



CAPACITY4FOOD

Integrated Soil Fertility  
Management for Food Security:  
Matching capacities  
in Anglophone West African  
Nation HEIs with local needs

ANGLOPHONE NEEDS ANALYSIS REPORT  
ACT 1.1

CAPACITY4FOOD: Integrated Soil Fertility Management for Food Security: Matching capacities in Anglophone West African Nation HEIs with local needs-ANGLOPHONE NEEDS ANALISYS REPORT

University of Alicante (Spain), University of Dschang (Cameroon), University of the Gambia (Gambia), College of Agriculture and Consumer Sciences, University of Ghana (Ghana), Federal University of Technology (Nigeria), Njala University (Sierra Leone).

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CAPACITY4FOOD

## 1. Executive summary

The overall aim of the CAPACITY4FOOD project is to foster capacity building and regional integration in the field of integrated soil fertility management (ISFM) for food security in five West African countries, namely, Gambia, Sierra Leone, Ghana, Nigeria and Cameroun.

The needs analysis section of the project was designed to carry out an in-depth analysis of the current status of ISFM and needs of higher education institutions to enhance their capacity for ISFM training and dissemination. University teachers and industry stakeholders were interviewed across the five countries to ascertain their ISFM capacity and needs.

### The Universities

Surveys were conducted in selected universities in the five countries. A total of 150 respondents in 15 universities involved in the training of students of agriculture, forestry and natural resources across the five countries were interviewed. These institutions offer programmes at PhD, Masters, Bachelors, Diploma and Certificate levels. The respondents were made up of university lecturers, research scientists, research assistants, technicians, field officers and university administrators.



## ISFM Institutional Capacity, Resources and Infrastructure

Teachers of soil fertility were less than one per cent of total staff strength of the universities. All the universities offered agriculture and forestry degrees/diplomas, which include soil fertility courses but ISFM is not a stand-alone course in any university. Consequently, it was difficult to estimate the budget or any resource or support specifically for ISFM. None of the universities had an office for ISFM activities.

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All the universities had farms or land, which could be used for ISFM practical training, but 80% of the universities had no training programmes or on-going projects in ISFM. All the universities had shared laboratories for soil nutrient analysis and in addition had access to National Research Laboratory facilities. The university laboratories were relatively well equipped. Staff had access to Internet (medium speed) statistical and GIS software. No online educational platform was available in 75% of universities surveyed.

All the universities support teacher exchange programmes in general but not specifically ISFM programmes. All the university teachers surveyed had participated in one international project or another. Indications were that universities may award travel grants although not specifically for ISFM.

Limited travel grants funded by universities are possible.

The universities unanimously supported the creation of a centre of excellence for theory and practical training in ISFM.





## Policy, Co Operation and Research in ISFM

Although all the universities affirm that ISFM is an important part of their training activity, only 40% of the countries surveyed supposedly had an ISFM policy.

Teachers in all institutions have cooperated with farmers at one time or another and unanimously affirm that farmers are very receptive to new technologies, including ISFM.

All the universities surveyed have participated in one international project or another. The teachers in most countries (80%) were involved in international projects. However, despite this exposure, majority of universities had no formal cooperation in ISFM between university, industry or policy makers. About 40% of the institutions had some formal cooperation with industry or other stakeholders. These stakeholders included local organisations (ministries, NGO's etc.) and international organisations (World Bank, Aforinet, CIRAD, etc).

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Across the 15 institutions surveyed, less than 10% of their staff had attended conferences on ISFM. Publications (books and journals) from universities varied from very high in Nigeria to low Gambia.

Teachers in all countries expressed the need for in-depth, 1-2 month duration training courses in ISFM but majority (80%) were unsure if university would fully or partially fund training in ISFM.

All the institutions affirmed the need for an ISFM office to organise training programmes, facilitate inter and intra industry and university cooperation.





## The Industry

For the industry stakeholders, 155 respondents from NGO's, farmers, Ministry of Agriculture, Research Institutes, Farmer Associations and Agricultural Projects across the five countries were interviewed.

## General education and Training in ISFM

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There was a unanimous agreement by respondents that ISFM activities were very important in their work, but majority of respondents rated their knowledge of ISFM as medium.

On the whole, government ministries and research institutions had staff with ISFM background capable of training farmers.

There was a very limited cooperation amongst industry stakeholders on ISFM related activities but there was no cooperation between industry and universities on IFSM.

All respondents supported the establishment of a centre of excellence to facilitate ISFM related activities.

## Conclusions from Farmers

Majority of farmers (80%) rated soil fertility constraints as high to very high. The farmers also confirmed that use of ISFM strategies led to increased crop production but did not necessarily reduce production costs.

Less than 25% of farmers had received any formal training in ISFM. The limited trainings had been on composting. Farmers had also not received any regular information on ISFM from universities or extension services. All farmers expressed a





great desire to participate in ISFM activities if it would enhance productivity.

## Conclusions from NGO's and other Institutions

Majority of Ministry of Agriculture staff had background in soil fertility. They however did not have clear opportunities for in-service training in ISFM to improve their knowledge. All stakeholders endorsed ISFM adoption as a path to address soil fertility declines in production systems.

Majority of NGO's and other institutions reported that they had very limited cooperation with universities. Forming a network and creating linkages between industry and universities would be very useful for all stakeholders.

## Topics for Trainings and Round Table Discussions

Twenty topics suggested for trainings and round table discussions by universities and industry stakeholders were as follows:

- ▶ Soil organic matter and soil water management strategies (mulching, strip cropping, composting, biochar)
- ▶ Fertilizer use and management
- ▶ Integrated nutrient management
- ▶ GIS application in soil fertility
- ▶ Development of ISFM training materials
- ▶ Training on development of extension materials on ISFM (TV clips, jingles, flyers, posters)
- ▶ Biochar and crop production
- ▶ Silvopastoral systems for soil fertility
- ▶ Modelling nutrient dynamics in cropping systems
- ▶ Principles, technologies and practice of ISFM



- ▶ Climate change, integrated soil fertility management and food security
- ▶ Awareness and compliance with and enforcement of ISFM
- ▶ Community needs assessment techniques
- ▶ Capacity building in soil health
- ▶ Farmer field schools in soil fertility management
- ▶ Establishment of agricultural information generation and sharing platforms among farmers, NGO's, universities and governments.
- ▶ Policy development strategies for ISFM
- ▶ Role of ISFM to household and national food security and farmer livelihoods
- ▶ Participatory evaluation of existing farmer practices in ISFM

### **Conclusions (what CAPACITY4FOOD can achieve)**

Creation of centres of excellence will serve as reference points for training and capacity building in ISFM for teaching staff and extension officers to improve competencies in ISFM.

Training programmes in ISFM will enhance teacher experience in ISFM. This can increase the critical mass of ISFM experts, create awareness and inform policy direction. Training, information sharing and networking are tools that will promote ISFM hence CAPACITY4FOOD gives an opportunity for training of trainers in ISFM who will later train farmers. There is need for Internet upgrade, books on ISFM and multimedia projectors for enhanced and proper dissemination activities.

CAPACITY4FOOD will initiate and assist in the formation of collaborative networks and strengthen collaboration and networking on ISFM. It will assist in creating linkages between farmers, NGO's, policy makers and universities within countries and internationally.

The table below represents an overview of the most significant conclusions of the need analysis.

UNIVERSITY (HEI)	
Total respondents	150
Universities involved	15
Teacher of ISFM at the HEIs	<1%
No training programmes or on-going projects in ISFM at HEIs level	80%
No online platform at HEIs	75%
POLICY, CO OPERATION AND RESEARCH IN ISFM	
Institutions surveyed	15
Countries supposedly with an ISFM policy	40%
Institutions with formal cooperation with industry or other stakeholders	40%
Researchers involved in international projects	80%
Staff had attended conferences on ISFM	<10%
INDUSTRY, FARMERS NGOs & OTHER	
Respondents from NGO's, farmers, Ministry of Agriculture, Research Institutes, Farmer Associations and Agricultural Projects across the five countries interviewed	155
Knowledge of majority of respondents in ISFM	MEDIUM
Cooperation amongst industry stakeholders on ISFM related activities	LIMITED

Cooperation amongst NGO's and other institutions and HEIs on ISFM related activities	LIMITED
Cooperation between industry and universities on IFSM related activities	NOT STATISTICALLY RELEVANT
Percentage of farmers who rated soil fertility constraints as high to very high.	80%
Farmers who received any formal training in ISFM	<25%
Opportunities for in-service training in ISFM to improve the Ministry knowledge	NOT STATISTICALLY RELEVANT

## 20 TOPICS SUGGESTED FOR TRAININGS AND ROUND TABLE DISCUSSIONS BY UNIVERSITIES AND INDUSTRY STAKEHOLDERS

- Soil organic matter and soil water management strategies (mulching, strip cropping, composting, biochar)
- Fertilizer use and management
- Integrated nutrient management
- GIS application in soil fertility
- Development of ISFM training materials
- Training on development of extension materials on ISFM (TV clips, jingles, flyers, posters)
- Biochar and crop production
- Silvopastoral systems for soil fertility
- Modelling nutrient dynamics in cropping systems
- Principles, technologies and practice of ISFM
- Climate change, integrated soil fertility management and food security
- Awareness and compliance with and enforcement of ISFM
- Community needs assessment techniques
- Capacity building in soil health
- Farmer field schools in soil fertility management
- Establishment of agricultural information generation and sharing platforms among farmers, NGO's, universities and governments.
- Policy development strategies for ISFM
- Role of ISFM to household and national food security and farmer livelihoods
- Participatory evaluation of existing farmer practices in ISFM



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## 2. Introduction

Agriculture represents a major economic sector in West Africa. Majority of inhabitants depend on agriculture and it employs about 70% of the workforce all of whom depend on agriculture for their livelihood. However three key problems have been identified that threatens optimum agricultural output

Firstly, declining soil productivity means that less and less food is being produced and this threatens food security and livelihoods. Soils of most West African countries have low fertility but also they do not receive adequate nutrient replenishment. The traditional land management systems are dependent on the availability of sufficient land to allow long fallow periods to replenish soil fertility but this is no longer possible but rather integrated strategies could be used. A second problem that arises is the critical shortage of experts in integrated soil fertility management (ISFM). Availability of experts in ISFM in universities and other training institutions could result in these institutions being able to advice and train farmers and extension staff to improve agricultural practices. These experts could also advice government authorities for adoption of realistic policies to improve and sustain soil fertility. The third problem is the lack of awareness of ISFM and the importance of networking and inter-institutional and international cooperation in ISFM strategies. More experienced

practitioners could share good practices with other partners, thus leading to better practice of ISFM.

With these constraints in mind, there is an urgent need for fostering capacity building and regional integration in the study and practice of ISFM for enhanced food security and improved livelihood. The CAPACITY4FOOD project objective is to foster capacity building by setting up centres of excellence and enhance regional integration in ISFM. In furtherance of this, structured interviews were conducted in universities and industry stakeholders in Gambia, Sierra Leone, Ghana, Nigeria and Cameroun to ascertain the current status and needs for ISFM knowledge, research, cooperation and infrastructure.

## 2.1. Methodology

The methodology used to carry out this in-depth analysis has been based on a set carefully designed questionnaires. Different surveys have been prepared taking into account our target groups:

- ▶ Universities (partner and beyond the CAPACITY4FOOD consortium)
- ▶ Stakeholders (Ministries, NGOs, farmers, associations)

The questionnaires can be found in Annex I of this report.

### 2.1.1. Questionnaires for Universities

11 are the sections that compose the questionnaire addresses to Universities:

- ▶ *General information about your institution:* the aim of this section is to have some basic data on the institution and the person who is answering the question

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- ▶ *Institutional resources*: to understand the resources the institution has at its own disposal for teaching and learning purposes and to have an understanding of the actual size of the institution
  - ▶ *General education and training*: to have an in-depth insight of the study programmes offer of the university
  - ▶ *Cooperation on ISFM*: to see in which cooperation activities the university are involved and with which kind of actors
  - ▶ *ISFM institutional capacity*: to detect any relevant background of the institution on ISFM and related topics
  - ▶ *Research and cooperation on ISFM*: to know in which research activities they are involved and understand their needs
  - ▶ *ISFM related infrastructure*: to understand what infrastructure the Centres of Excellence that the CAPACITY 4FOOD will create will have at their disposal
  - ▶ *ISFM education*: to have a complete overview of the study programmes and the levels of education
  - ▶ *Information about other institutions in your country*: to broaden our perspective and not only limit our research to partner universities
  - ▶ *Cooperation with administration, industry & stakeholders*: cooperation with different actors is of a great relevance, so that the purpose of this sentence is to detect any kind of cooperation the university has with other actors
  - ▶ *Additional comments*: in case the respondent would add any comment

6 are the sections that compose the questionnaire prepared for stakeholders. This survey is much more concise since we supposed the fact that this kind of target would spend less time answering the survey and thus we decided to have a





shorter document to ensure the quality of answers and information provided.

The sections that compose the questionnaire are presented in the list below:

- ▶ *General information about your institution*: the aim of this section is to have some basic data on the institution and the person who is answering the question
- ▶ *Institutional resources*: to understand the resources (human and logistical) the institution has at its own disposal for ISFM
- ▶ *General education*: of the respondent on ISFM related topics and his /her level of expertise in cooperation and research activities (national, regional and international)
- ▶ *Farmers*: to understand the knowledge they have on ISFM, the policies, the training activities in which they participated in and any other data to detect their needs on ISFM that the project could satisfy.
- ▶ *NGOs and other institutions (service providers)*: to understand the expertise of the NGO staff in terms of ISFM and detect their needs on ISFM that the project could satisfy.
- ▶ *Additional comments*: in case the respondent would add any comment.

The surveys have been prepared by the University of Alicante, the project coordinator, with the cooperation of all partners who actively provided feedback and suggested modifications for their improvement. This has been crucial, since the project partners are the ones who really know their context and are the best actors for supporting the project coordinator in the design of effective surveys for the different targets.

After the creation of the surveys, they have been distributed to the CAPACITY4FOOD consortium and partners decided to





employ a hybrid methodology that consisted in both sending the surveys by email, but also using them as guide for face to face interviews. This approach has been agreed since our main objective was to obtain data not only from the partner universities, but also from others actors, so that to have statistical relevant data.

As far as for stakeholders, face-to-face interviews became essential due to the fact that in many cases they did not have access to internet and thus if we really wanted to reach them, this could have been done only by face-to-face interviews.

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The answers have been analysed by each partner at national level, and after that passed to the activity leader for its further analysis and drafting of this report.

Last but not least this need analysis activity gave to all partner the possibility to carry out an extensive dissemination of the CAPACITY4FOOD project





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## 3. Results by country

### 3.1. Cameroon

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#### 3.1.1. Cameroon- Universities

##### DATA CONCERNING RESPONDENTS

Five institutions involved in the training of students of agriculture and forestry (Technical school of agriculture Bambili, University of Buea, University of Bamenda, Institute of agricultural research for development (IRAD Ekona) and the Ministry of agriculture and rural development) in Cameroon were involved in the survey. Although the ministerial departments are not universities, they have experts who are involved in tertiary education. A total of 47 respondents participated according to the following distribution: University lecturers (10%), Laboratory supervisors (2%), senior research officers (2%) and students (85%). Seventy-five questionnaires were administered but only 47 were returned, giving a return rate of 63%.

##### FINDINGS ON INSTITUTIONAL RESPOURCES

The teaching staff population of the universities interviewed ranged from 500 to 850. Relative to this staff strength, the

percentage of lecturers specialized in soil fertility evaluation and management is less than 1%. A common phenomenon is that some of these lecturers serve as both full-time and part-time lecturers in different universities. The university of Buea has two permanent staff specialized in soil fertility and environmental chemistry. In the university of Dschang, soil fertility is taught in both undergraduate and graduate levels, while in the university of Buea, there is no graduate studies yet at the faculty of agriculture. The difference between the two universities is that in Dschang, soil fertility is taught as separate course while in the University of Buea, it is a component of introductory soil science. Specialization in soil fertility is at the postgraduate level in the university of Dschang, where since its creation (about 50 years ago), only 3 masters students have graduated in soil fertility option. Less than 10 students are currently enrolled in the soil fertility option for the 2013/2014 academic year. Because soil fertility is not treated as a separate component in the university, it was difficult to provide an estimate of the budget allocated to soil fertility activities. Seventy per cent of the respondents indicated that there was no on-going project on soil fertility, reflecting the limited attention that stakeholders give to this important soil quality, which is the pivot of human existence. More than two thirds (60%) of the respondents opine that the universities have no training programs for teachers on integrated soil fertility management (ISFM) and food security (FS). This is supported by 80% of respondents, who reported that no centre for teacher support on ISFM exists. With the aforementioned background information, respondents were unanimous that it would be interesting/necessary to have a centre in each university specialized in ISFM, project management and other strategic issues that could be useful for international cooperation and



study programs improvement (theoretical and practical). The capacity4food project can increase the critical mass of experts required to direct issues of soil fertility and food security, create awareness on the importance of ISFM as a discipline and inform policy on budgetary allocations.

### GENERAL EDUCATION AND TRAINING AND ON ISFM

Averagely, 13 degree programs are offered by each university. ISFM is not a degree, but is an integral part of agricultural degrees. This deliverance of non-degree courses (certificate and diploma courses) represent averagely, 19 percent of courses offered. Specifically, the University of Dschang and the Technical College of agriculture, offer diploma and certificate courses. It is evident that potential candidates needing specialized training on ISFM will have limited chances to enrol in agricultural institutions who recruit students through government controlled competitive examinations. The creation of centres of excellence on ISFM in the capacity4food project will increase the opportunity of middle cadre and extension agents to improve their competences on ISFM. Most respondents (69%) acknowledge that teacher exchange programs with other universities/countries exist. With respect to the existence of online educational platforms, 71% of the respondents were positive. This could be an over-representation because online educational platforms were confused with availability of Internet facilities for communication. Soil fertility courses are structured as theory and practicals or theory, tutorials and practicals, with an average of 57 hours for theory, 16 hours for tutorials and 25 hours for practicals. Eighty-three percent of the respondents acknowledged that opportunities are available to train teachers externally, even though limited support

(mostly as travel grants) is provided by universities administration.

### COOPERATION ON ISFM

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Respondents (100%) asserted that ISFM is an important part of their activities. This was illustrated by the response that farmers are receptive to methods of improving soil fertility other than use of chemical fertilizers (63%). Fifty-four percent of the respondents were of the opinion that policies exist on ISFM, but when asked to state these policies, they were unable to. Just about half of respondents (59%) acknowledged university cooperation with other universities; 65% acknowledged university cooperation with policy makers and 70% university cooperation with farmers. The high University-farmer cooperation indicates that the capacity4food project, which has training of students or capacity building as a major component, is a suitable entry point to increase farmers' knowledge on ISFM in relation to current challenges perceived both by farmers and researchers and food security. Participation of respondents in international projects was low (17%), with just above 1/3 (39%) of respondents stating that university has an MOU or any similar official framework in collaborating with industry/international ISFM related study program or international cooperation initiatives.

### ISFM INSTITUTIONAL CAPACITY

Eighty percent of the respondents are not aware of the existence of any office related with ISFM and international cooperation. If this office exists, it is required to collaborate with ISFM experts or other competent authorities and advice local farm-



ers and NGOs. Ninety-four percent of the respondents consider useful an office at the university that will organize trainings on ISFM, cooperate with university for study programs drafting and improvement and also for university cooperation projects. The capacity4food project intends to bring in these innovations.

### Research and cooperation on ISFM

Because of the small number of staff and students specialized in ISFM, the number of international projects related to ISFM is small (7%). This explains also why the number of scientific articles, chapters and books published on ISFM is small. Although other forms of publication (leaflets, posters etc) are available, they represent a limited source of information (26%). Less than half (48%) of the respondents have attended conferences/workshops, even though these conferences were not indicated. Respondents (94%) agreed that it would be interesting/necessary for some experts and students from higher institutions of learning to receive training on ISFM and related subjects in other countries and on international cooperation options. They expect three training options: short courses (24%), in-depth (1-2 months) training (32%) and postgraduate training programs (44%). All three kinds of training are important and should be factored in activities within the capacity4food project. However, a major setback to long-term training could be limited external funding as reflected by this survey. A majority (79%) of respondents indicated that are incapable of partially of fully financing such trainings.



## INFRASTRUCTURE

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ISFM related infrastructures are shared. In the university of Dschang for example, there is a common laboratory for soil science and environmental chemistry. The newly created faculty of agriculture and veterinary medicine of the University of Buea, has no specialized laboratory of soil sciences, but shares the facilities available at the Institute of Agronomic research for development (IRAD) Ekona. The following laboratory equipment are available in Dschang and Ekona: atomic absorption spectrophotometer, electronic balance, pH meters, spectrophotometers, tensiometers, digesters, autoclave, ovens, refrigerators etc. major infrastructure needs such as greenhouses and modern laboratories were highlighted in all higher institutions of learning. Computers placed at the disposal of students are few (between 1 – 22), with access to Internet connections (69%), with internet speed characterised as slow-to-medium (96%). Statistical software used by students and staff are: GENSTAT, SPSS, R, STATISTICA, MSTAT and GAMS. Frequently used GIS software are MapInfo and ArcGIS to a limited extent. Effective learning in the centres of excellence, when created can only take place if computers are made available for trainers to use as well as high speed internet connections provided. Because students are familiar with GIS software, training on spatial evaluation of nutrient deficiencies and modelling of nutrient dynamics would be easily appreciated. There is limited subscription to specific ISFM journals (91%).

## COOPERATION WITH ADMINISTRATION, INDUSTRY & STAKEHOLDERS

University collaboration with institutions involved in ISFM (Ministry, local farmers, stakeholder associations, NGOs, sub-regional/ regional organizations, international projects/ consultants can be placed at 50%. Collaboration have been with CGIAR, AfricaRice, CIRAD, IRAD and the ministry of agriculture and rural development. Present collaboration with international experts is limited to 25%, This implies that there is much room for improvement. The institutions of higher learning have worked with stakeholders in the following capacities: Research and development cooperation (60%); International cooperation (49%); Quality assurance (32%); **Training of industry/international ISFM program (21%); Industry/international ISFM programme experts teaching in higher institutions (7%);** Participation on committees/advisory boards/governance boards (36%); **Information technology tools for ISFM (15%).**

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## SUGGESTION ON TOPICS FOR TRAININGS AND ROUND TABLES

### Training

- ▶ *Soil organic matter and soil water management in smallholder farming systems*
- ▶ *Fertilizer use*
- ▶ *GIS applications in soil fertility management*

### Round table

- ▶ *Climate change, integrated soil fertility management and food security*

### 3.1.2. Cameroon- Labour Market, NGOs and Institutions

#### DATA CONCERNING RESPONDENTS

A total of 19 respondents were involved in the study. They were distributed as follows: 7 farmers representing 37%, 6 NGOs and Ministry of agriculture and rural development staff, each representing 32%.

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#### GENERAL EDUCATION AND TRAINING AND ON ISFM

The labour market is unassuming and rates the level of awareness of ISFM as average (58%). Institutions, NGOs and farmers (89%) are not aware of any existing policies on ISFM. Sixty-three percent of the respondents are of the opinion that it would be interesting/necessary to have a centre at university specialized in ISFM to help and support in ISFM and food security. Twenty four percent of respondents acknowledged that they have staff with background in soil fertility management. The agreed unanimously that ISFM is important for their activity.

#### MAIN CONCLUSIONS FROM FARMERS

- ▶ More than half (58%) of the farmers rate soil fertility constraints as high to very high.
- ▶ Common ISFM practices are: use of organic manure; combined use of manure and mineral fertilizers; use of cultural practices, manure and mineral fertilizers.
- ▶ Fifty-three percent of farmers acknowledged that use of ISFM led to increased productivity.
- ▶ Only 32% of farmers have received training on soil fertility management; mainly on production of compost.

- ▶ Eighty-nine percent of farmers do not receive regular updates on agricultural information from universities.
- ▶ More than half of the respondents (58%) are willing to be trained on ISFM practices.
- ▶ Constraints encountered with ISFM are: lack of inputs; lack of relevant information; limited training and low-income status of farmers.

### MAIN CONCLUSIONS FROM NGOS AND OTHER INSTITUTIONS

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- ▶ All staff of ministry of agriculture and 24% of staff of NGOs have background knowledge of soil fertility.
- ▶ More than half of the respondents (58%) indicated that there is limited cooperation between farmers, NGOs, other agricultural institutions and universities on generation of data, and exchange of information on soil fertility.

### SUGGESTION ON TOPICS FOR TRAININGS, NATIONAL MATCHING EVENTS AND ROUND TABLES

- ▶ The establishment of agricultural information generation and sharing platforms among farmers, NGOs, universities and government

## 3.2. Gambia

### 3.2.1. Gambia- Universities

#### DATA CONCERNING RESPONDENTS

- ▶ The questionnaire was filled by staff of the University of the Gambia (UTG), and the Gambia College (GC) which is a tertiary institution that offers training in agriculture at

certificate and diploma levels. Thus the data generated come from academic and administrative staff of these two institutions.

- ▶ The University of the Gambia has a total teaching staff of 269 out of this, 160 are full-time lecturers and the remaining 109 are part-time lecturers.
- ▶ The School of Agriculture and Environmental Science has a teaching staff of 16 out of this 2 are on part-time.
- ▶ Soil fertility is not taught as a stand-alone course. It is part of the core courses which students majoring in crops production have to register for.
- ▶ The University of the Gambia being a young university has signed MOUs with some institutions, which affords student to do their research work in those institutions. Unlike the Gambia College which has a well-established farm and garden.
- ▶ The Gambia College has experienced a high attrition rate as a result depends on part-time lecturers and lecturers from the University of the Gambia.

### FINDINGS ON INSTITUTIONAL RESOURCES

- ▶ The University of The Gambia is the only institution that awards degrees in agriculture in The Gambia. As a result this it faces no competition in the allocation of resources meant for training in ISFM. And by extension it is well positioned with the required human resource to carryout training in ISFM.
- ▶ The total numbers of students enrolled in the university stands at 4000 and 2% of this number have registered for agriculture. Gambia College has a total student enrolment

of 2038 and 5% of this number have registered for agriculture.

- ▶ Some of major constraints face by the School of Agriculture and Environmental Sciences are low enrolment, inadequate finance and infrastructure.
- ▶ The management of funds is centralised. Thus all Schools and Departments and disbursed from this source.
- ▶ However, it is a young university when compared to other institution in the sub-region. Consequently, it is still facing some teething problems as regards to having all the required facilities such as well-equipped laboratories and research farm. To circumvent this problem UTG has signed Memoranda of Understanding (MOU) with some partner institutions in order to share their facilities.
- ▶ The Capacity4Food Project will help in providing some of the training materials that would be needed to run the course locally.

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### GENERAL EDUCATION AND TRAINING AND ON ISFM

The University of the Gambia has seven Schools which offer degree programs:

- ▶ School of Business and Public Administration
- ▶ School of Medicine and Allied Health Sciences
- ▶ School of Agriculture and Environmental Sciences
- ▶ School of Education
- ▶ School of Arts and Sciences
- ▶ School of Communication, Information and Technology
- ▶ School of Law.
- ▶ The University of the Gambia offers the following Post graduate programs
  1. M.A in French

2. MSc in Responsible Tourism and Management
  3. MPH – Health Improvement and Dev. And Environmental and Occupational Health
  4. M. Ed Sectoral Analysis and Management of the Education System
  5. M.A history
- ▶ The UTG is partnering with 29 institutions based in Africa, Europe, Asia and the US. These partnership agreements allows staff and students of UTG to visit any of these institutions on an exchange program.

### COOPERATION ON ISFM

- ▶ Most Gambian farmers are small scale farmers who cannot afford to depend on commercial fertilizers because of the high cost involved to improve the nutritional status of their soils. An integrated approach is the most viable option
- ▶ Farmers are highly receptive to technologies that utilise local resources ISFM seems to include the use of locally available material that farmers can provide at no or little cost.

### ISFM INSTITUTIONAL CAPACITY

- ▶ As the School of Agriculture and Environmental Sciences continues to grow and expand, more specialised courses will be introduced and ISFM would become a stand-alone course.
- ▶ The pre-requisite structures such as offices will be created and the support staff needed to execute the program will be recruited with time.

## Research and cooperation on ISFM

- ▶ School of Agriculture and Environmental Sciences of UTG being a young School, is in dire need for trained personnel in diverse areas and disciplines ISFM is one of these.
- ▶ A strong partnership with institutions within the project will in no small measure contribute immensely towards its capacity building initiatives. This view has been cited by all the respondents.
- ▶ The University will be prepared to support the training of students and staff for both long and short term training programs in ISFM.

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## INFRASTRUCTURE

- ▶ The UTG being a young institution has signed an MOU with many partners which avails the university the opportunity to use the facilities that exist in those institutions. One of these institutions is the National Agricultural Research Institute (NARI).
- ▶ Some of the equipment at the NARI soil laboratory include:
  1. pH meter
  2. Flame photometer
  3. Atomic Absorption Spectrometer
  4. Ovens etc.
- ▶ It is part of UTG's policy to provide all academic and administrative staff with computers that have 24 hours high-speed internet connection. Payment of this service is done by the university.
- ▶ The library has an assortment of books that covers areas of ISFM. Some journals can be accessed through the Electronic libraries such as The Electronic Agricultural Library (TEAL).

- ▶ Some of the statistical software available includes SAS, MSTATC, SPSS etc.
- ▶ The university lacks a research farm with irrigation systems that would ensure year round work.

### COOPERATION WITH ADMINISTRATION, INDUSTRY & STAKEHOLDERS

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The university has a smooth working relation with stakeholders, which includes NGOs, the private sector and government departments and ministries. As a result they are engaged during curriculum reviews with the view of making products that graduate from the School more prepared for the job market.

### SUGGESTION ON TOPICS FOR TRAININGS AND ROUND TABLES

- ▶ Compost making
- ▶ Development of training materials
- ▶ Community needs assessment techniques
- ▶ Training on developing radio jingles, TV clips and animation on ISFM
- ▶ Making posters and flyers on ISFM

### *3.2.2. Gambia- Labour Market, NGOs and Institutions*

#### DATA CONCERNING RESPONDENTS

- ▶ The questionnaires were administered to representatives of the following organisations:
  - Department of Agriculture of the Ministry of Agriculture
  - National Agricultural Research Institute (NARI)
  - National Women Farmers Association (NAWFA)

- National Coordinator of Farmer Associations Gambia (NACOFAG)
- Agricultural projects in soil fertility of the Ministry of Agriculture
- Commercial farmer

### GENERAL EDUCATION AND TRAINING AND ON ISFM

- ▶ Respondents from Research and the Ministry have a high level of knowledge in ISFM while NGOs and Commercial farmers show a low level. They however show interest in being trained in ISFM.
- ▶ There is no policy yet on ISFM but the Research Institute has generated some results or innovations through collaborative work with International Organisations that have used Innovation Platform (IPs) and IAR4D to transfer knowledge and skills to farmers
- ▶ The Extension service of the Department of Agriculture imparts knowledge and skills to farmers through Field Demonstrations of improved practices on farmers' farm.

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### MAIN CONCLUSIONS FROM FARMERS

- ▶ Low soil fertility is of concern to farmers as a result crop residue management and manure application is being practice by farmers
- ▶ This technique of maintaining soil fertility has helped to stabilised the yields of farmers over the years
- ▶ A training focussing on ISFM will be highly appreciated which could be used in growing crops both in rain fed and irrigated ecologies in which farm sizes vary from 10-20 hectares.

- ▶ Because of the high demand for manure the cost has gone up considerably

### MAIN CONCLUSIONS FROM NGOS AND OTHER INSTITUTIONS

- ▶ NGOs, Research Institute and front line Extension Workers highly endorse the adoption of ISFM in addressing soil fertility problems.
- ▶ High cost however is a limiting factor in obtaining and transporting crop residues and manures
- ▶ Training, information sharing and networking are possible tools that could be used promoting ISFM
- ▶ Highly trained staff in ISFM is highly required.

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### SUGGESTION ON TOPICS FOR TRAININGS, NATIONAL MATCHING EVENTS AND ROUND TABLES

- ▶ Compost making
- ▶ Development of training materials
- ▶ Community needs assessment techniques
- ▶ Training on developing radio jingles and TV clips on ISFM

## 3.3. Ghana

### 3.3.1. Ghana- Universities

#### DATA CONCERNING RESPONDENTS

- |                        |    |
|------------------------|----|
| ▶ University Lecturers | 10 |
| ▶ Research Assistants  | 4  |



## FINDINGS ON INSTITUTIONAL RESOURCES

### FINDINGS:

- ▶ Soil fertility taught at graduate and undergraduate levels
- ▶ There is farm/garden available for training in ISFM
- ▶ There is no inter university co operation on ISFM
- ▶ No special support for ISFM by university
- ▶ Full support for centre specialised in ISFM

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### INTERVENTIONS:

- ▶ Establishment of Centre of excellence in ISFM
- ▶ Linkages and networking amongst Anglophone HEI in West Africa

## GENERAL EDUCATION AND TRAINING AND ON ISFM

### FINDINGS:

- ▶ Degree programmes do not include ISFM modules but rather, ISFM subjects are contained within the courses
- ▶ There is no teacher exchange programme with other universities or countries on ISFM
- ▶ There is no educational online platform
- ▶ University has a competitive research fund to support any approved research
- ▶ University supports teacher exchange programme generally

### INTERVENTIONS:

- ▶ Formation and empowering of international experts group
- 



## COOPERATION ON ISFM

### FINDINGS:

- ▶ ISFM regarded as important part of activity
- ▶ Farmers very receptive to ISFM methods other than fertilizer use
- ▶ ISFM policy exists but no known formal co operation reported
- ▶ Some university lecturers have co operation with farmers, NGO, industry on ISFM
- ▶ Lecturers have participated in ISFM related projects internationally
- ▶ University does not have MoU or formal framework co operation in ISFM related studies with industry or international organisations

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### INTERVENTIONS:

- ▶ Greater co operation with industry on ISFM

## ISFM INSTITUTIONAL CAPACITY

### FINDINGS:

- ▶ University has no specific office related to ISFM
- ▶ University has an international students office that co ordinates all international programmes
- ▶ Lecturers regard an ISFM training and international co operation office as very useful

### INTERVENTIONS:

- ▶ Creation of the Centre of Excellence as focal point for ISFM activity
- 



## Research and cooperation on ISFM

### FINDINGS:

- ▶ Most lecturers have been involved in international projects related with ISFM
- ▶ All lecturers in the Soil Science Dept. have published papers and articles on soil fertility related issues
- ▶ Very few lecturers have attended conferences on ISFM
- ▶ It was considered necessary for some soil science experts of university to receive training in ISFM
- ▶ In depth training of 1-2 months regarded as most useful
- ▶ University not likely to provide financial support for specialised ISFM training

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### INTERVENTIONS:

- ▶ Organisation of training curriculum for experts in Anglophone HEI.s

## INFRASTRUCTURE

### FINDINGS:

- ▶ Have shared premises
- ▶ Have shared laboratory
- ▶ Have few computers, medium-fast internet, genstat & spss statistical package
- ▶ Have less than 50 books related to ISFM and no journal subscription
- ▶ Major need is laboratory equipment for nutrient analysis

### INTERVENTIONS:

- ▶ Provision of some laboratory equipment
- 

- ▶ Provision of computers with internet for online research

### COOPERATION WITH ADMINISTRATION, INDUSTRY & STAKEHOLDERS

#### FINDINGS:

- ▶ No current formal co operation in ISFM related issues with industry, international consulting or research exists

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### SUGGESTION ON TOPICS FOR TRAININGS AND ROUND TABLES

- ▶ Integrated nutrient management
- ▶ Fertiliser use and management
- ▶ Silvo-pastoral systems for soil fertility
- ▶ Biochar and crop production

### 3.3.2. Ghana- Labour Market, NGOs and Institutions

#### DATA CONCERNING RESPONDENTS

▶ Ministry of Food & Agric. Extension Staff	6
▶ NGO Farmer Training	4
▶ Ministry of Food & Agric. Farmer Training	4
▶ National Research Organisation	4
▶ Farmer (private)	4

#### GENERAL EDUCATION AND TRAINING AND ON ISFM

#### FINDINGS:

- ▶ Knowledge of ISFM rated medium to high
- ▶ ISFM considered important in work

- 
- ▶ Establishment of Centre of Excellence will be extremely useful
  - ▶ Staff members not trained specifically in ISFM
  - ▶ Respondents aware of ISFM policy in Ghana
  - ▶ There has been interdepartmental co operation on ISFM training and awareness
  - ▶ There was limited co operation with policy makers on ISFM policy formulation; National Research Organisation however co operated with Min of Agric. on ISFM policy, i.e. Ghana Soil Health Consortium
  - ▶ All respondents have participated in international ISFM related activities

### **INTERVENTIONS:**

- ▶ Linking and networking with stakeholders in roundtable national events

## **MAIN CONCLUSIONS FROM FARMERS**

### **FINDINGS:**

- ▶ Soil fertility problems rated high on farms
  - ▶ No training or support from local or international experts on ISFM
  - ▶ No extension services from any source
  - ▶ Most farmers small scale commercial farmers
  - ▶ Over 75% unaware of ISFM practices
  - ▶ Farmers keen to undertake ISFM training if it would enhance farm productivity
  - ▶ For farmers engaged, ISFM increased productivity but not necessarily reduced costs
- 

- ▶ Stressed problem of unavailability of organic component of ISFM and absence of straight inorganic fertilizers
- ▶ Increased productivity due to soil nutrient mgt, sound agronomic practices, improved germplasm and local adaptation

## MAIN CONCLUSIONS FROM NGOS AND OTHER INSTITUTIONS

### FINDINGS:

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- ▶ Knowledge of ISFM is low
- ▶ No formal training conducted for stakeholders
- ▶ Fifty per cent of staff have university level experience for ISFM
- ▶ No formal network with universities
- ▶ Network on ISFM would be useful
- ▶ Expectations of network is sharing knowledge in sustaining the soil
- ▶ Have linkages between Ministry of Agric, universities and NGO's; Soil Research Institute co ordinates soil health consortium, funded by AGRA and IITA

### INTERVENTIONS:

- ▶ Creating linkages between universities and other stakeholders

## SUGGESTION ON TOPICS FOR TRAININGS, NATIONAL MATCHING EVENTS AND ROUND TABLES

- ▶ Capacity building in soil health
- ▶ Farmer field schools in soil fertility management
- ▶ Review of ISFM packages

- ▶ Soil and water management strategies (mulching, strip cropping, composting, biochar)
- ▶ Characterisation of organic fertilizer resources
- ▶ Types and uses of inorganic fertilizer

## 3.4. Nigeria

### 3.4.1. Nigeria- Universities

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#### DATA CONCERNING RESPONDENTS

- ▶ Four Universities which include Federal University of Technology, Akure (FUTA); University of Ibadan (UI); Federal University of Agriculture Abeokuta(FUNAB) and Ekiti State University, Ado -Ekiti (EKSU) were surveyed for the need assessment.
- ▶ Overall, 75 respondents across the four Universities were participated in the needs assessment.
- ▶ 15(20%) of the respondents were top level University managers and administrators.
- ▶ 20(26.6%) of the respondents were technologist.
- ▶ 30(40%) of the respondents were lecturers.
- ▶ 10(13.4%) of the respondents were field officers.

#### FINDINGS ON INSTITUTIONAL RESPOURCES

- ▶ Across the four Universities surveyed in Nigeria, the student population range from 8000 to over 10,000.
- ▶ The number of teachers across the surveyed universities ranged from 500 to 2,500.
- ▶ The number of teachers that specialized in soil fertility evaluation and management ranged from 3 to 25 across the four Universities.

- ▶ Across the four Universities surveyed, 70% to 100% of the lecturers were employed on full-time basis.
- ▶ 98% of the respondent lecturers indicated that soil fertility as a course is taught at the undergraduate and postgraduate levels.
- ▶ Across the four Universities the respondent teachers indicated that on the average only 25% of the students specialize in soil fertility management.
- ▶ 75% of the respondents across the four Universities indicated the presence of an on-going project in ISFM.
- ▶ Across the four Universities surveyed, long lists of facilities available for research and teaching of soil fertility management were provided. The common lists include Atomic absorption spectrometer; kjedahl apparatus; soil pH meter; soil corer; oven; etc.
- ▶ Across the four Universities surveyed, the findings from the respondents indicated that there was no budget provision that is specific for ISFM
- ▶ 75% of the respondents also indicated the non-existence of training programme that is specific for teachers on ISFM in cooperation with either other Universities or countries.
- ▶ Across the four Universities the findings from the respondents clearly indicated the absence any centre for teacher support in terms of ISFM.
- ▶ 100% of the respondents across the four Universities surveyed indicated interests and necessity for a centre in the universities that specialized in ISFM
- ▶ All the universities surveyed have a large farm where students do carry out practical training in ISFM.

The analysis of the findings above show an obvious low student specialization in ISFM; non-existence of training programme

that is specific for teachers in ISFM and absence of any centre for teacher support in terms of ISFM. The capacity4 food project through Train the Trainer (TOT) programme; demonstration plots; establishment of centre of excellence and mobility programmes will go a long way at arousing the interest of students in ISFM, enhancing the skills in project management and other strategic issues that could be useful for international cooperation and study programmes improvement.

### GENERAL EDUCATION AND TRAINING ON ISFM

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- ▶ The findings across the four universities revealed many degree and bachelor's programme which included courses in ISFM.
- ▶ The universities also offered diplomas and middle level cadre and extension agents
- ▶ Teachers exchange programmes with other universities within the country and other countries exists through sabbatical placement and adjunct lecturing.
- ▶ Other programmes that supported teachers exchange programme include DAAD, Germany; Common Wealth Programme, TWAS- CNPq
- ▶ The universities surveyed noted that they all have educational online platform (e-learning).
- ▶ Generally, the quality assurance process across the four universities include vetting of questions; assessment of lecture delivery methods; constant update and review of course synopsis and external moderations.
- ▶ Generally, the soil fertility courses were structured as 2hours of lecture and 1 hour of practical for a 3 hours course (3units) and for 2hours course (2units), we have 1 hour of theory and 1 hour of practical.

- ▶ Across the four universities, there was a clear indication that the teachers have opportunity for trainings in international project.
- ▶ It was also indicated that the university do support research and exchange programmes provided it does not jeopardize the employment status of the teacher.

The training programmes in ISFM that is a major component of the Capacity 4 food project will further enhance the teachers experience in ISFM for improved lecture delivery and practical training of students. The international training workshop in the capacity 4 food project will further boost the staff exchange programme.

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### COOPERATION ON ISFM

- ▶ More than 90% of the respondents across the four universities surveyed agreed that ISFM is an important part of their activity.
- ▶ It was clearly indicated also by the response of the respondents across the four universities that the neighbourhood farmers prefer other methods of improving soil fertility other than the use of chemical fertilizers.
- ▶ The response across the four universities revealed the absence of any policy on ISFM in Nigeria.
- ▶ It was also clear from the survey that none of the universities under consideration have cooperation with other universities on ISFM related issues.
- ▶ The findings also revealed the absence of cooperation between universities and policy makers on ISFM related issues.
- ▶ About 60% of the respondents indicate the existence of cooperation between the universities and local farmers and other NGO's. This type of cooperation is a compulsory re-



quirement of the Department of Agricultural extension in the Faculties of Agriculture for curriculum accreditation by the National government.

- ▶ Aside, other World Bank projects on food security in the universities warranted the cooperation between universities and local farmers.
- ▶ All the universities surveyed responded positively to the fact that they had all participated in one form of international project or the other.

The National activities that will involve collaboration and interaction with top Administrators and policy makers during national workshops and round table talks under the capacity 4 food projects will provide a singular opportunity for formulating the much needed policy on ISFM which currently none exists in Nigeria.

The capacity 4 food project will also help to initiate and strengthen collaboration and networking on ISFM between universities in Nigeria which is currently lacking.

### ISFM INSTITUTIONAL CAPACITY

- ▶ About 75% of the respondent across the four universities indicated the absence of any office dedicated for ISFM and other international cooperation.
  - ▶ However, some of the universities (25%) had a unit for ISFM related issues. For instance, at the Federal Universities of Technology Akure (FUTA), there is a centre of excellence in Food security which consists of offices and world class analytical laboratory that is well equipped. The centre of excellence in food security is a STEP B project under the World Bank Project on food security in Nigeria (2009).
- 

- ▶ Generally, across the four universities surveyed, the results of the analysis indicated the general absence of experts in ISFM.
- ▶ The need for an office in all the universities that would organize trainings on ISFM was clearly indicated through the positive response of 100% of the respondents across the four universities.

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The capacity4food project will help to create centre of excellence in ISFM in the partner universities (FUTA). The centre when created we serve as reference centre for training and capacity building in ISFM for teachers, technical staffs and field officers.

The expertise of the trained personal will be transferred to local farmers through extension service

#### RESEARCH AND COOPERATION ON ISFM

- ▶ Across the four universities surveyed, about 60% of the respondents admitted that they have international projects related with ISFM while about 40% indicated no ISFM related projects.
- ▶ The related project identified include World Bank step B on food security; West African Productivity Programme (WAPP) sponsored by World Bank.
- ▶ Several Journal Papers and chapter in books have been published on ISFM as indicated by the respondents across the four universities surveyed.
- ▶ Some of the identified links include; Fasimirin J. T. And Reiche J. M (2010); Oyun M. B; Kadeba O. And Aletor V. A. (2006), Journal of Applied sciences 6, 2217 – 2223; Oyun M. B; Kadeba O. And Aletor V. A (2006); Journal of Biological



sciences 6, 1113 – 1117; Agele S. O (2010); Archives of Agronomy and soil science (Taylor & Francis).

- ▶ Findings from respondents indicated the publication of conference and journal Papers in the National journal and conference proceeding in soil fertility and plant nutrition.
- ▶ Some links : (1) Ogun M. B (1993) proceedings of the 23rd Annual conference of Forestry Association of Nigeria; 17 – 21 August 1993, 28 – 33.  
(2) Agele S. O; Adeyemo A. J. And Famuwagun I. B (2011); Archives of agronomy and soil science (Taylor & Francis) 57 (1): 91 – 104.
- ▶ Across the four universities survey, 95% of the respondents indicated their attendance of conference/workshop on ISFM both local and international.
- ▶ Some links: (i) Ewulo et al (2008) proceedings of the Forestry society of Nigeria Annual conference, Akure.  
(ii) Ewulo et al (2012). Annual Conference on Research and Capacity Building for Agric. transformation in Nigeria. FUT, Akure, Nov. 2012.
- ▶ Across the four universities over 85% respondents indicated their interest to receive training on ISFM and related subjects for a period ranging from 1week; 1 – 2 months and 1 year.
- ▶ Majority of the respondents (75%) do not know whether the university can fully or partially provide financial support for training in ISFM.

The Capacity 4 Food Project will provide opportunity for more training and capacity building for staff that hitherto may not have such opportunity due to poor funding status in the university.

## INFRASTRUCTURE

- ▶ The findings in infrastructure in the four universities indicated the presence of Exclusive Premises and well equipped laboratory for soil fertility related analysis.
- ▶ Some of the important equipment include: Atomic Absorption Spectrophotometer (AAS), Flame Photometer, High performance liquid chromatophy (HPLC), Gas Chromatophy, UV Spectrophotometer; Election microscope, Amino acid auto distiller
- ▶ Although, the findings of the need analysis indicated the availability of internet across the four universities, the internet connectivity was all adjudged to be very slow and erratic in supply
- ▶ The statistical software available include Gensat discovery edition 4; SPSS version 15.0; SAS; Solva; Biostat; Ms Excel.
- ▶ The GIS software include Arc GIS 9; Google earth.
- ▶ The books related to ISFM were indicated to be less 50.
- ▶ The four universities subscribed to AGORA
  - e.g European Journal of soil science
  - Soil and Tillage Research
  - Applied soil ecology.
- ▶ In all the universities survey, there were high expression of the need to upgrade the internet facility and provision of multi- media projector.
- ▶ The capacity 4 food project can help to provide relevant books on ISFM in addition to providing internet facility to enhance the project activities in the dissemination of training programmes to farmers and other stakeholders.

## COOPERATION WITH ADMINISTRATION, INDUSTRY & STAKEHOLDERS

- ▶ A clear collaboration with institutions involved in ISFM at both local and international levels was indicated in the findings
- ▶ The type of collaboration as indicated across the universities surveyed include consultancy; project execution and extension services.
- ▶ Agencies involved in collaboration includes:
  - (i) United Nation Development Programme (UND)
  - (ii) Olokola Environmental Impact Assesment (EIA)
  - (iii) African Forestry Research Network (AFORNET)
  - (iv) World Bank
  - (v) African Development Bank (ADB)
  - (vi) River Basin Development Authorities
  - (vii) Agriculture and Rural Management Training Institutes (ARMT)
  - (viii) Nigeria Farmers Congress (NFC)
- ▶ Across the four universities surveyed, strong collaboration exists in Research and Development; Quality Assurance for higher Education; Participation on committees/ advisory boards.
- ▶ Limited Cooperation was indicated for training of industry/ International ISFM programme in almost all the institutions.

The capacity 4 food project will help to strengthen industrial and international collaboration with the universities particularly in ISFM.

## SUGGESTION ON TOPICS FOR TRAININGS AND ROUND TABLES

- ▶ Soil organic matter quality and nutrient availability in soil
- ▶ Fertilizer use and management
- ▶ Soil water management
- ▶ Modelling nutrient dynamics in cropping systems
- ▶ Awareness of compliance with and enforcement of ISFM.

### 52 3.4.2. Nigeria- Labour Market, NGOs and Institutions

#### DATA CONCERNING RESPONDENTS

- ▶ The sample size of the respondents is 84. The respondents consists of the representatives of the farmers congress; Agricultural Development Projects (ADP); Women Farmers Organization; Youth in the farm Organization; Agricultural Rural Management and Training Institute.(ARMTI) and National Centre for Agricultural Mechanization (NCAM)
- ▶ From this sample population, 20 respondent (23.8%) represents the farmers congress
- ▶ 10 respondents (11.9%) represents the women farmers organization
- ▶ 24respondents (28.57%) represents the Agricultural Development Project consisting of 3 Directors of Agricultural Services (Ondo, Ekiti and Kwara States); 3 Directors of Planning (Ondo, Ekiti and Kwara States) and 15 extension officers, 5 each from Ondo, Ekiti and Kwara states ADP.
- ▶ 10 Respondents (11.9%) represents the Youth in the farm organization.
- ▶ 10 Respondents (11.9%) which consist of 1 Director of Research; 1 Director of Planning and 8 training officers represent ARMTI.

- ▶ 10 Respondents (11.9%) which consists of 1 Director of Administration, 1 Director of Planning and 8 irrigation officers represents NCAM.

## FINDINGS ON INSTITUTIONAL RESOURCES

- ▶ ARMT is government institution engaged in Training, Research and Consultancy.
- ▶ Has a staff strength of 200 workers.
- ▶ Strong interests of the staffs and Executive Director of ARMTI to have a centre at the universities specialized in ISFM.
- ▶ There are trained staff with background in soil fertility management in ARMTI
- ▶ NCAM is a Federal Government Institution engaged in Research and Development in Agriculture.
- ▶ Has a staff strength of 160 workers
- ▶ Strong interests of the staff and the Executive Director of NCAM to have a Centre at the universities specialized in ISFM.
- ▶ There are trained staff with background in soil fertility Management in NCAM.
- ▶ ADP is a government institution engaged in Agricultural data generation and extension services.
- ▶ Has a staff strength of about 400 workers in each of the three states surveyed.
- ▶ Strong interests of the staff and the Directors in the three states to have a centre at the universities specialized in ISFM.
- ▶ Absence of trained staff with background in soil fertility management in the ADPS.

The Capacity4 food project will help to provide a window for staff training to acquire requisite knowledge in ISFM at the

centres of Excellence that would be established in each of the partner universities particularly for staffs that would be drawn from the Agricultural Development Projects where there are presently no trained staff in ISFM as indicated by the needs analysis.

### GENERAL EDUCATION AND TRAINING AND ON ISFM

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- ▶ Low level of knowledge in ISFM.
- ▶ Overwhelmingly acceptance of the importance of ISFM on the institutional activities as expressed by the respondents across the surveyed institutions.
- ▶ The majority of the respondents expressed lack of awareness of any policy on ISFM in Nigeria.
- ▶ Majority of the respondents in the agricultural institutions also expressed lack of cooperation with universities on ISFM related issues.
- ▶ Expression of the existence of cooperation activities between the institutions and policy makers.
- ▶ The kind of cooperation expressed include data generation; planning; Research and Statistics.
- ▶ Cooperation with local farmers and other NGO is also expressed by the agricultural institutions.
- ▶ The kinds of cooperation expressed include training of farmers in fertilizer application; farm agronomic data; farm production and yield measurement.
- ▶ Respondents in agricultural institutions indicated their participation in natural and international project.
- ▶ Accordingly, the participation include:
  - (i) Root and Tuber expansion programme (RTEP) UNDP project

(ii) Community Based Agriculture and Rural Development Project (CBARDP) – World Bank Project.

(iii) Reaching Agents of change project (RAC)

[www.sweetpotatoknowledge.org](http://www.sweetpotatoknowledge.org)

The capacity4food project will help to initiate cooperation between agricultural institutions and universities on ISFM and related disciplines. It will also help to create the needed awareness on the need to formulate policies related to ISFM through round tables with top administrators and policy makers during national events.

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### MAIN CONCLUSIONS FROM FARMERS

- ▶ Majority (75%) of the farmers rated soil fertility problem high.
- ▶ 25% of the farmers practice application of manure as the only ISFM practice adopted in their farm
- ▶ 50% of the farmers point to application of chemical fertilizer as the ISFM practice adopted in their farm.
- ▶ 25% point to crop rotation as the practice adopted in their farm.
- ▶ 90% of the farmers agreed that the ISFM practices adopted have increased their crop productivity but attest to the fact that the practice has not reduced their production cost.
- ▶ 75% of the farmers had no opportunity to be trained on ISFM; while 25% have had some form of training on fertilizer knowledge organized by IFDC (International fund for Development and Cooperation).
- ▶ 95% of the farmers are engaged in arable crop production with an average size of farm land of 2.5 acres.

- ▶ 50% of the farmers indicated a decrease in their farm productivity over the past ten years while 50% indicated an increase.
- ▶ 90% of the farmers accepted that the cost of maintaining soil fertility has increased over the past 10 years.
- ▶ 95% of the farmers expressed their willingness to undergo training in ISFM.

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The Capacity4 food project will provide the opportunity for training the trainers in ISFM who will later go ahead to train the farmers to acquire the requisite knowledge in ISFM that is generally lacking among the farmers.

#### MAIN CONCLUSIONS FROM NGOS AND OTHER INSTITUTIONS

- ▶ Knowledge of staff in ISFM is rated as average
- ▶ 60% of the respondents claimed that staffs do not have opportunity for in - service training, while 40% claimed that they do
- ▶ For those that has opportunity for in- service training, the trainings were organized within the organization
- ▶ The aspect of ISFM where the staff receive training include: the use of organic and inorganic fertilizers, soil management practice; fertilizer application
- ▶ On the average, the percentage of the staff with university level training on soil fertility management is about 5%
- ▶ 75% of the respondents indicated the absence of formal network between their institutions and universities/ research institutions
- ▶ 95% of the respondents agreed to encourage the creation of a network between their institution and universities/ Research centres

## SUGGESTION ON TOPICS FOR TRAININGS, NATIONAL MATCHING EVENTS AND ROUND TABLES

- ▶ Capacity Building and information sharing on ISFM
- ▶ Awareness creation about ISFM among stakeholders in Nigeria
- ▶ Developing target activities in ISFM for food Security
- ▶ Development of agricultural soil map
- ▶ Policy development strategies for ISFM in Nigeria

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### 3.5. Sierra Leone

#### 3.5.1. Sierra Leone- Universities

#### DATA CONCERNING RESPONDENTS

*Lecturers – 7 (29.2%); HOD – 9 (37.5%); Deans – 2 (8.3%); students – 4 (16.6%); technicians – 2 (8.3%)*

#### FINDINGS ON INSTITUTIONAL RESOURCES

- ▶ The university is well staffed but very few are specialised in soil fertility management
- ▶ Soil fertility is taught both at the undergraduate and graduate levels but no specialization in soil fertility management
- ▶ There is a laboratory for soil and plant analysis but no on-going project on soil fertility management
- ▶ No special budget or training for ISFM
- ▶ All respondents agreed to the setting up of a centre for ISFM in the university
- ▶ Enough land available but no farm for agriculture practical

- ▶ CAPACITY4FOOD Project can help the establishment of a centre for ISFM and curriculum development for training in ISFM

### GENERAL EDUCATION AND TRAINING AND ON ISFM

- ▶ The universities and polytechniques have a variety of degree, diploma and certificate programmes, but none in ISFM
- ▶ In the MSc Soil Science Programme, there is a course titled “integrated soil management and conservation”
- ▶ No teacher exchange or nor any online programmes
- ▶ Quality assurance is by staff performance contracts and student evaluation of staff teaching
- ▶ CAPACITY4FOOD could assist in staff exchange and training programmes on ISFM

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### COOPERATION ON ISFM

- ▶ Farmers are always willing to accept improved methods that they believe could improve their farm productivity
- ▶ However, there is no cooperation with local farmers, NGOs, policy makers and other universities on ISFM
- ▶ CAPACITY4FOOD could assist in creating linkages among local farmers, NGOs, policy makers and HEIs for promoting ISFM

### ISFM INSTITUTIONAL CAPACITY

- ▶ No office for ISFM and international cooperation
- ▶ Need for an office on ISFM

### Research and cooperation on ISFM

- ▶ No books on ISFM, only Soil Science Books that cover ISFM
- ▶ No international project on ISFM

- ▶ No conferences/workshops attended on ISFM
- ▶ Need for short courses, in-depth training and postgraduate programmes on ISFM
- ▶ Most respondents are not sure of either full or partial funding from university

### INFRASTRUCTURE

- ▶ Laboratory for soil and plant analysis but with technicians that are not properly trained
- ▶ Internet available but rather slow to medium speed
- ▶ CAPACITY4FOOD can help improve laboratory space, office space and internet access

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### COOPERATION WITH ADMINISTRATION, INDUSTRY & STAKEHOLDERS

- ▶ No institution actively engaged in ISFM and so no collaboration exists
- ▶ University has worked with stakeholders on several programmes but none specifically on ISFM
- ▶ CAPACITY4FOOD can assist in formation of collaborative networks

### SUGGESTION ON TOPICS FOR TRAININGS AND ROUND TABLES

- ▶ Principles for the development of ISFM
- ▶ ISFM technologies and practices
- ▶ Agroforestry technologies for sustainable soil and crop productivity
- ▶ Soil water and nutrient management
- ▶ Modelling soil organic matter and nutrient dynamics
- ▶ ISFM Policy and decision-making

- ▶ ISFM and Rural Food Security
- ▶ Remote sensing and GIS applications to ISFM

### **3.5.2. Sierra Leone- Labour Market, NGOs and Institutions**

#### **DATA CONCERNING RESPONDENTS**

Farmers -10 (41.7%); Researchers - 5 (20.8%); NGOs - 3 (12.5%); Government -6 (25%)

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#### **GENERAL EDUCATION AND TRAINING AND ON ISFM**

- ▶ Most respondents have both low to medium level of knowledge on ISFM
- ▶ All respondents agreed that ISFM is important for their activities but no awareness on any ISFM policy nor any cooperation with relevant stakeholders on ISFM
- ▶ CAPACITY4FOOD could assist in raising awareness on ISFM and building collaborative networks on ISFM

#### **MAIN CONCLUSIONS FROM FARMERS**

- ▶ Farmers are aware of soil fertility problems
- ▶ Most approaches to addressing soil fertility by farmers are inadequate
- ▶ Farmers are aware that soil fertility is on the decline and could be attributed to lack of fertilizer use
- ▶ Farmers are willing to participate in ISFM training and collaborative networks



## MAIN CONCLUSIONS FROM NGOS AND OTHER INSTITUTIONS

- ▶ Except for research institutions, most NGOs rate their staff knowledge on ISFM as low to moderate
- ▶ Only research institutions offer some level of in-service training on soil management; none for NGOs
- ▶ Knowledge on soil fertility management is mainly acquired during university training
- ▶ No networks with HEIs on ISFM
- ▶ Most NGOs look forward to the establishment of formal networks on ISFM

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## SUGGESTION ON TOPICS FOR TRAININGS, NATIONAL MATCHING EVENTS AND ROUND TABLES

- ▶ Relevance of ISFM to agricultural production and improved farmer livelihoods
  - ▶ Role of ISFM to household and national food security
  - ▶ Participatory evaluation of existing farmer practices on ISFM
  - ▶ Development of sound ISFM practices
- 

## 4. Annex I

### 4.1. Survey for universities

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CAPACITY4FOOD

Dear Respondent<sup>1</sup>,

This is a questionnaire looking at Integrated Soil Fertility Management and Food Security in your country: policies, initiatives, etc. It contains questions on the following areas<sup>2</sup>:

- ▶ General information about your institution

- 
1. Respondent should be project partners (directly and indirectly involved in the project ACADEMIC, TECHNICIANS, MANAGERS of the partner university) and if possible other universities not included in the project consortium.
  2. Any information or data provided is done so in strictest confidence, will only be used for this project, and will not be shared with third parties.

- 
- ▶ Integrated Soil Fertility Management (ISFM) and Food Security (FS)
  - ▶ Stakeholder relationship within your institution

This questionnaire is part of the project *Integrated Soil Fertility Management for Food Security: matching capacities in Anglophone West African Nation HEIs with local needs (CAPACITY-4FOOD)*. The project's objective is to foster capacity building & regional integration ISFM for Food Security in the Anglophone West African Universities by means of two sub objectives:

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- ▶ To enhance Regional Networking in Integrated Soil fertility management focused on Food Security by setting up a Regional Network of Centres of Excellence in ISFM for Food Security
- ▶ To develop targeted activities in ISFM for Food Security at local level with a view to increase HEIs capacity building towards sustainable food production

The countries involved in the action are: Cameroon, Gambia, Ghana, Nigeria and Sierra Leone and Spain as Project coordinator.

**THANK YOU VERY MUCH FOR YOUR COOPERATION!**

***Please indicate your answer accordingly (Yes or No, fill in the spaces available. You may use more space if you need)***



## GENERAL INFORMATION ABOUT YOUR INSTITUTION

<b>COUNTRY:</b>	
<b>UNIVERSITY NAME:</b>	
<b>YOUR ROLE IN THE INSTITUTION (director of, teacher, technician, student, etc.)</b>	

### Institutional resources

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How many students are there at your university?		
How many teachers are there at your university?		
How many teachers are specialised in soil fertility evaluation and management?		
Indicate the percentage of the teachers mentioned above which are employed on a full-time basis.		
Is soil fertility taught at the undergraduate and graduate levels? Please specify.	YES	NO
How many students are specializing in soil fertility management at the graduate level (if applicable to your institution)?		
Is there any on-going project on soil fertility management in general and ISFM in particular?	YES	NO
List the facilities available in your institution for research and teaching of soil fertility management.		
What percentage of the faculty's budget is devoted to research on soil fertility improvement?		

Does your university have training programmes for teacher on ISFM and FS in cooperation with other Universities and countries?	YES	NO
Does your university have any centre for teacher support in terms of ISFM (support for study programmes and international cooperation initiatives)	YES	NO
Do you think it would be interesting/necessary to have a centre at your university specialised in ISFM, project management and other strategic issues that could be useful for international cooperation and study programmes improvement?	YES	NO
Does your university have a farm or garden where students have practical training in ISFM?	YES	NO

### General education and training

How many degree and bachelors' programmes exist in your university? Any joint or double degree?		
Do they include ISFM courses?	YES	NO
Apart from degree programs does your university offer non-degree programs such as certificates and diplomas in ISFM for the middle level cadre and extension agents?	YES	NO
Does your University have any master or PhD programme that include the ISFM and/or FS subjects?	YES	NO

Are there any teachers exchange programmes with other universities/ countries in your university?	YES	NO
If yes, please list and name the programmes		
Does your university have any educational online platform?	YES	NO
What is the quality assurance process in your institution? Please outline broad steps and timeframe		
How are soil fertility courses structured? How much time is devoted to practicals and theory?		
Do teachers have opportunity for trainings in international projects, quality assurance in higher education?	YES	NO
Does the university support research and teacher exchange programs on ISFM?	YES	NO
If yes, explain.		

### Cooperation on ISFM

Do you think ISFM is and important part for your activity?	YES	NO
How receptive are your farmers to other methods of improving soil fertility other than the use of chemical fertilizers?	YES	NO
Is there any policy on ISFM in your country?	YES	NO

Does your university have cooperation with other universities on ISFM related issues?	YES	NO
Does your university have cooperation with policy makers on ISFM related issues?		
Does your university have cooperation with local farmers, NGOs, etc., on ISFM related issues?		
If yes, please list the initiatives and the actors involved		
How many ISFM networks do you belong to? Please specify.		
Have you ever participated in any international project?	YES	NO
Does your university have a Memorandum of Understanding or any similar official framework in collaborating with industry/ international ISFM related study programme or international cooperation initiatives?	YES	NO

### ISFM institutional capacity

Does your University have any office related with ISFM and international cooperation?	YES	NO
If yes, please provide the full name		
If yes, when was the office created?		

How many people are working in the office? (Please indicate if they are teachers, researchers, administrative, technicians, etc.)		
How many of them are experts in ISFM, in quality assurance in higher education, in international projects?		
Has this office collaborated or advised the ISFM or other competent authorities, local farmers or NGOs?	YES	NO
If yes, could you provide the names of these authorities or NGOs?		
Would you consider useful an office at the university that would organise trainings on ISFM, to cooperate with university for study programmes drafting and improvement and also for international cooperation projects?	YES	NO

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### Research and cooperation on ISFM

Do you have international projects related with ISFM?	YES	NO
If yes, please provide name, indicate partners and if they are public or private entities		
How many papers/chapters/books have you published on ISFM?	YES	NO
If yes, please provide references or links if available		
Do you have any other kind of publication (dissemination or raising awareness for farmers, etc.) such as leaflets, posters?	YES	NO

Do you have any journals in the country for the publication of findings in soil fertility and plant nutrition?			
Have you ever attended any conference/workshop about ISFM?	YES	NO	
If yes, please provide references or links if available			
Do you think it would be interesting/necessary for some of the experts of your institution to receive training on ISFM and related subjects in other countries and on international cooperation options?	YES	NO	
Specify the kind of training: short courses (e.g. 1 week), in depth training (1-2month) postgraduate programmes (1 year), etc.			
Can your university fully or partially provide financial support training costs (minimum short courses e.g. 1 week) abroad?	YES	NO	DON'T KNOW

### ISFM Related Infrastructure

Please indicate if available:			
Exclusive/shared premises Y/N	Laboratory:	Y/N	
	Enumerate some of the equipment:		
Computer equipment:			
How many PCs are there or can be assigned to ISFM research?			
Is there a network in place?	YES	NO	
Do you have access to internet?	YES	NO	
If yes, how would you rate your internet speed (please indicate accordingly)	Fast / Medium / Slow / Very Slow		

What statistical software is/are available?	
What GIS software is/are available?	
Library equipment:	
How many books related with ISFM do you have?	<50; 50-100; >100
Do you have any subscription to a journal related to ISFM? (provide names)	
Are there any major needs in infrastructure? Please list below.	

### ISFM education

Does your university offer some Bachelor degrees directly related to ISFM or that include ISFM within its courses?	YES	NO
How many students are enrolled in an ISFM related programme at undergraduate level?		
Does your university have a Bachelor's programme in the following discipline? (multiple answers possible)		
Agricultural Engineering	YES	NO
Forestry	YES	NO
Geography	YES	NO
Biology	YES	NO
Microbiology	YES	NO
Environmental Sciences	YES	NO

Are these subjects/topics available/taught in your University? (multiple answers possible)			
Subject		No. of credits	No. of teaching hours
Soil Water management	Y/N		
Soil organic matter quality and nutrient availability	Y/N		
Fertilizer use and management	Y/N		
Role of ISFM in Food Security	Y/N		
Organic Agriculture as a module	Y/N		
Climate change and adaptation strategies	Y/N		
Silvo pastoral system for soil fertility management	Y/N		
Modelling nutrient dynamics in cropping systems.	Y/N		
Statistical methods or biometry	Y/N		
Soil fertility evaluation and classification	Y/N		
Geographic Information Systems	Y/N		
Natural resources management	Y/N		
Policy & regulations on fertilizer procurement and use	Y/N		
Environmental risks and impact assessment	Y/N		
What other courses (relevant to ISFM) are available/taught in your department? Please list (you may attach a list in a separate document).			

How relevant do you think these skills/themes are in improving the capacity of your university? (on a scale of 1-5 with 1 = least relevant and 5 = most relevant)	
Soil Water management	
Soil organic matter quality and nutrient availability in soil	
Fertilizer use and management	
Role of ISFM in Food Security	
Climate change and adaptation strategies	
Silvo pastoral system for soil fertility management	
Modelling nutrient dynamics in cropping systems	
Geographic Information Systems	
Data on landings (registration, monitoring, etc.)	
National regulation on ISFM	
Awareness of compliance with and enforcement of ISFM management regulations	
Public decision making in ISFM	
Policy on ISFM	
Soft skills (presentation, negotiation, etc.)	
Curriculum development training	
International projects management	
Quality Assurance of study programmes	
Other themes not included in the list above, please mention:	

### Information about other Institutions in your country

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Is there any other university in your country with expertise in ISFM and Food Security?	YES	NO
Do you have a harmonized curriculum with other institutions of higher learning in your country?	YES	NO
If yes, please list		
Do they have any experience in curriculum development and international cooperation?	YES	NO

Does your country have an Agriculture Ministry?	YES	NO
Does your country have any other official Agriculture Institution/s dealing only with ISFM?	YES	NO
Please provide the full name/s		
Do you know if there is any periodic survey on Soil Management and Preservation? Please provide details		
Do you know of any relevant report about ISFM sector in your country? Please provide references or links		

## Cooperation with administration, Industry & Stakeholders

Have you collaborated with institutions involved in ISFM in your country (ministry, local farmers, stakeholders associations, NGOs, sub-regional / regional organisations, international projects/ consultants)?	YES	NO
If yes, please describe collaboration:		
Please indicate:		
Are you collaborating with any international expert/consultant?	YES	NO

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Has your institution worked with stakeholders in the following capacity?		
Research and Development cooperation	YES	NO
Consulting for industry/international ISFM programme	YES	NO
Industry/international ISFM programme consulting/advising my institution	YES	NO
International cooperation	YES	NO
Quality Assurance for higher education	YES	NO
Training of industry/international ISFM programme by my institution	YES	NO
Industry/international ISFM programme experts teaching in my institution	YES	NO
Participation on committees/ advisory boards /governance boards	YES	NO
Information Technology tools for ISFM	YES	NO
Other (please specify):		



### **Additional COMMENTS**

If you have any further additional comments on ISFM in your country, we invite you to include them here

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**THANK YOU FOR YOUR PARTICIPATION!**



## 4.2. Survey for stakeholders



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### CAPACITY4FOOD

Dear Respondent<sup>3</sup>,

This is a questionnaire looking at Integrated Soil Fertility Management and Food Security in your country: policies, initiatives, etc. It contains questions on the following areas<sup>4</sup>:

- ▶ General information about your institution
- ▶ Integrated Soil Fertility Management (ISFM) and Food Security (FS)
- ▶ Stakeholder relationship within your institution

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3. Respondent should be project partners (indirectly involved in the project STAKEHOLDERS, FARMERS, NGOs, etc.)

4. Any information or data provided is done so in strictest confidence, will only be used for this project, and will not be shared with third parties.

This questionnaire is part of the project *Integrated Soil Fertility Management for Food Security: matching capacities in Anglophone West African Nation HEIs with local needs (CAPACITY-4FOOD)*. The project's objective is to foster capacity building & regional integration ISFM for Food Security in the Anglophone West African Universities by means of two sub objectives:

- ▶ To enhance Regional Networking in ISFM focused on Food Security by setting up a Regional Network of Centres of Excellence in ISFM for Food Security
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The countries involved in the action are: Cameroon, Gambia, Ghana, Nigeria and Sierra Leone and Spain as Project coordinator.

**THANK YOU VERY MUCH FOR YOUR COOPERATION!**

***Please indicate your answer accordingly (Yes or No, fill in the spaces available. You may use more space if you need)***

## GENERAL INFORMATION ABOUT YOUR INSTITUTION

<b>COUNTRY:</b>	
<b>TYPE (farm, NGO, etc.):</b>	
<b>YOUR ROLE IN THE INSTITUTION (owner, employee, Ministry of Agriculture, farmer training institutions etc.):</b>	
<b>MAJOR ACTIVITIES AND STAFF:</b>	

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### Institutional resources

How many employees does your institution have?		
Do you think it would be interesting/necessary to have a centre at universities in your country specialised in ISFM to help and support you in ISFM and Food Security and to involve your institution in international projects to cooperate with other farmers and universities and also to provide trainings for you?	YES	NO
Do you have a trained staff / or someone with a background in soil fertility management in your institution?	YES	NO

### General education

Which is your level of knowledge in ISFM?	low/medium/high	
ISFM involves the combination of more than one soil fertility management technique for soil fertility improvement. Do you think ISFM is important for your activity?	YES	NO

Are you aware on any policy on ISFM in your country?	YES	NO
Do you cooperate (generate data, receive information, work with students, etc.) with universities on ISFM related issues?	YES	NO
If yes, which kind of cooperation?		
Do you have cooperation activities with policy makers (ministries, local councils, etc.) on ISFM related issues?	YES	NO
If yes, which kind of cooperation?		
Do you cooperate (train, share information, extension visits etc.) with other local farmers, NGOs, etc., on ISFM related issues?	YES	NO
If yes, which kind of cooperation?		
Have you ever participated in any national / international project?	YES	NO
If yes, on which topic and project type? Please list web address or any other reference		
Have you ever participated in any international project?	YES	NO
If yes, on which topic and project type? Please list web address or any other reference		

## Farmers

How will you rate soil fertility problems in your farm? Very high [1] high [2] average [3] low [4] very low [5]		
Which ISM practices do you use?		
Have these practices increased your productivity?	YES	NO
Has ISFM reduced your production cost?	YES	NO
Have you received any training or support from local or international experts in the past 5 years on ISFM?	YES	NO
If yes, which kind of training or support?		
Do you receive regular updates from universities, research institutions, NGOs etc. on ISFM practices?	YES	NO
What are the constraints associated with the use of ISFM practices?		
Do you practice only subsistence farming?	YES	NO
Do you practice commercial farming?	YES	NO
Do you grow Arable crop only?	YES	NO
Do you grow tree crop only?	YES	NO

Do you grow both Arable and tree crops?	YES	NO
What is the size of your farm? (in Acres)		
How do you maintain the fertility of soil in your farm practice?		
Are you aware of the concept of Integrated Soil Fertility Management (ISFM)?	YES	NO
If yes, where and when?		
Has the productivity of your farm been increasing over the past 10 years?	YES	NO
Has the productivity in your farm been decreasing over the past 10 years?	YES	NO
What do you think is responsible for the increase if it does?		
What do you think is responsible for the decrease if it does?		
Has the cost of maintaining the fertility of the soil been increasing over the past 10 years?	YES	NO
Has the cost of maintaining the fertility of the soil been decreasing over the past 10 years?	YES	NO
Do you think the concept of Integrated Soil Fertility Management (ISFM) can help in reducing the cost of maintaining soil fertility in your farm?	YES	NO

If yes, would you be ready to undergo any training in Integrated Soil Fertility Management (ISFM)?	YES	NO
Would you be ready to make minimum sacrifice to undergo training in Integrated Soil Fertility Management (ISFM)?	YES	NO

### NGOs and other Institutions (Service providers)

How will you rate the knowledge of your staff on ISFM? Very high [1] high [2] average [3] low [4] very low [5]		
Do you carryout in service training for your staff on ISFM?	YES	NO
If yes, where do your trainers come from?		
Which areas of ISFM do you train staff on?		
What is the percentage of your staff with university level training on soil fertility management?		
Is there any formal network between your institution and universities, research institutions on information generation and sharing on ISFM?	YES	NO
If No, would you encourage the creation of such a network?	YES	NO
What are your expectations from such a network?		



**Additional comments**

If you have any further additional comments on ISFM in your country, we invite you to include them here

**THANK YOU FOR YOUR PARTICIPATION!**



EDU/INK



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