCAL should focus on innovating strategies to enhance the uptake of the concepts by students.

- RUFORUM is ever ready to coordinate for experts in CIS and CSA to be involved for students to develop interest in these concepts.



Group Photo at the end of the opening Ceremony with participants including the regional Coordinator of AICCRA, Dr Robert Zougmore (second on the first row from the left) and the representative of WASCAL Governing Board (Prof Issakha Youm, 2nd from the right on the first row)

Prof. Ahmadou Aly Mbaye, Vice Chancellor of University Cheik Anta Diop

- Climate change is a cross cutting issue for our economies.
- On behalf of RUFORUM and WASCAL universities he welcomed participants to Dakar in Senegal.



Group Photo after the visit of the VC, Prof Mbaye (3rd from the right) to the participants

Overview of the meeting in Nairobi – Prof. Majaliwa

- Representatives from Burundi, Ethiopia, Kenya, Uganda, Z

- Online awareness creation on CSA and CIS Nov, 2021
- Workplan to develop and implement the modules
 - Needs Assessment
 - Liaison with partners
 - Development of the module
 - Rolling out
- 6 out of 7 modules for East and Southern Africa have been co-developed and are available (course guide, facilitator's guide and presentation)
- Testing and rolling out the module. First training of the Deans will be done in December 2022

Completed Module Presentation and Discussion

1. Soil Nutrients and Water Management in Crop Production – Prof. Zelalem Bekeko

- Eight sections, all for 48 hours
- Three Aims/ objectives articulated
- Mode of delivery
- Assessment method
- To be adopted for undergraduate or post graduate level depending on the target audience to identified

2. Indigenous and local trees based agroforestry systems involving – Prof. Achille Assogbadjo

Presented by Prof. Kone

- Learning Outcomes: 4 with one verb for each outcome
- Content outline: 6 sessions
- Clear links between LOs and sessions
- Delivery approaches: multiple
- Assessment: multiple
- Duration: 80 hours (10 hs x 6 session, 20 hs of field work)
- Details of each session clearly elaborated.
- Discussion on the 300-slide detailed content.

Overview of the meeting in Nairobi – Prof. Betty Ezati

- Module system was agreed
- Sessions under each module
- Content of module
 - Module name
 - Module rationale
 - Module Description
 - Module Aim
 - Module Learning outcome
 - Entry requirements
 - Duration
 - Mode of instruction
- Content of each session
 - Session name
 - Session description
 - Learning outcome
 - Mode of delivery
 - Teaching and Learning materials
 - Mode of assessment
 - Reading list

Curricula development – Prof. Betty Ezati

- From idea, need assessment until implementation and evaluation.
- Curricula answer questions/solve problems.
- Makes it a thoughtful activity.
- Five action steps for curriculum design
 - Situational analysis
 - Formulation of learning outcomes
 - Deriving content
 - Selection of appropriate methods and media
 - Determine the assessment strategies
- Four levels for the formulation of learning outcomes
 - Factual
 - Conceptual
 - Practical/ professional
 - Metacognitive
- Example: Climate change
 - Factual: Define climate change
 - Conceptual: Analyse the effect of climate change
 - Practical: Design intervention to address the effect of climate change
 - Metacognitive: Evaluate the social and economic impacts of CC
- Implementation
 - Planning for teaching (pre-active, active, post active phases of teaching)
 - Active session (introduction teaching, conclusion)
- Selecting the appropriate methods
- Facilitating training – Plan
- Facilitating a session – Asking questions
- Assessment
 - Continuous, summative?
 - Participants should evaluate the model

IRI's CSA and CIS knowledge products and services – Dr. Amanda Grossi

- IRI approach to Education and Training in Climate Risk Management for Agriculture
 - Generate, Translate, Transfer and Use knowledge
- What is the role of your university in supporting adaptation and strengthening the agriculture and food system?
- Why develop curricula?
 - Gap in using climate information, lack of capacity
 - Problem of not using climate information
 - How to access and use of climate data
- The IRI approach – Building on and expanding the AICCRA- Ethiopia approach
 - Competency based
 - Systems oriented
 - Meets and stimulates demand for high quality climate information services
 - Maximizes reach and impact through ToT
 - Emphasizes co-production and iterative feedback
- Example: Climate Risk Management in Agricultural Extension (CRMAE)
 - M1: Climate basics
 - M2: Climate information products and tools
 - M3: Climate sensitive agricultural decisions
 - M4: Integrating climate services into agricultural extension
- CRMAE resources
 - Facilitator's guide
 - Link to ppt presentations

End of Day 1

- Closing and way forward for the next day - Prof Koné Daouda

Day 2 – 12th October, 2022

Welcome – Prof. Daouda Kone

- The second day session started with arrival and registration of the participants.
- Prof Kone welcomed participants to Day 2 of the programme.
- Recap of day 1 was elaborately provided by Dr. William Amponsah

Policy documents and advocacy areas of focus – Dr. Portia Adade Williams

- What does Policy entail? General description
 - Call for action, decision making, governments
 - Context, vision, actions, actors
 - Circle: agenda setting, policy formulation, policy implementation, monitoring and evaluation, policy review
 - Consultative process (institutional team, stakeholders, team of experts)
 - Formulation of policy: research, consultations, drafting, further consultations, re-drafting, finalize, adoption, publishing and launching
 - Actor and funding (private sector, academia, government, mass media, lead agency)
 - Monitoring and evaluation: SMART monitoring criteria, monitoring activities, evaluation criteria, evaluation methods
 - Policy reviews: a number of reasons for this, process the results of the review.
- Progress made with CSA relevant policy documents. What next?
- Global frameworks informing CSA commitment and actions
 - UN Paris Climate Agreement
 - Sustainable Development Goals
 - UN Food systems summit
 - Sendai Framework for Disaster Risk Reduction 2012-2030
 - UN decade on ecosystem restoration 2021-2030
- Continental frameworks (African context)
 - Agenda 2063
 - African Union Climate and resilient development and action plan 2022-2032
 - Malabo Declaration on accelerated agricultural growth and transformation for shared prosperity and improved livelihood
 - AU Green stimulus action plan
 - Adaptation for African Agriculture
- Regional Development Plans (West Africa)
 - West Africa Institute for Climate Smart Agriculture
- National Level
 - National adaptation programme of action
 - Nationally appropriate mitigation actions
- Implementation progress
 - Over 15 countries have climate smart profiles
 - 12 have CS investment
 - Multiple countries have included CSA in their national policies, strategies, or plans
 - Progress in implementing the African continental policy frameworks is generally low
 - Kenya has done well in terms of investment with over 250m USD
- Enabling policies and governance need to improve
 - Limited technical capacity
 - Weak institutional capacity
- Vision for CSA adapted future should be differentiated structured and improved policy coordination
 - Improve policy review
 - Improve policy coordination

- Policy advocacy to be stepped up (research to influence policy, assess policy environment, stakeholder mapping)
- Key success factors:
 - Evidence-based decision making is very important
 - Inclusive governance
 - Implementation and formulation are equally important
 - Universities are important in supporting

Discussion on Policy Advocacy – All Participant

- Sometimes governments don't consult.
- Human resources to be first in key success factors.
- Power analysis, those behind the scenes... where do universities belong in terms of influence line?
- How do we get to influence the processes of policy formulation and implementation?
- Need to think of short-term training for policy advocacy.
- We have good policies but not accessible – awareness creation through technology.

3. Module on Policy Framework to support implementation of CSA and CIS - Dr Portia Adade Williams

- Module name
- Module rationale
- Module description
- Module learning outcome
- Aim: Improve review and coordination and strengthen multi level capacities to support implementation of CSA and CIS
- 4 module sessions
 - Session 1: Introduction to policy and policy process (4 sections)
 - Session 2: Strategic Framework for development and implementation of inclusive CSA policy and programmes (5 sections)
 - Session 3: Conducting monitoring, Evaluation and review of CSA and CIS relevant policies
 - Session 4: Creating an enabling environment for upscaling CSA and CIS (5 Sections)
- Beneficiaries (academia, policy makers NGO, Civil society)
- Delivery approach of the module
- Assessment modes
- Reference materials

Discussion on Policy Framework to support implementation of CSA and CIS – All participants

- Stakeholders not comprehensive enough.
- Policy on data acquisition and use need to be included.
- Decision support tools and use of technologies to support policy processes.
- Module name needs to be revisited, too long and should not have active verbs.
- Realign the points under rationale to tell a story – justification.
- Objectives and learning outcomes to be revisited

4. Renewable energy, water resources and agriculture nexus under climate change – Prof. Rabani Adamou

- Rationale:
 - Considered population growth
 - Shortage of essential resources, adverse climate impact
- Description:
 - Connection between water, energy and food to enable sustainable and effective resource management in the region
 - Use of solar lighting and cooling
 - Solar water pumping
 - Drip irrigation and distance irrigation
 - Soil improvement (bio mass and waste management)
- Content:

- Four sessions (Global warming and climate change, Sustainable development theory and global SDG, WEF nexus challenges and opportunities in SSA, Technologies and good practices for green agriculture solution in SSA)
- Aim: Provide solid understanding of WEF nexus.
- 4 Learning outcomes:
 - LO1: Understand how human activities can affect climate (air pollution, greenhouse effect, global warming and climate change)
 - LO2: Analyze of interdependencies and relationships between water, energy and food (WEF) three resources
 - LO3: Evaluate WEF challenges and opportunities in line with SDGs in SSA
- Delivery approach:
 - Interactive lectures, Tutorial and laboratory hands-on-activities, interaction with experts and key stakeholders, case study, field trips, group work
- Beneficiaries
- Assessment: cases studies, situational analysis, problem and solution, labs hands-on, field work report
- Reference materials.
- Duration: 60+20 hours
- Yet to develop the details of the 4 sessions.

Discussion on Renewable energy, water resources and agriculture nexus under climate change – All Participant

- SSA climate change has a lot of impact like drought.
- The issue of biogas and fertilizer production are important.
- Need to work with partners already working on similar modules.
- Upscaling from farmer level to PhD level.
- Need to relook at the learning objectives.
- Provided comments for consideration in stating learning outcomes and other aspects of the module.
- Need to reflect on the documentation to polish it better.

5. Disaster risk management in crop production, livestock and aquaculture – Dr. Agboka Komi

- Rationale
 - Linked to SDGs and national priorities.
- Module description
- Learning outcomes
- Entry requirements
- Duration – 40 hrs
- Target audience
- Mode of delivery
- Mode of assessment
- Reading list
- Existing programmes
- Potential programme
- Module content (5 Sessions)
 - Climate disaster risk in agriculture and food systems.
 - Climate information systems.
 - Water resources in crop, livestock and aquaculture.
 - Strategies for integrated DRM in crop, livestock and aquaculture.
 - Case studies.
- Contents of sessions presented
- Other details of sessions yet to be developed.

Discussion on disaster risk management in crop production livestock and aquaculture – All participants

- Suggested a number of adjustments for improving the layout of the module contents.
- General content and order of the sessions.
- To include drought related content.
- Revisit the target audience.
- Collapse session 5 into other sessions.

- Review learning outcomes and merge some.
- Need to realign the contents.

6. **Pest and diseases management in crop, fish and livestock production - Prof Fatogoma Sorho**

- Followed module format
- Justification
- 5 learning outcomes
- Entry requirements
- Duration of 50 hours
- 4 sessions
- Clearly elaborated on the contents of the different sessions.

Discussion on pest and diseases management in crop, fish and livestock production – All participants

- Entry requirements needs review.
- Outcome and objectives to have action verbs.
- Possibly do away with objectives.
- Revisit the write up for consistency and make adjustment on grammar.
- Focus on specific species of crops, livestock and aquaculture.
- Session on ‘biotic and abiotic stresses’ was proposed to be a stand-alone module.

End of Day 2

- Closing remarks by Prof. Mwanjalolo Majaliwa
- Expressed optimism that good progress is being made by all groups
- Advised that by mid of November substantial work needs to have been done to allow for presentation in Harare in December

Recap of Day 3 – 13th October, 2022

Welcome – Prof. Daouda Kone

- The third day session started with arrival and registration of the participants.
- Prof Kone welcomed participants to Day 3 of the programme.
- Recap of day 1 was elaborately provided by Dr. William Amponsah

Commentary/Presentation on the approach to the Training of Trainers at the university level – Prof Betty Ezati

- Reflection on objectives and learning outcomes
- Differences between the two were given
 - Objectives: describes intention, focuses on what the teacher will do, opportunities
 - Outcomes: describes the result of learning, focus on what the students will do, how learning us used
- A number of examples of objectives and learning outcomes were provided

Commentary/Presentation on the approach to the Training of Trainers at the university level – Prof Betty Ezati

- Today learning outcomes are used as opposed to the objectives
 - Learning outcomes emphasize deep learning than content coverage and promote course alignment and coherence
- It was advised that knowledge, skills and attitudes should be considered in developing learning outcomes
- A number of verbs were presented as suitable in stating learning outcome for factual, procedural and metacognitive
- Learning outcome should be SMART

Implementing ToT– Prof Betty Ezati

- Who are we going to train?
- How do we upgrade and downgrade the module?
- Tailoring the curriculum to be taught by others
- Acknowledging that intellectual competence and pedagogical competence are different qualities
- Focus on handling methods, contents, learning environment, nature of adult learners
- Elaborate description of characteristics of adult learners were highlighted
- Emphasis given on the careful planning of the learning session and how it should be run effectively
- Careful choice of teaching method is important

Discussion approach to the Training of Trainers at the university level –All Participants

- How to deal with science subjects that very intensive and hard to understand or explain like in the case of mathematics and physics?
- Time allocated to finish ToT and whether to focus more on how to teach the contents than the contents
- How to adapt the same module for farmers, students and other categories
- Attitude change, how do we make sure that this is achieved?

Refined Curriculum – Curricula developers

- Dr. Portia ADADE Williams
 - Updated the module title
 - Module description updated
 - Learning outcomes were revised
- Prof. Sorho FATOGOMA
 - Included the beneficiaries
 - Updated the module description but still needs to be enhanced
 - Adjusted the learning outcomes, ranking them from the factual to the metacognitive
 - Adjusted the time allotted for each of the 5 sessions
- Prof. Rabani ADAMOU
 - Title was adjusted and is still to be fine tuned
 - Module duration was redone
 - The four sessions were distributed to the various experts to develop contents
- Prof. Komi AGBOKA
 - Module description was improved
 - Duration was adjusted to 60 hours
 - Mode of teaching, and assessment were revised
 - Module content was rearranged but needs further review
 - Each of the 5 sessions was updated

Module on Soil Carbon Sequestration – Dr. Yacouba DIALLO

- Module rationale was presented
- Module description was also presented
- Entry requirements
- Duration
- Mode of delivery
- Beneficiary list
- Mode of assessment
- Session contents
- Details of sectional structure yet to be developed.

Artificial Intelligence – Tool for climate and crop Production - Prof Maïssa Mbaye

- The experimental farms
- Edge AI-IoT Node
- Cloud Fog

- Edge AI hardware platforms
- AI software frameworks (TensorFlow, Keras, Scikit-learn, (py) Tournch
- Rift valley fever outbreaks – early warning system
- Data sources
 - ISRA and national Health System
 - Local communities
 - EU open data portal
 - FAO Rift valley fever
 - WHO
- Temperature has been investigated but result is not strong enough
- Evaluation of pollution
- Smart agriculture- AfricaRise uses deep learning
- Cheaper approach to recognize disease

Discussion

- Needs a lot of data
- How to train out students to use AI
- Difference between deep learning and machine learning
- How can historical data be effectively used
- How to build a sustainably practical solution for small holder farmers
- Need to build collaboration with other African institutions/ countries to bolster the efforts to use AI and ML techniques to build solutions to help solve continental challenges
- Using AI deep learning for crop production improvement – smart agriculture

Roadmap validation - Prof Majaliwa - Prof Koné

- Improvement of the modules by October 29 - Team leaders
- Review of modules November 1-15
- Testing in Zimbabwe December 8- 16
- Finalization of the modules December – January
- Elaboration of the modules December 12-14
- Closing – Prof Koné Daouda

Roadmap on Modules on Climate Smart Agriculture and Climate Information System for Staff, students and other stakeholders in Universities

Activities	Period	Responsible
Improvement of the modules content for review	October 29th	Team leaders
Review of modules	November 1-15	WASCAL
Short courses development	21-26 November 2022	WASCAL
Testing in Zimbabwe	December 10-16	RUFORUM/WASCAL
Finalization of the modules content	December to January 15th	Team leaders
Elaboration of the module implementation strategies into the Universities	December 12-14	All participants

Field visit to show case on the use of CSA and CIS at Daga-Brian in Fatik region (~ 500 km from Dakar)



a)



b)

Figure 3 a: picture of the communities and their chief (first seated from the right) involved in the demonstration and used of CSA and CIS at Daga Birame et Kafrine in Sénégal as indicated on the plaque below



Participants of the curricula development at the demonstration site of CSA and CIS at Daga Birame et Kafrine in Sénégal where groundnut, cowpea and millet are under evaluation and also the use of pv for water pumping for irrigation will be using in the near future.



a)



b)



c)

Figure 5: Participants in figure 5a are following explanation of demonstration conducted on the site using groundnuts and in 5b where there is a manual rain gauge in addition to an automatic rain gauge in 5c

The visit at been ended by addressing participant thankful and gratitude to the communities of farmers in the village

Annex 1: Participants

Prof KONE Daouda, Director, WASCAL CBD

Prof. Issakha YOUM, Senegal representative to the Board of WASCAL

Prof. Rabani ADAMOUM – Niger. Director Graduate programme

Dr Robert Zougmore, Coordinator, AICCRA

Dr. William AMPONSAH, Scientific Coordinator of WASCAL, Kwame Nkrumah University of Science and Technology, Ghana

Dr. Portia Adade WILLIAMS STEPRI- CSIR, Accra, Ghana

Prof. ADEYEWA Debo, Director of WASCAL Climate system, Akure, Nigeria

Prof. Zelalem BEKEKO, Haramaya, University, Ethiopia

Dr. Michael TUFFOUR, HoD Water Resources and Sustainable Development

Dr. Francis OTTO, RUFORUM, Uganda

Dr. Yacouba DIALLO, Director of WASCAL programme in Climate Change and Agriculture

Dr. Ibrahima BARRY, Director for WASCAL programme in Climate Change Economics, UCAD, Senegal

Prof. Julien ADOUNKPE, University of Abomey Calavi, Benin

Prof. Majaliwa Mwanjawolo, Soil Scientist, RUFORUM

Prof. Wilson Agyei AGYARE, Director for Climate Change Land use, Kwame Nkrumah University of Science and Technology, Ghana

Prof. Komi AGBOKA, Director or Programme Change Disaster Risk Management, Lome, Togo

Prof. Betty Ezati, Curriculum expert, Makerere University

Prof. FATOGOMA Sorho, WASCAL Programme on Climate Change and Biodiversity, Scientific Coordinator, UFHB, Abidjan, Cote d'Ivoire

Selasi WETO, WASCAL, CBD

John MAAMU, WASCAL, CBD

Online Participants :

Dr Savadogo Moumini, WASCAL Executive Director

Dr. Florence Nakayiwa, Dep. Exec. Secretary, RUFORUM

Dr. Amanda Grossi, IRI's -USA

Annex 2: Workshop Program

Day 1: 10th October, 8h30 – 17 h15 min

	ACTIVITIES	Speakers/Responsible
8h30-9h05	Arrival and Registration of the participants	Selasi Weto WASCAL
9h05-10h00	Welcome Remark	Vice Chancellor of UCAD
	Opening Remarks RUFORUM	Dr. Florence Nakayiwa
	Opening Remark WASCAL	Dr Robert Zougmore
	Opening Remark WASCAL	Dr Savadogo Moumini
10h00 - 10h15	Self-introduction	
10h15 - 10h20	Presentation and Validation of the Agenda	
10h20 - 10h30	Expectation of the meeting	
10h30-11h00	Update on AICCRA perspectives and orientation on CSA and CIS into University curricula	AICCRA Senegal
11h20-11h30	Groupe Photo	IT GSP WASCAL
11h-11h30	Health Break	Selasi
11h30-12h00	Discussion on AICCRA perspective on CSA and CIS into University Curricula	All participants
12h00-13h00	Overview on the meeting in Nairobi (status of curricula developed)	Majaliwa
13h00-14h00	Health break	
14h00-15h00	Discussion on the meeting in Nairobi	
15h00-16h00	Curricula development: from idea, need assessment until the implementation and evaluation	
16h00-17h00	Discussion on AICCRA perspective on need assessment until the implementation and evaluation	
17h10-17h10	Closing and way froward for the next day	

ACTIVITIES		<u>Speakers/Responsible</u>
9h00-9h10	Arrival and Registration of the participants	Welcome of participants
9h10-9h30	Recap of day 1 and feedback from participants	Dr Amposah Williams
9h30-10h30	Policy documents and advocacy	Dr Portia Adade Williams STEPRI -CSIR
10h00-10h20	Discussion on Policy document	All participants
10h20-11h00	Renewable energy -water resources and agriculture nexus under climate change	Prof Rabani Adamou
11h00-11h30	Health Break	Selasi
11h30 -12h00	Discussion on Renewable Energy-Water resources and Agriculture nexus under climate change	All participants
12h20 -12h30	Presentation of module on Disaster risk management in crop production livestock and aquaculture WASCAL	Prof Agboka Komi, Director WASCAL Togo
12h30-13h00	Discussion on module on Disaster risk management in crop production livestock and aquaculture WASCAL	All participants
13h00-14h00	Lunch break	Selasi
14h00-14h30	Module pest and diseases management in crop, fish and livestock production	To be identified
14h30-15h00	Discussion on pest and diseases management in crop, fish and livestock production	To be identified
15h00-15h30	Discussion on the meeting in Nairobi	
15h30-16h00	Presentation of module on Policy Framework to support implementation of CSA and CIS	Dr Portia Adade William STEPRI- Prof. Chrispen Murungweni, Zimbabwe
16h00-17h30	Presentation of module on Policy Framework to support implementation of CSA and CIS	All participants
16h30-17h00		
17h00-17h20	Recap Day 2	

Day 3: 12th October, 9h – 17 h

ACTIVITIES		<u>Speakers/Responsible</u>
9h00-9h10	Arrival and Registration of the participants	Welcome of participants
9h10-9h30	Recap of day 2	Dr Amposah Williams
9h30-9h30	Commentary/Presentation on the approach to the Training of Trainers at the university level	Curriculum Expert TBI
9h:30-13h00	Refined Curriculum Improvement areas- presentation	Curricula developers
13h00-14h00	Health Break	Selasi
14h00-16h00	Refining Curricula on soil-carbon sequestration and crop	
16h00-16h30	Artificial Intelligence – Tool for climate and crop Production	Prof Maïssa Mbaye
16h30-17h00	Discussion	
17h00-17h30	Roadmap validation	
17h30-18h00	Closing	AICCRA-RUFORUM-WASCAL

Day 4 :13th October, 9h – 17 h

ACTIVITIES		<u>Speakers/Responsible</u>
9h00-9h10	Arrival and Registration of the participants	Welcome of participants
9h05-13h	Recap of day 3 on the way to visit	Dr Amposah Williams
	Departure for visit in the field o show case on the use of CSA and CIS	
13h00-14h00	Lunch	
14h00	Visit to Gorée (optional)	



AICCRA
Accelerating Impacts of CGIAR
Climate Research for Africa



About AICCRA

Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) is a project that helps deliver a climate-smart African future driven by science and innovation in agriculture.

It is led by the Alliance of Bioversity International and CIAT and supported by a grant from the International Development Association (IDA) of the World Bank.

Discover more at aiccra.cgiar.org



This Report compiled under the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) in partnership with WASCAL. RUFORUM is a partner under the AICCRA Program