EU-ACP NUS Project "Strengthening capacities and informing policies for developing value chains of neglected and underutilized crops in Africa"

Training Course on Research Proposal Writing with a focus on upgrading value chains of neglected and underutilized species of plants

17-21 November, 2014 at Lomé, Togo

Workshop report Compiled by:

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CONTENTS

Introduction

These last years, recent international fora across the world have emphasized the importance of biodiversity for food security and health. The World Summit on Sustainable Development (WSSD) in Johannesburg, South Africa, 2002, emphasized the interconnections among five focal areas including health, agriculture and biodiversity necessary for achieving long-term sustainability (Bisseleua and Niang, 2013). The world has made great progresses in reducing hunger, particularly the 'hidden hunger' caused by missing of micronutrients.

The problem of malnutrition constitutes a key challenge for the future. Biodiversity has a crucial role to play in mitigating the effects of micronutrient deficiencies that are debilitating hundreds of thousands of people in sub-Saharan Africa, particularly children and women (Bisseleua and Niang, 2013). The overdependence on only a handful of species – rice, maize, wheat and potatoes –providing over 50 per cent of the world's caloric intake (FAO, 2010), has seen hundreds of species and varieties of food plants marginalized and becoming increasingly irrelevant in national agricultural production systems and economies. Less attention by researchers on these so-called neglected and underutilized species (NUS) (Padulosi and Hoeschle-Zeledon, 2004) translates into missed nutrition and health opportunities (Smith, 1982; Frison et al., 2006; Chadha and Oluoch, 2007; Hawtin, 2007; Smith and Longvah, 2009), since many of them offer a broader range of macro and micronutrients than those available in major staple crops. Two groups of such highly promising crops are grain legumes (especially Bambara groundnut) and leafy vegetables (particularly amaranth).

Recently, agricultural organizations and policy makers have recognized the current role and the untapped potential of the NUS for food and nutritional security, for income generation in rural areas, for strengthening resilience, adaptation to climate change and mitigation of climate, agronomic and economic risks. Also many NUS have medicinal values and can be used as nutraceuticals to prevent of combat diseases. Therefore, the value chains of such important crops should be promoted. For the promotion of NUS value chains to be a reality in Africa, a large cadre of well-trained and motivated African agricultural scientists will have to play a critical role in providing farmers with a steady flow of new technologies including newly developed products (improved farming practices, varieties, foods products, etc.). Unfortunately, because of decades

of under-investment mainly in African regions, the human and institutional capacity required for research, food processing, marketing and knowledge sharing on NUS are weak and challenging.

In order to face this challenge, the **Project "Strengthening Capacities and Informing policies for developing value chains of neglected and underutilized crops in Africa"** has been developed by Bioversity International and IFS (in collaboration with African partners) and funded by EU-ACP. This project will be implemented in three African countries: Benin, Kenya and Zimbabwe to promote the value of two key NUS: Bambara groundnut and Amaranth.

Among the training or capacity building activities of the first year of this project was the **Training Course on Research Proposal Writing with a focus on upgrading value chains of neglected and underutilized species of plants.** We report here the results of this training workshop held in Lomé (Centre Catholique Universitaire, Quartier St Joseph, Tokouin), Togo from 17 to 21 November 2014.

1. Course background, Objectives and Overview

1.1. Background

Africa hosts thousands of edible plants, but only a small number dominates agricultural research and development. Yet, many farmers, especially in marginal areas, rely on neglected and underutilized species (NUS) for their livelihoods. The genetic diversity of NUS and their wild relatives comprises a major part of agricultural biodiversity, but is in rapid decline. Worldwide, farmers and consumers are abandoning them as globalization, population growth and urbanization change agricultural and food systems. However, there is also a growing international recognition that NUS play a role in providing food and nutrition security and income opportunities among smallholder farmers, and that NUS can help in adapting agriculture and food systems to climate change. But the expansion and commercialization of NUS is constrained by a low knowledge base, weak value chains and inadequate capacity and policies.

The project **"Strengthening capacities and informing policies for developing value chains of Neglected and Underutilized species"** supported by the EU-ACP Science & Technology Programme with co-financing by the project partners and the CGIAR Research Programme on Policies, Institutions and Markets, will run from 1st January 2014 to 31st December 2016. The project's vision is to enhance value chain of Neglected and Underutilized species in Africa so that they will better contribute to improve food and nutritional security, income of smallholder

farmers and entrepreneurs and mitigation of, and adaptation to climatic, agronomic and economic risk."

The project focuses on the value chains of two model (**high nutritional value with health improving potential**) crops: Bambara groundnut (*Vigna subterranea*), a native African legume, and amaranth (*Amaranthus spp*.), a widely consumed leafy and grain vegetable. Both are recognized as priority crops in Western, Eastern and Southern Africa, but they are constrained by weak value chains. Opportunities to upgrade value chains are available, and some farmers and entrepreneurs are (or would like to) investing in production, product development and marketing, but various bottlenecks along the value chain need to be addressed through socio-economic, biological, agronomic and food technology research to generate new knowledge that value chain actors can apply to make the chains more effective. For sufficient funds raising, **young scientists should be well trained in developing convincing research proposals** on NUS in general and on Bambara groundnut and amaranth in particular.

1.2. Objective

The objective of the training course was to provide early career scientists working on NUS with the skills and tools to prepare a complete research proposal for submission to IFS or any other granting agency.

Specifically the course aim to:

- Enhanced capacity of young researchers in three African sub-regions to design value chain research on Neglected and underutilized species especially Bambara groundnut and Amaranth
- Mentor the applicants regarding their research proposal, research methods, etc.,
- Develop skills in writing quality proposals.

1.3. Eligibility criteria

Applicants eligible for this call should:

- Be a citizen and resident of the following project countries in west Africa: Benin, Togo, Burkina Faso, Mali, Niger and Côte d'Ivoire

- Be a national scientist attached to a university, national research institution or a research oriented and not-for-profit NGO (scientists working in international research organizations are not eligible)
- Be under 35 years of age (male) or under 40 years of age (female)
- Have at least a Master's or equivalent degree
- Be a national scientist attached to a university, national research institution or a research oriented and not-for-profit NGO (scientists working in international research organizations are not eligible)
- Be under 35 years of age (male) or under 40 years of age (female)
- Have at least MSc or equivalent degree
- Submit applications and a draft of project proposal (preferably on amaranth and Bambara groundnut) in English or French

Applications from female scientists were particularly welcomed. Based on these criteria, the numerous applications received were pre-screened and about 40 applicants from Benin, Togo, Burkina Faso, Mali, Niger and Côte d'Ivoire were jointly shortlisted by experts from Bioversity and IFS. Shortlisted applications where now carefully analyzed by a committee including African partners and **25 candidates** have been selected.

1.4. Workshops Co-facilitators and Organizers

Dr Richard HALL, Program Coordinator at IFS and Mr **Per Rudebjer,** Head, Knowledge Management & Capacity Strengthening, Bioversity International, were the Principal trainer and provided most of the course materials and support throughout the course. They were assisted by:

- **Professor Alexandre DANSI**, Dean of the Faculty of Science and Technology of Dassa (University of Abomey-Calavi) Benin,
- **Dr Kperkouma WALLA** and **Dr Seminhiva AKPAVI** from the Faculty of Science of University of Lomé.

The organizing committee who provided the needed secretarial and technical assistance was composed of **Dr. Arlette ADJATIN**, **Dr Laura LOKO, Mrs Faouziath SANOUSSI and Mrs Olive KPOMALEGNI** from LAAPT (Faculty of Science and Technology of Dassa, University of Abomey-Calavi) Benin and **Mr Koffi KOMBATE and Esso-Nam WEMBOU** of University of Lomé.

Table 1: List of the participants at the training course on research proposal writing with a focus on upgrading value chains of neglected and underutilized species of plants

N°	Surname	Given names	Gender	Title	Institutions	Country	Phone number /Email
1	AHAMIDE	Innocent	M	Assistant de recherche	Université d'Abomey Calavi (UAC)	Bénin	+229 96906228 adinoss2013@gmail.com
2	AIHOUNTON	Dossou Ghislain Boris	M	Assistant de recherche	FA de l'Université de Parakou (UP)	Benin	+229 96505996 aihountong@yahoo.fr
3	AKAKPO	Agbémébia Yawovi	M	Assistant de recherche	Institut Togolais de Recherche Agronomique (ITRA)	Togo	+228 90771812 akakpo07@hotmail.fr
4	BA	Alassane	M	Attaché de recherche	Institut d'Economie Rurale (IER)	Mali	0022376055405 baalassane_1981@yahoo.fr
5	BADO	Lucien	M	Assistant de recherche	Institut de Recherche en Sciences de la Santé	Burkina Faso	+226 72091810 bado_bi@yahoo.fr
6	BAMMITE	Damigou	M	Doctorant	Université de Lomé	Togo	+228 91966551 bdmigou@gmail.com
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8	BONOU	Alice	F	Doctorante	Université Cheikh Anta Diop Dakar	Benin	+229 95019241 alice.bonou@gmail.com
9	DOSSA	Lucrès	F	Ingénieur agronome	Université de Parakou	Benin	+229 97684337 lucrsdossa@yahoo.fr
10	GOUNSOUGLE	Yéname	M	Ingénieur agronome	CASADDVR (Sokodé)	Togo	+228 90082381 gounsougleyemane@yahoo.fr
11	KINI	Janvier	M	Ingineer of research	Institut de Recherche en Sciences de la Santé	Burkina Faso	+226 70031920 flavki@yahoo.fr
12	MAHAMADOU	Abdourahamani	M	Doctorant	Université de Niamey	Niger	+227 96055307 mabdourahamani@yahoo.fr
13	Maï Boucar	Ibrahim	M	Doctorant	Université de Niamey (FAST)	Niger	+227 96421656 maimaine01@ yahoo.fr
14	SANOU	Komi	M	Assistant de	Institut Togolais de	Togo	+228 90374501

				recherche	Recherche Agronomique		klsanou@gmail.com
15	SEYNI BODO	Bachirou	M	Doctorant	Faculté d'Agronomie de l'Université de Niamey	Niger	+227 96479714 bachiroubodo@yahoo.fr
16	TEKETE	Mohamed Lamine	M	Doctorant	Faculté des Sciences et Techniques de Bamako	Mali	+223 66851374 molate111@yahoo.fr
17	THERA	Korotimi	F	Doctorante	Institut d'Economie Rurale (IER)	Mali	korotimi.thera@yahoo.fr
18	TOURE	Yaya	M	Doctorant	Université Nangui Abrogoua (Abidjan)	Côte d'Ivoire	+225 05742597 toure_ya@yahoo.fr
19	TOVIHOUDJI	Gbènoukpo Pierre	M	Doctorant	Université de Parakou (FSA)	Benin	+229 96005950 pierretovihoudji@yahoo.fr
20	TRAORE	Korotoumou	F	Doctorante	Aidemet-ONG	Mali	96171738 Koti_ml@yahoo.fr
21	WOUYOU	D. Agapit	M	Doctorant	FAST/UAC (Bénin)	Benin	+229 96907057 wagapo81@yahoo.fr
22	ZERBO	Issouf	M	Doctorant	UPR/SVT de l'Université de Ouagadougou	Burkina Faso	(+226) 76589642 pifzerbo@yahoo.fr
23	ZONGO	Aboubié Elisabeth	F	Doctorante	Université de Ouagadougou	Burkina Faso	(+226) 70777591 zongoelisabeth29@gmail.com
24	ZOUNDJI	Mahougnon Charlotte C.	F	Doctorante	FSA/UAC	Benin	(+229) 97727172 zoundjicharlotte@gmail.com
25	DANSOU-KODJO	Kodjovi Atassé	M	Doctorant	Université de Lomé	Togo	(+228) 90186007 treb7@yahoo.fr

1.5. Venue and Dates

The regional training workshop was held from the 17-21 November, 2014 at Centre Catholique Universitaire of Tokouin at Lomé, Togo. Participants were daily transported by bus from their Hotel to the training center. Lunches and health breaks were served within the Centre Catholique Universitaire under a nice canopy close to the training room. Training started daily on time at 8:30 am and usually ended by 5.30 to 6 pm.

Photo1: Group photo showing participants, trainers and member of organizing committee

1.6. Duration and Strategies

The course was designed to cover four days of intensive introduction / review of appropriate concepts and practical applications. Day's activities began at 8.30 am and ended by 6.00 pm. Discussions were held in each day during the plenary sections after group work. Daily recaps regularly took place. These were meant to set roadmap and connectivity of topics delivered. The programme of the workshop was as follow:

Programme of the workshop

Monday, November 17th, 2014

Session 1. Introduction and setting the scene

08.30 Registration of participants

IMPORTANT NOTE: each participant must bring a draft IFS proposal – hard as well as electronic copy - in order to register

09.00 **Official opening**

Welcome addresses

- Prof. Alexandre Dansi, Laboratory of Agricultural Biodiversity and Tropical Plant Breeding (LAAPT/BIORAVE), Benin
- Mr. Per Rudebjer, Bioversity International, Rome, Italy
- Dr. Richard Hall, International Foundation for Science

Key note speech /opening remark

- Prof. Sanda Koffi, Vice President, University of Lomé

10.00 Refreshment break

10.30 Introduction of both the participants and workshop resource persons
Richard Hall, International Foundation for Science
Per Rudebjer, Bioversity International

11.00 Overview of the objectives and the planned structure of the training workshop
Richard Hall, International Foundation for Science

11.15 The EU-ACP project background: upgrading value chains of neglected and underutilized species of plants
Per Rudebjer

11.30 Status of neglected and underutilized species (NUS) in Togo
Dr. Akpanvi Sêmihinva

12.00 Research and development of neglected and underutilized species (NUS) value chains in West Africa
Faouziath Sanoussi and Alexandre Dansi, Laboratory of Agricultural Biodiversity and Tropical Plant Breeding (LAAPT), Benin

12.30 Lunch break

Session 2. Formulating problem statement and objectives

13.30 Conceptualizing research and formulating research problem statements/project justification
Richard Hall
Group Exercise: Drafting of a clear problem statement

15.30 Refreshment break

16.00 Plenary presentations of examples of problem statements

17.00 End of work sessions for the day *and 'Clinics' by appointment with individual resource persons on participants' draft of IFS research proposals*

Tuesday 20th November, 2014

Session 3. The proposal writing process, guidelines, what reviewers look for

08.30 International Foundation for Science (IFS) granting programme, research proposal application guidelines and administrative requirements
Richard Hall

09.30 Improvements to the original draft titles of the IFS proposals prepared prior to the workshop
Richard Hall

10.00 Refreshment break

10.30 Improvements to the original draft titles of the IFS proposals prepared prior to the workshop, continued
Richard Hall

11.45 Connecting research with development impacts: how Logical Framework Analysis can be useful in clarifying research ideas
Per Rudebjer

12.30 Lunch break

13.30 Group exercise: Logical Framework Analysis
Per Rudebjer

15.30 Refreshment break

16.00 Presentations of group exercise, Logical Framework Analysis

17.00 End of work sessions for the day and *Clinics by appointment with individual resource persons on participants' draft IFS research proposals*

Wednesday 19th November

Session 4. What is already known about your problem? Literature review and knowledge gaps

08.30 Literature searches: making the best use of the internet for sourcing scientific literature
Richard Hall

09.30 Group exercise: Literature searches
Richard Hall

10.30 Refreshment break

11.00 Plenary presentations of literature reviews in participant's draft proposals

12.30 Lunch break

Session 5. Statistics and research design

13.30 Overview of statistical methods used in field and laboratory experimentation and the use of statistical software packages: main pitfalls and limitations
Dr Kperkouma Wala, University of Lomé

14.30 Case study from Togo: Basic overview of riparian forest in Sudanian Savanna ecosystem
Dr. Folega Fousseni, University of Lomé

15.00 Group Exercise: examples of research designs of a sample of participants' draft IFS proposals
Alexandre Dansi

15.30 Refreshment break

16.00 Group Exercise, continued

17.00 End of work session for the day *and Clinics by appointment only with individual resource persons on draft research proposals (continuation)*

Thursday 20th November,2014

Session 6. Summary – the most critical section of your project proposal

08.30 The research hypothesis
Richard Hall

09.00 Formulating a concise and clear Summary
Richard Hall

Group Exercise: Summary

10.30 Refreshment break

Plenary presentations: Summary

12.30 Lunch break

Session 7. IFS evaluation role play

13.30 The IFS grant evaluation process: what do the reviewers look for?
Richard Hall

Role-playing exercise: IFS Scientific Review Panels - participants to evaluate IFS proposal applications; completion of evaluation forms and formulation of final verdicts
Richard Hall

15.30 Refreshment break

Results of role-playing exercise

16.00 Formal closing of the training course
- Evaluation
- Presentation of certificates
- Closing remarks

17.00 End of training course

Friday 7th November

Public awareness / sensitization action

Opening ceremony and introduction of the participants

2.1. Opening ceremony

Professor Alexandre Dansi first took the floor to express his gratitude to the vice President of University of Lomé for honoring this opening ceremony by his presence. He thanks Professor AKPAGANA Koffi, director of the laboratory of Botany (Lomé) and his team for their personal involvement of the organization of the workshop despite their multiple occupations. He indicated that Professor AKPAGANA was the one who initiated research on NUS in Togo in 2001 under a project of "minors crops'' sponsored by IRDC. Professor Dansi expressed his gratitude to the European partners especially **International Foundation for Science -IFS** and **Bioversity International** for supporting NUS promotion initiative in Africa and for including these species in the priorities of their institutions. He underlined for the assistance the necessity to recognize the efforts of Dr Richard Hall and Mr. Per Rudebjer since 4 years for the promotion of NUS in Africa.

At his turn, Dr Richard Hall from IFS thanked the organizing committee put in place for the success of the training course. He introduced the objective of the training to the participants which is to learn how to write a convincing research proposal in order to be granted by International Foundation for Science, the institution in which he belongs to.

Mr **Per Rudebjer**, the Representative of Bioversity international started his speech by underlining some of the major challenges for Africa that justify capacity building actions and which are: fight against malnutrition, Resilience or adaptation to climate change, Improvement of income and Sustainable agricultural system. For him, the training course is among other a response to the International summit for Food and Agriculture. He listed as other important actions **the third international conference on NUS in 2013** at Accra (Ghana) that ended with policy recommendations **and the conference on Indigenous diets** held this year 2014 at Kinshassa (Congo). During these two events, importance of NUS in food security and poverty alleviation was highly acknowledged. He indicated that the NUS value chains aim at training a great number of researchers of various Universities and research institutions during three years.

He also owes a great debt of gratitude to the organizing committee (including university of Lomé) as well as to the participants.

On behalf of the President of the University of Lomé, the **Vice President Prof. Sanda Koffi** welcomed all the participants and partners in Togo. According to him the promotion of minor crop in Togo started at the Laboratory of Botanic of University of Lomé since 1999 under a project funded by IDRC. He recognized the importance of such training course to be held in order to promote NUS and thanked the partners for its extension to different regions of Africa. However to achieve the goal of food secure Africa, he believe that using value chain upgrading approach including multidisciplinary research are today compulsory for NUS promotion. He encouraged the participants to focus their attention on the training to be able to write several bankable projects to contribute to the improvement of NUS value chain for Africa. At last, he wished fruitful training course to everybody before declaring officially opened the regional Training Course on Research Proposal Writing with a focus on upgrading value chains of neglected and underutilized species of plants.

Photo 2: From left to right: Resource person of Bioversity International, University of Lomé, IFS and FAST-Dassa at the High table

Photo 3: The Vice President presenting the key note address on behalf of the President of University of Lomé

Photo 4: Official delegates of University of Lomé seating at the front table in the conference room during the opening ceremony

Photo 5: Participants at coffee break with the official delegates and resources persons

After the key note address, the participants were invited to enjoy the coffee break. The organizing committee (including the European partners) took a photo with the representative of the University of Lomé and some participants.

Photo 6: Group photo showing some of the participants with the officials of the University of Lomé and the workshop organisers and trainers

2.2. Introduction of the participants

The floor was left to Dr Richard Hall for conducting the activity entitled “Introduction of both the participants and workshop resource persons”. During these step Dr Richard invited the participants to introduce themselves using a participatory approaches in which a participant introduce his new colleague to audience by indicating his name, country, field of specialization and research interests on NUS and institution of origin (**Photos 7 and 8**). After this wonderful exercise which help to better know each other, Dr Richard mentioned the work strategies to be used during the five day and which will focus on IFS grant applications form.

Photo 7: Participants preparing to introduce each other

Photo 8a: A Togo participant Mr Yéname presenting his colleague Mr Innocent from Benin

Photo 8b: Two Mali participants introducing themselves to the rest of the participants at the training course

After the opening ceremony and on request of the representatives of the university of Lomé, the program of the activities was slightly modified and the two presentations entitled "Status of neglected and underutilized species (NUS) in Togo" and "Research and development of neglected and underutilized species (NUS) value chains in West Africa" respectively by Dr. Akpavi Sêmihinva and Faouziath SANOUSSI was held. This is to allow the delegates to follow before going back. In the first presentation, Dr AKPAVI highlighted the diversity of NUS of Togo discovered following a national survey in thirty eight (38) villages distributed throughout the country. The study reveals the existence of more than one hundred plants species classified in the NUS group. However he mentioned that the diversity of NUS varies from one region to another as well as from one ethnic group to another. In the second presentation the major research work on NUS in West Africa were highlighted. In his talk, the speaker, Faouziath SANOUSSI after showing the evidence of the strong association between dietary diversity and nutritional status of people, highlighted the NUS as palliative solution for balanced diet for combating malnutrition and preserving health. In her speech, she indicated that within the region, Benin republic and Ghana have conducted a national survey to assess the diversity and identify the priority NUS in each country under the first EU-ACP project on NUS in West Africa. These first studies were the starting point of several others research on NUS in the region. The example of fonio value chain at Burkina-Faso, Senegal and Mali as well as the one of Moringa and *Crassocephalum* spp in Benin were given as part of the major research work on NUS value chain within the region. She revealed that there is lack of research taken account all the step of the value chain for each species as the main research works focused on inputs and production steps. She concluded on the necessity to enhance partnership between sectors, increase investment on NUS research and capacity building, reinforce communication on NUS to create awareness within large public and establish sustainable policy environment to promote NUS value chain in West Africa for the achievement of the MDG which is to reduce malnutrition by 50% in 2015.

For the general comments, the participants mentioned that the two presentations are good overviews of NUS research status within the region. They pointed out that the NUS list varies from one country to another and hence, certain species considered NUS in one country may not be NUS in other countries.

Photo 9: Participants following Dr AKPAVI on NUS status in Togo

Photo 10: Mrs SANOUSSI presenting "NUS value chain research in West Africa"

2. Workshop practice / Interactive exchange

3.1. How to write a good research proposal

The first lecture of the training course entitled "How to write a good research proposal" was given by Richard. For his introduction, he mentioned the nutritional and medicinal importance of NUS especially for combat malnutrition in Africa. He highlighted that the research on NUS is important for creating an integrated value chain for these species. He asked then to the participants the difference between value chains and supply chain. For a participant, in value chain there is interconnection or collaboration between the actors to achieve the goals assigned, while for the supply chain each actors impact individually. The research on NUS is conducted to reduce the problems linked to the production, processing, and marketing. Above all, the conceptualization of research idea seems very important. For starting this exercise, the speaker recommended to the participants to:

- Read well the recommendation of the form
- Be as much as possible clear
- Avoid the jargons, the abbreviations
- Be comprehensible

3.1. Concept of value chain

The floor was then left to Mr **Per Rudebjer** to present «general concept of value chain». For introducing the topic he mentioned that the previous presentation by SANOUSSI has already give clearly details on the concept, so he first of all share with the participants data on genetic diversity status of, and the place occupy by NUS and their nutritional and medicinal properties and their resilience to climate change compared to major crop.

According to him value chain approach is based on three main steps which intend to satisfy consumers' demand of special product (market) through mastering of production and its constraints (production) by creation of value added products (processing). He said that NUS research is blocked by several constraints of different natures among which local knowledge and intellectual property rights, Genetics materials exchange and Food technology.

To overcome these problems and contribute to the enhancement of research to confirm the potential of NUS for their better utilization in West and East Africa, the ACP_EU project 2014 _ 2016 was released after the success of the previous project. Mr. **Per Rudebjer** revealed that the project is funded by EU-ACP for 1.16 million of Euros and connecting the colleagues of Benin republic, Kenya and Zimbabwe to encourage research on NUS value chain especially Amaranth and Bambara groundnut. To conclude his presentation, the speaker mentioned that the expected output is to develop the value chain of these two species as it was achieved for Quinoa by his institution and get innovative products from amaranth and Bambara groundnuts. Some questions were then asked by the participants.

- For value chain research on specific crops, is it compulsory to carry out search on all the steps of the chain?

  R*: Is it not compulsory to conduct research on all the steps of the value chain but we have just to face the research related to our area of specialization in order to contribute to research on the part of the value chain.*

- How to face the problem of long cooking time of Bambara groundnut in the process of its value chain?

  R: A participant answered this second question by proposing that it is important to identify the varieties adapted to short cooking time to promote their utilization to

overcome this constraint. In addition Dr Richard Hall mentioned that during the exhibition fair of the innovative platform workshop in July at Cotonou, a private entrepreneur presented a precooked Bambara groundnut as part of the NUS products he has already processed. This product which reduces cooking time from five or six hours to thirty minutes could be an alternative solution to face this challenge.

Participants were asked to write on paper the topics and key contents of their proposals and paste them under the corresponding components or steps of value chain on the wall. The objective was to see the representatively of the different value chain components in the diversity of the proposals submitted. It was found that the majority of the participant's research on NUS value chain improvement focus on production steps of the chain while there were very few researches on processing and trade. No participants were interested in studying consumer's aspects.

Photo 11: Dr Richard giving the first lecture of the training course on "How to write a good research proposals"

Photo 12: Mr **Per Rudebjer** commenting the value chain research status among the participants

3.2. Designing good problem statement

After lunch the training course session restarted at 3pm. The first presentation was done by Dr Richard Hall on: "What is research?" Basically the research is for creating knowledge, he mentioned first of all. He highlighted the two types (fundamental research and applied research) of research before indicating that IFS does not support fundamental research but only the applied research.

So the main question was how to identify good research idea and to well state the problem?

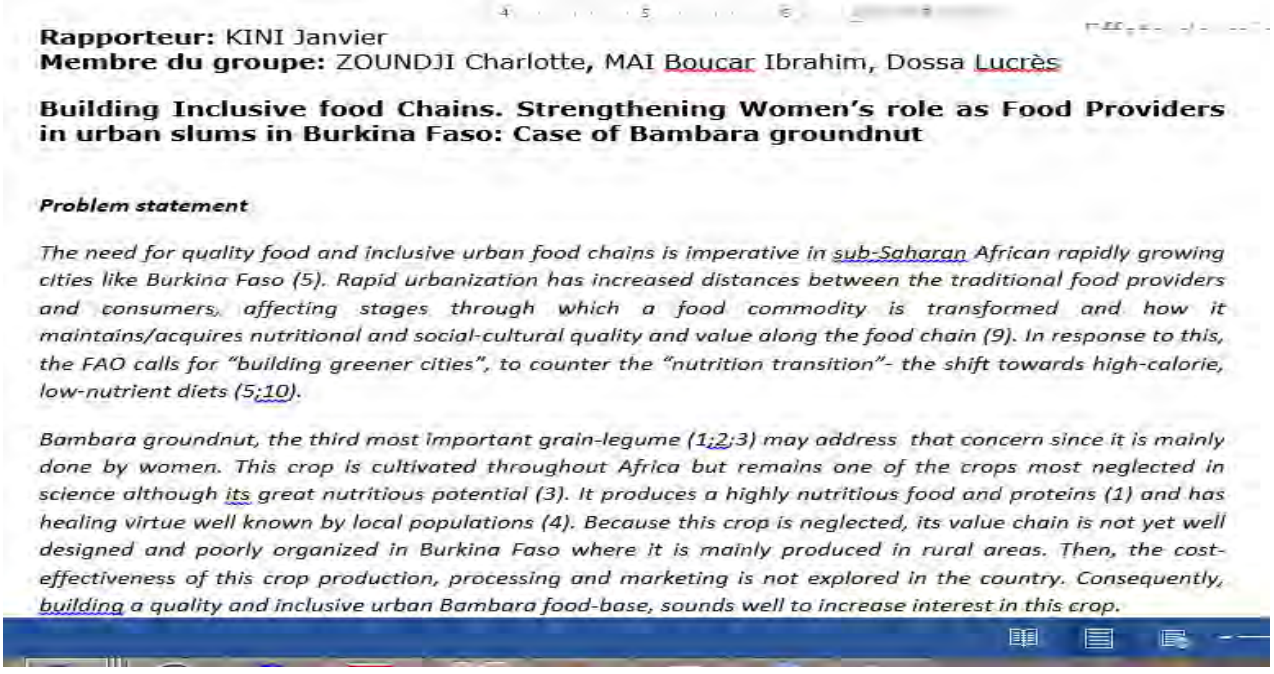
For the problem statement there is need to be more precise and focus on more specific problem by following these steps:

- Identify the problem
- Well state the problem
- Identify research gaps which would help to address this problem.

The floor was given to Mr **Per Rudebjer** to describe the exercise on which the participants were invited to bring their reflections as following:

- Find colleagues who work on the same crop as you (Work in groups of 3 persons).
- Identify the problem that you seek to help solving through research, and analyses the causes of the problem
- Identify the gaps in current knowledge related to the problem
- Formulate the problem statement

After one hour of group work followed by the coffee break the reporting session was held. During this step, the first two groups that presented their work focused on Bambara groundnut and taro (see example).



Rapporteur: KINI Janvier
Membre du groupe: ZOUNDJI Charlotte, MAI Boucar Ibrahim, Dossa Lucrès

Building Inclusive food Chains. Strengthening Women's role as Food Providers in urban slums in Burkina Faso: Case of Bambara groundnut

Problem statement

The need for quality food and inclusive urban food chains is imperative in sub-Saharan African rapidly growing cities like Burkina Faso (5). Rapid urbanization has increased distances between the traditional food providers and consumers, affecting stages through which a food commodity is transformed and how it maintains/acquires nutritional and social-cultural quality and value along the food chain (9). In response to this, the FAO calls for "building greener cities", to counter the "nutrition transition"- the shift towards high-calorie, low-nutrient diets (5;10).

Bambara groundnut, the third most important grain-legume (1;2;3) may address that concern since it is mainly done by women. This crop is cultivated throughout Africa but remains one of the crops most neglected in science although its great nutritious potential (3). It produces a highly nutritious food and proteins (1) and has healing virtue well known by local populations (4). Because this crop is neglected, its value chain is not yet well designed and poorly organized in Burkina Faso where it is mainly produced in rural areas. Then, the cost-effectiveness of this crop production, processing and marketing is not explored in the country. Consequently, building a quality and inclusive urban Bambara food-base, sounds well to increase interest in this crop.

The general observations here were related to vague problem statement and through questions the facilitators help them to become more specific.

For the third presentation, the same problems of unspecific problem statement were raised. Here Dr Richard Hall directed the presenter to add the country (Benin and Togo) and some statistics on taro production from per example 2008 to 2013 in order to show the real situation. Some literature reviews were also required to give key information on some particular properties of this crop species. After this Professor Dansi advised the participants to auto-review their own proposal during the night in order to improve their problem statement. According to him about 75% of research proposals submitted to IFS from West Africa region are simply bad and therefore there is much effort to do. It is on this important advice that the training session of Monday closed.

Day 2

The day 2 session is started by quick presentation of the day program of activities by Mr **Per Rudebjer**. Report from day one was presented. After this, three groups presented their assignment report. The first two groups worked on Amaranth while the third group worked on Bambara groundnut. The first topic was "Socio economic analysis of the vegetable Amaranth (Amaranth spp) in Northen Benin: Case of study of Parakou municipality" and the second was "Study of salinity tolerance mechanisms in Amaranth in coastal areas of Benin". After the two presentations, the general comments were based on importance to make evaluator comfortable when he is invited to read your paper. Here Dr Richard Hall highlighted the importance to make the text attractive for the reader by breaking it into several paragraph. The assistance recommended to the first group to improve the work starting by the title. For the second group, the general correction which could be done based on comments by **Per Rudebjer** is the size (number of words) limitation of the problem statement.

Dr Richard Hall reminded to the participants that to write a good problem statement the first sentence should be about the problem by explaining why it is a problem in the global context. The second paragraph is to expose the knowledge gap and this is followed by the last sentence

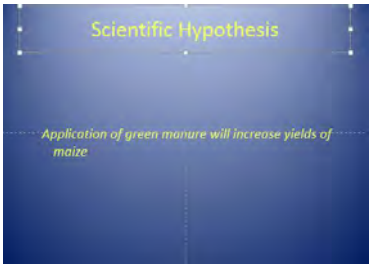
which explains what are going to be done. He also indicated that this part of the proposal is important because it let the reader know why your research is important and what you see as objective and so it should be as detailed as possible and extremely clearly lay out. Above all, he mentioned that the proposal will be read by non-expert and expert evaluators who will be spending probably no more than 15-20 minutes on each application, so it important to respect all prescription above and follow the guideline and stay within the word limit.

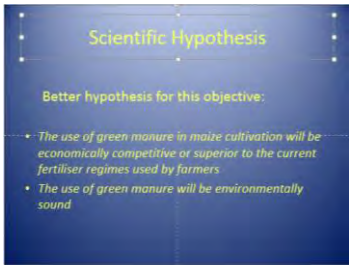
2.3. Summary of evaluation criteria of IFS

This was presented by Dr Richard Hall. Aspects considered for evaluation were among other: applicants training experience, the goal and it relevance to the current need, well formulated hypothesis, up to date knowledge, sound experimental design and research methodology.

Then the rest of this presentation is dedicated to analysis each sections of IFS applications form to guide participants on how to draw up them. For example for the sections 8.1 related to the publications of the applicants, Dr Richard recommended that the place can be filled by putting any redaction, report, articles papers even in press, communications at conference that the participants have done. It is important to do not leave this place in blank and cite properly the publications. For the 8.3 point on the institutional support of the applicant, he mentioned that here the mandate of the applicants institution can be put there as well as similar work to the proposed research done in the institution and its equipment, methodology and experiences. In the case that applicants would like to establish contacts with any leaders in his field who he may not know (8.5), he recommended that this people can be found in publications as well as their email address sometimes. Addressing the literature review issue 9.2 to 9.3, the speaker mention that is to check whether the proposed research want to base on what is already know (country specific) to advance in the field. He also mentioned that this part of the proposal should be up to date and clear and specify measurable output of the project. For the 9.4, 9.6 and 9.12 point, Dr Richard Hall point out that this part is for checking whether the project objective is realistic, and realizable in the time allocated. Then he highlighted the importance of the research hypothesis and stated that: A well-reasoned hypothesis focuses the mind on what has to be done in order to

meet the objectives of the project. So he give the following example on how to write good hypothesis:





About the point 9.10 related to the activities, the speaker recommend to the participants to develop in details description of the activities they are going to carry out in the proposed project as well related experiment and tests. Here he stated that it is important to check if all objective is reflected by the methodology.

For research plan he noticed that it must be repeatable, it is important to mention where the sample is getting from and the names of the species involved and for establish the timeline it is also important to precise where the activities are going to be done.

A well elaborated budget reflect a good performing project, he report for budget section written. So his recommendation is to well justify all the line especially the expendable supplies base on reasonability and accuracy

To finish his presentation, Dr Richard Hall advice the participant to share their application with their colleagues for reviewing and in a case that application is not funded to do not give up and try again.

After his presentation, Mr BAMITE, a participant from Togo comments that this kind of training course is very important for all young scientists because in their home country, they not always have access to resource person in their institution to direct them in IFS application written.

Mrs Alice BONOU from Benin asked to the facilitator whether the participants at this training can have a copy of good written IFS proposal to be use as inspiration source. To respond to her Dr Richard HALL say that three samples of project will be gave to them for the evaluation exercise later.

Another participant Mr AHAMIDE from Benin wanted to know if for a specific proposal, the first objective aim to test “Dose upon Effect” what will be happen. Here Richard Hall if this first

results determine the rest of the work, this specific proposal may be not probably fund because if the expected results of this first objective is not achieve all the rest of the objective can be block. Then the participants are invited to break for coffee before continue the activities.

2.4. How to write title

Dr Richard HALL presented a quick statement on "How to write title". Here it can be noticed that the title seems to be the most important part of the proposal and should be most informative, clear, short and self-explanatory. It should be understandable by non-specialist scientist and encourage or not the reviewer to keep reading.

Participants were invited to a small exercise during which one participant from each five group will presents his own proposal title to the audience for reviewing.

The first group presented the title "**Value chain analysis and upgrading economic viable utilization for sustainable conservation of *Vitelleria Paradoxa* (Shea butter tree) in Benin**." This was found long and redundant and corrected as follow: "**Shea butter value chain upgrading in Benin: an analysis of the processing profitability"**

The third group title "**Bioavailability of Zinc and Iron in Bambara groundnut-Maiza and Misola locally produced complementary food in Burkina Faso**" raise up several comments such as the lack of precision in term of why the work is important, the lack of clarity (What is Misola) as well the non-visibility of the goal which is going to be achieved by the research as well as the rest of title presented during this part of the program. So the third group title became "**Bioavailability of Zinc and Iron in Bambara groundnut-maize formula and MISOLA, a local infant food in Burkina Faso**. The second group title "**Socio economic analysis of the vegetable Amaranth (*Amaranth* spp) in Northen Benin: Case of study of Parakou municipality**" improvement led to get the new title "**Cost effectiveness of Amaranth vegetable production under different soil fertility conservation strategies in Parakou Municipality, (Northern Benin)**".

2.5. Building a logic project design/ Logical framework

To introduce this topic Mr **Per Rudebjer** show the evidences that the research should have impact on our communities and that is why we should think in research on impact pathway or change theory. According to him, the International Foundation for Science funds the research in order to be useful for the communities and for solving current problems. So in the research, the participation of the stakeholder as well as the utilization of results makes the research more relevant. In each of the proposed IFS project, the participants have then to care of what results they are going to deliver, who will use the results and what change in behavior will this lead to.
Then the presenters pointed out that the impact pathway analysis can help to well design the development objective of the research and clearly stated it as well as specific objectives. It can also help to draft the activities, the outputs, the outcomes and impacts related to them. This analysis helps to get control with the project and draft the logical framework. The logical framework help to be much more on details about the project in general because it can give a look on objectives and activities, their indicators and their means of verification following the chronologic order from the activities, the outcomes to the objectives. He said that there is no standard logical framework, it depends to the donor's institutions and he gave the example of EU, UNEP logical framework requirements. The presenter highlighted three pitfalls to avoid using examples:

- Cause and effect chains (in one statement)
  - Agricultural growth increased **through** improved livestock productivity
- Restatements
  - Activity: Survey of markets for grain amaranth
  - Result: Market survey completed
- Logical leaps
  - Too large jumps in the cause-effect chain

He shared with the audience the written of CORAF on "Further reading on log frames" which he guess to be a good paper to direct in how to write a good logical frame work before giving the group exercise related to his presentation.

Photo 13: Per Rudebjer presenting the logical framework

After the lunch the participants are divided into five groups as during the day before and their focus their attention to solve the exercise until the afternoon coffee break time at 4.30 pm. The reporting session started then after the coffee. The representative of group 5 present the outcome of logical framework design on the project entitled "Production of Bambara groundnut in Niger". After his presentation the general comment were related to non-specific statement for example:

- How many ecotypes are going to be characterized?"
- How many times the trials will be done?

  And the recommendation to this group was to reformulate the second specific objective by break in two different specific objectives the objective which is led to more than one activity.

This presentation also awaked some confusions and the main question of the participants was how to well formulate the development objective and the specific objective.

To overcome this question after a long discussion among the participants, the facilitator Dr Richard HALL highlighted that the specific objective is an objective which contribute to the achievement of the development objective. The specific objective is sometimes measurable and verifiable.

The group 2 presented on “Shea butter value chain upgrading in Benin: an analysis of the processing profitability”. The general recommendation here was: Reformulate the indicator and the importance to break clearly the different activities in order to make the budget written easier. So the group was invite to improve the work and this led to obtain the following logical framework draft:

Title: **Shea butter value chain upgrading in Benin: an analysis of the processing profitability**

Objectives and activities	Indicators	Mean of verification	Assumption
Development objective: The poverty of women who process shea butter in Benin reduced	The proportion of women whose income is above the poverty line	• Census data • Administrative data • NGO reports	
Specific objective: Low performance of shea butter processing due to the low rate of adoption of new equipment in Benin improved by half within 5 years	The amount of shea butter produced: the supply of shea butter	• Census data • Administrative data • Trade Sheets	• The extension service disseminates well the results • it convinces the women to adopt the new equipment of processing • The rate of adoption increases
Expected results: Appropriate evidences to convince the women to adopt the new equipment made available: 1. The return on labor of the 2 systems of processing (traditional and upgraded) 2. The return on investment of the 2 system	The figures showing evidences: 1. Return on labor 2. Return on investment	• Literature • The project report • The scientific publication	• We assume that the raw material -shea nuts are available- (rainfall, drought..) • We assume that the micro enterprise is totally commercial: all the production is sold on market
Activities: 1. Sampling, 2. Data collection 3. Compute the return indexes 4. Test scientific hypotheses	1. Sampling size 2. Field work/ Questionnaire/ Interviews 3. Statistical tools used	1. The survey report 2. The filled questionnaire 3. The statistician 's report	• Processing women accept to answer our questions • Reliability of data • Validity of data

Title: Production of Bambara groundnut in Niger

Objective & activities	Indicator	Means of verification	Assumption
DO: reduce food and nutritional insecurity impact in Niger	Food and nutritional security	Population livelihood	
SO: increase Bambara groundnut production in Niger within three years	10% of supplement production of Bambara groundnut is obtained	Agriculture statistical service and agriculture Ministry	NGOs help, climate requirement, pest control
Result 1 : Best ecotypes of Bambara groundnut are identified and characterize	10 best ecotypes are identified and characterized	Scientific publications, institution year book	researcher motivation and availability, climate requirement, pest control
Result 2: 1. Productivity and adaptability of best Bambara groundnut ecotypes are tested	Best knowledge productivity and adaptability of 10 best ecotypes	Scientific publications, institution year book	researcher motivation and availability, typical climate requirement, pest control
Activities 1.1.Collect of Bambara groundnut accessions 1.2.Agromorphologic and 1.3. genetic characterization 1.4.Chemical analyses to determine nutritional value of collected ecotypes	• 50-100 ecotypes conserved in the national Bambara groundnut collection of Niger • 5 ecotypes with resistance to viruses identified • 10 ecotypes with high nutritional value identified	Laboratories, Scientific publications, institution year book	Farmers' collaboration, availability of laboratory equipment, researcher motivation and availability, climate requirement, pest control
Activities 1.5. Grow collected ecotypes in an experimental site 1.6. Selection of best productive and adapted ecotypes	• 5-10 ecotypes adapted to drought identified • 5-10 ecotypes with high yield identified	Scientific publications, institution year book	researcher motivation and availability, climate requirement, pest control

Logical framework before and after correction

To conclude the session Dr Richard mentioned that several institutions requires for logical framework but IFS not requires it. But if one try to draw the logical frame work that will help to make it IFS proposal written easier.

This day was ended by Clinics by appointment with individual resource persons on participants' draft IFS research proposals.

Photo 14: Participant's working on logical framework design exercise

Photo 15: Participant presenting logical framework of his group and receiving comments of the facilitator

Photo 16: Dr Richard HALL mentoring Mr GOUNSOULE for his IFS proposal

Photo 17: Mr **Per Rudebjer** mentoring Mrs A. BONOU for her proposal

Photo 18: Prof Alexandre DANSI reviewing Mrs ZONGO IFS proposal openly in presence of other participants

Photo19: Dr Richard HALL reviewing Mr AIHOUNTON, IFS proposal

Day 3

Mr **Per Rudebjer** quickly presented the schedule of the third day which was devoted to statistics and literatures survey. So he left the flow to Dr Richard HALL to share with the participant his knowledge on "References and Databases/ Literature survey".

2.6. References and Databases/ Literature survey

To introduce the topic, the presenters highlighted that nobody can propose research without knowing what is already done in the field. So according to him, literature survey should provide knowledge or improve applicability of a system by referring to others work or what have been carried out before. As characteristic, it has to be up to date and focus on the problem at both in local and global context. For referring to others, the researcher must mainly look for peer reviewed literatures by searching in electronically filed database, reports, policy briefs, textbooks etc. Then he presented several database and their hosting institutions, the types of information posted on them as well as the mode of access (free or pay, individual or institutional) and sometimes the website, the username and password for getting access. As example it can be mentioned "Research 4life database which compile four initiative: Agora (by FAO, Over 3500 journal titles – food, agriculture, fisheries, environmental science, related social science themes),

OARE (by UNEP with University of Yale. Over 4000 journal titles – many environmental, geographical themes), HINARI (13,000 journals, 29,000 ebooks, Managed by WHO; Focus is on medicine and health) and ARDI (Technology and innovation, Hosted by WIPO – World Intellectual Property Organization, 12 publishers provide access to over 20,000 journals for 117 developing countries). He also describes CAP abstrats, Scopus, WIPO, INASP, AJOL, Pubmed, Open J Gate, Open DOAR, Oxford, JSTOR, Google scholar, Scielo, Sciences direct, etc….and provide the link of their website. For Pubmed particularly, he mentioned that it contains free access journals and demonstrated to the participants how to get access to Pubmed while highlighted that Open DOAR is only for institution to put their intellectual information online. To conclude his presentation, he pointed out that all these databases are international database which quite focus on agriculture issue and so on biodiversity issue, so they are important for literature survey. These presentations awaked some questions that have been clearly answered. These were:

- In Research4life database, is there any journal focusing on Social Science?
- Are the journals in AGORA database free for access?

The possibility of directly writing to authors to request full papers was also indicated.

Mr **Per Rudebjer** shared with the participants the exercise devoted to this part as follow:

- Choose one topic of the members of your group
- Go to the web engine of the databases that Richard presented
- Do the literature survey on your topic and check whether you have cover the research gap which needs to be filled and whether there is others knowledge on your species.
- Find relevant information for your topic

In order to maximize the chance for participants to interact he advised that new groups be formed. This exercise was done until the coffee break and the report was done after the coffee break.

The first rapporteur of the group (Mr BAMITE) search with his colleague relevant literature for the project entitled “Agromorphological and Molecular Characterization of Taro in Togo”. In these laps of time, the group was able to download over ten (10) research paper in full text using mainly Pubmed and by written “Colocassia esculenta” under the search box. According to the presenter, the papers downloaded can be helpful to find methodology for genome sequencing of the species and also give information on nutritional values and medicinal values of the crops.

Here the comment by Dr Richard HALL was that it possible to combine several words in PubMed in order to find more efficient papers related to one topic.

The tour was given to group 1 to report they search on "Bambara groundnut" under INASP database. Here the rapporteur, Mr Yaya TOURE mentioned that no result was found related to their search under INASP. Dr Richard HALL assisted by demonstrating via a presentation how to use INASP database.

Mr Mahamadou ABDOURAHAMANI share with the audience his experience with "Horizon IRD" another database on which free literature can also be found. Another participant Mr Janvier KINI also shared with the group that several database can be found also in "Online Access to Research in the Environment" under the rubric "free collection".

Photo 20: Participants in group navigate for literature survey

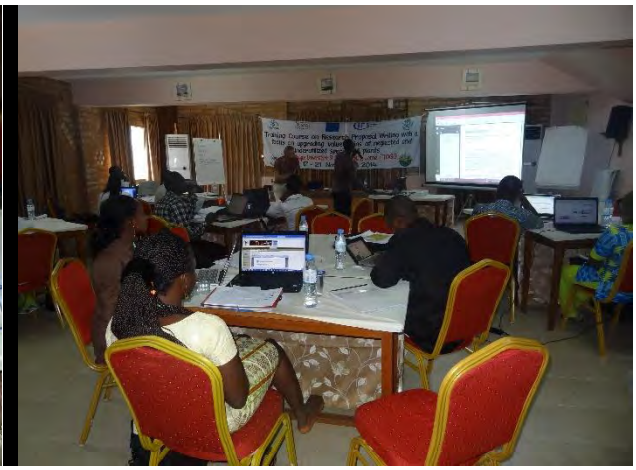


Photo 21: Mr BAMITE presenting the report of online literature survey on Taro

Mr **Per Rudebjer** then invited the participants to present the report of the group work on logical frame by the rest of the three (3) groups which were not presented the day before. The general comment held here was the precision of the fact that the indicator should be measurable and for example Mr **Per Rudebjer** propose to the group who work on "Bambara groundnut infant formula" that indicator can be "The presence of Bambara groundnut-maize formula in supermarket". For the group on Shea tree, Dr Richard proposes that one indicator should be "The processing time using upgraded technologies is reduced by 2 hours compared to the traditional processing method". To end this session Dr Richard HALL reminded to the participants that many donors request logical framework in order to be beyond of the control of the projects and

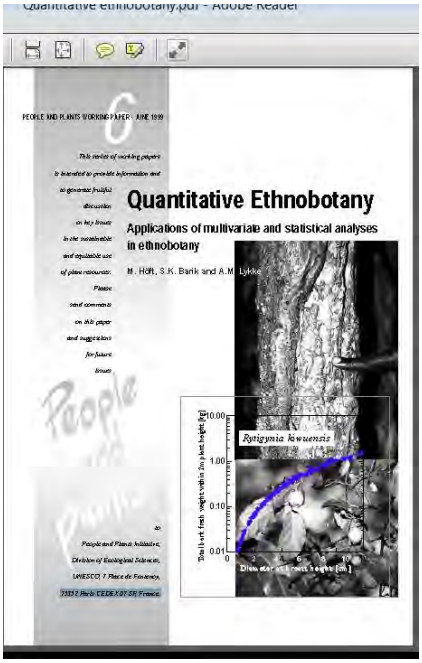
so it is important. However it could be noticed that the logical framework depends on procedure manual of the donors. Due to the interesting discussion for better improvement of the logical framework design, the participants were finally invited to break for lunch.

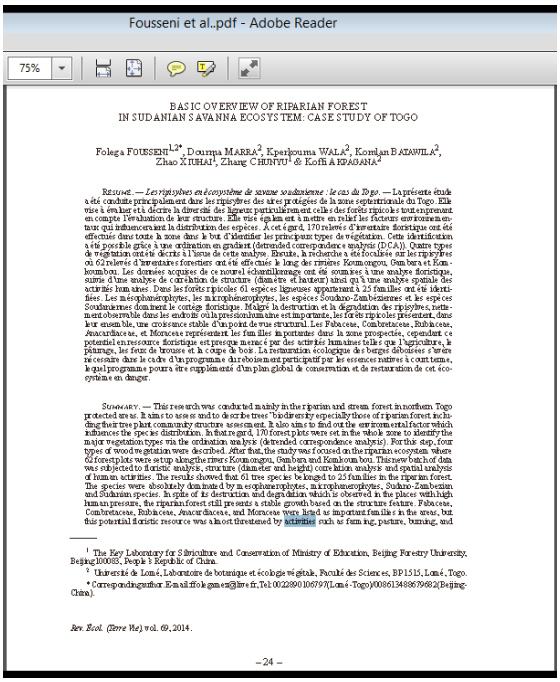
Photo 22: Participants and resource persons enjoying the third day lunch under the Canopy

2.7. Data collection and management

The afternoon session started at 2.18pm by the presentation of Dr WALLA Kperkouma on "Data collection and management". To introduce the topic, the speaker gives the outline of his presentation which will focus on data collection, data analysis, Modeling and some practical exercises. He pointed out that research start evidently when someone care to know where, How, When or What is the meaning of a phenomena in order to reach a specific objective. According to him, it is for this specific objective that we should be careful because it should be measurable and this lead to ask several questions such as: What should be the variables? How to measure it and which methods will be involved in this measurement? And finally which kind of sampling is appropriate and how to collect data? To answer these questions which appear to be important in the proposal written and make the work replicable, most competitive for getting subvention, the presenters introduce to the participants the three different types of data, the method of entering data, the different type of sampling technics and data analysis methods for both quantitative and qualitative data. Here it can be noticed that it is important to apply cost effectivity law before choosing the sampling technics, and the quantitative data can be analyze using means, standard deviation etc…. while for qualitative data it is the occurrence value and multivariate analysis that

is use. To conclude, he share with the audience the book entitled “Good statistical practice for Natural Resources Research” edited by R.D. Stern, R. Coe, E.F. Allan and I.C. Dale and the article publications on “Quantitative ethnobotany” published under people and plants working paper 6, Published in 1999 by the United Nations Educational, Scientific and Cultural Organization and another papers from his laboratory by Fousseni et al. which will be use later for the practical session.





The question posed by Alice BONOU here was: what is the difference between stratified and grape sampling and How to analyze rainfall data? Mahamadou A. also asked for the difference between quantitative and qualitative variables? The response of Dr WALLA on the first question stipulated that the stratified sampling regroups the individuals with the same characteristics (e.g: Sex; Ethnics group) and it is homogenous while grape sampling regroup the individual in the same area even if there are not homogenous. For rainfall data analysis Dr WALLA directed Mrs Alice BONOU to his colleague Dr FOUSSENI, also present in the conference room, who is more experienced about this kind of Data. The quantitative data are the kind of data which can be used to calculate mean, standard deviation while for qualitative data it can be analyze through codification, nominal or ordinal.

Dr FOUSSENI shared the data collection method and data analysis method used in his paper entitled “Basic overview of riparian forest in Sudanian savanna ecosystem: Case study of Togo” published in revue d’écologie (*Rev. Écol. (Terre Vie),* vol. 69, 2014.). Here the Principal component analysis-PCA was the point that raised some questions such as: How to interpret the data obtained and which statistical software have been used? To answer Dr FOUSSENI mentioned that for interpret data of the PCA analysis it is important to keep the data by side to attribute the characteristic of each group and Community Analysis Package –CAP was the software he used.

After this presentation different cases of study based on some of the participants proposals were held.

Photo 23: Dr WALLA giving the lecture on Data collection and management

Photo 24: Prof DANSI discussing with the participants on practical cases of the experimental design related to their proposed proposal

After this lecture some of the participants were took to University of Lomé for proposal reviewing by another resources persons.

Day 4

2.8. Scientific Hypothesis and summary written

The fourth day session have started at 8.30 am by the intervention of Mr **Per Rudebjer** who presented the program of the day in which the participants will have opportunity to know more on how to write a summary and scientific hypothesis. Dr Richard HALL presented the topic on "Scientific Hypothesis". From his presentation it can be noticed that scientific hypothesis is an idea of research objective that will be texted through experimentation. It may highlight the constraints which affect the research. The presenters then indicated that scientific hypothesis should be objective and linked to objective and be precise. Otherwise bad hypothesis may affect selection of the proposal. He continues by the next presentation on "summary written". According to the speaker, suitable summary is about 250 words and should highlighted:

- The background or problem you wish to address
- The research objective
- The procedure and methods
- The special resource need of the project
- The likely results, outcomes and benefits to be derived from the research and principal stakeholders who will benefit.

Then group exercise was given to participants:

- List your research objective(s)
- Construct your hypothesis/hypotheses (*See if these hypotheses are useful for modifying and adding to your objectives and designing experiments)*
- Write the summary for your own proposal.

This group exercise was done until the coffee break at 10.40 am and he reporting session was held after the coffee break.

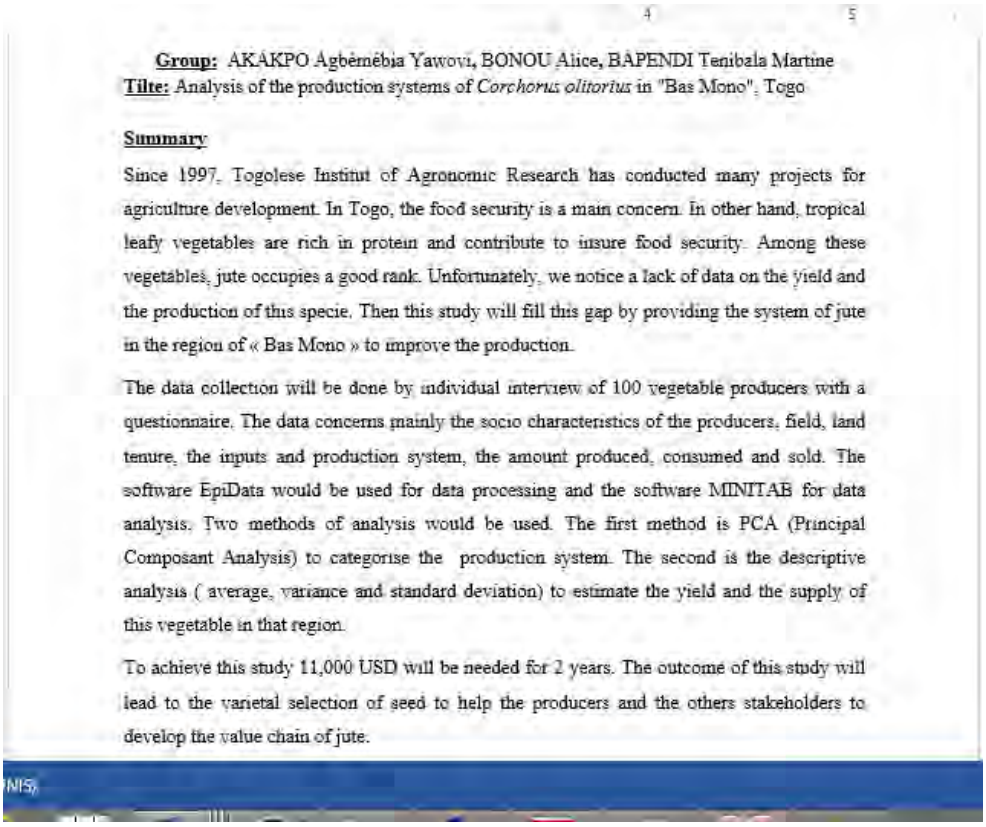
Photo 25: Participants working in group of three members to construct of scientific hypothesis and summary

Photo 26: Mr AKAKPO rapporteur of Group receiving the comment Dr Richard HALL and the others participants

During the reporting session, the audience successively listened to Mr Mahamdou Aboudourahamani, Mr Mai BOUCAR, Mr AKAKPO, Mrs ZONGO and Mrs ZOUNDJI for the project respectively entitled:

- Land characterization of a multifunctional space: the Nigerien parts of Lake Chad
- Caractérisation agro morphologique et biochimique des écotypes de voandzou collectés au Niger
- Analyse des systèmes de culture de *Corchorus olitorius* dans le Bas Mono au togo
- Etude de la diversité pathogénique et moléculaire du virus de la mosaïque BCMV-BIC du voandzou au Burkina Faso
- Improvement of Bambara groundnut production in Benin by use of efficient nitrogen fixation bacteria.

The general comment held here were about the lack of well-structured problem in some of the summary, the number of words which exceed 250 words in certain case, the lack of good connection and precision in problem statement, the lack of precision on how the work will be useful or efficient for the stakeholders. So after the improvement by taking the recommendation the summary of group three became as follow:



Group: AKAKPO Agbémébia Yawovi, BONOU Alice, BAPENDI Tenibala Martine
Tilte: Analysis of the production systems of *Corchorus olitorius* in "Bas Mono", Togo

Summary

Since 1997, Togolese Institut of Agronomic Research has conducted many projects for agriculture development. In Togo, the food security is a main concern. In other hand, tropical leafy vegetables are rich in protein and contribute to insure food security. Among these vegetables, jute occupies a good rank. Unfortunately, we notice a lack of data on the yield and the production of this specie. Then this study will fill this gap by providing the system of jute in the region of « Bas Mono » to improve the production.

The data collection will be done by individual interview of 100 vegetable producers with a questionnaire. The data concerns mainly the socio characteristics of the producers, field, land tenure, the inputs and production system, the amount produced, consumed and sold. The software EpiData would be used for data processing and the software MINITAB for data analysis. Two methods of analysis would be used. The first method is PCA (Principal Composant Analysis) to categorise the production system. The second is the descriptive analysis (average, variance and standard deviation) to estimate the yield and the supply of this vegetable in that region.

To achieve this study 11,000 USD will be needed for 2 years. The outcome of this study will lead to the varietal selection of seed to help the producers and the others stakeholders to develop the value chain of jute.

2.9. Evaluator role playing

After this the participants were directed to break for lunch. The lunch is following by the proposal evaluation session during which the participant are invited to be organized in four groups for playing the role of reviewer of the proposals which will be given to them. Before started the evaluation Dr Richard HALL quickly presented the evaluation criteria which is mainly divided in these keys points:

- Applicant and feasibility of project
- Scientific quality (e.g: generate new knowledge)
- Logical structured summary
- Well formulated realistic objective
- Up to date knowledge
- Balanced budget

After sharing the advisor form on which thirteen criteria of evaluation are mentioned, he invited the participants of each group to the following exercise.

- quote each criteria from 0 to 10 and decides whether the applications submitted will be funded or postponed or simply rejected
- Prepare power point presentation for deliver your judgment.

This group exercise was done until the afternoon coffee break. After taking this special coffee which was impacted by the presence of some of locally produced NUS juice such as tamarind juice, ginger juice, goyava juice etc., the participants went to the conference room for the report.

Photo 27: some participants evaluating proposals

The first report was on the topic: “Quest for ecological sustainability and management of terra firme forests in the XXXX”. After quotation of the proposals as showed in the picture below the group delivers the judgment that the application is recommended for funding. This last observation was in accordance with the point of view of the experts as reported by Dr Richard HALL.

Tilte of the project: Quest for ecological sustainability and management of terra firme forests in the XXXX

QUESTIONS	BADO	GOUNSOUGLE	AKAKPO	BONOU	KINI	WOULOU	MOYENNE
1	8	9	9	10	9	9	9
2	8	8	8	8	8	8	8
3	8	8	8	9	9	8,5	8,42
4	7	7	6	7	7	7	6,83
5	8,5	8	8	8	7	7	7,75
6	9	7	9	10	9	9	8,83
7	8	8	8	8	8	8	8
8	9	7	8	10	9	9	8,67
9	8	8	7,5	7	7	8	7,58
10	8	8	8	8	8	8	8
11	7	7	7,5	8	8	8	7,58
12	7	8	9	9	9	9	8,5
13	9	8	9,5	10	10	10	9,42
MOYENNE SUR 130							**106,58**
MOYENNE GENERALE							**8,20 / 10**

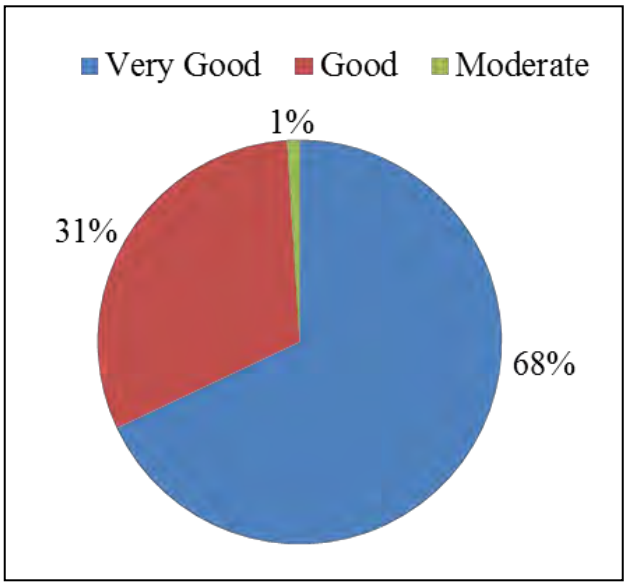
RESULT : The project is accepted

For the third group report on Aubergine, the mean of quotation was 6.3 over 10 led the member of the group decides that the application is recommended. So Dr Richard HALL mention that for this proposal, the expert comment that the literature review was not up to date and not precise, the methodology was not clear and there is a lack of published research that demonstrate that the wild species of this region is tolerant to salinity and molecular biology methodology was not clear. So the expert simply rejected this application. Here there was a contradiction between the group judgment and the one of the expert. This exercise led participants to understand somehow that the expert reviewer's jobs is difficult and also the key point on which they have to paid attention to make their proposal much understandable and clear as possible even for non-expert in the field.

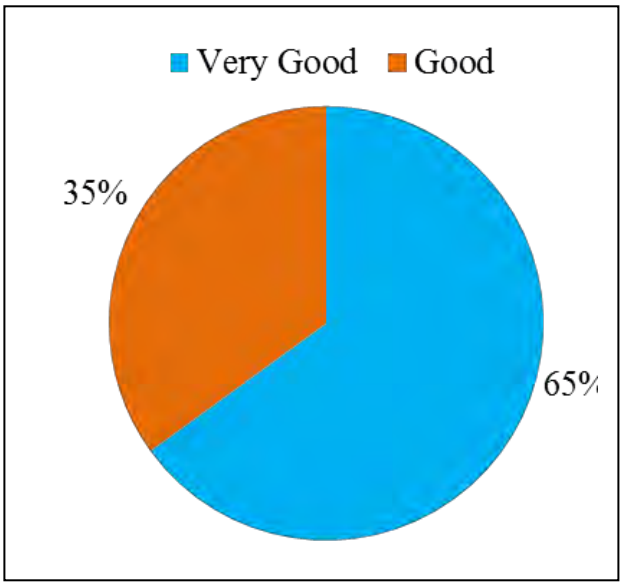
After this interesting reviewing exercise, Mr **Per Rudebjer** invited the participant for fill the evaluation form.

3. Logistic Evaluation

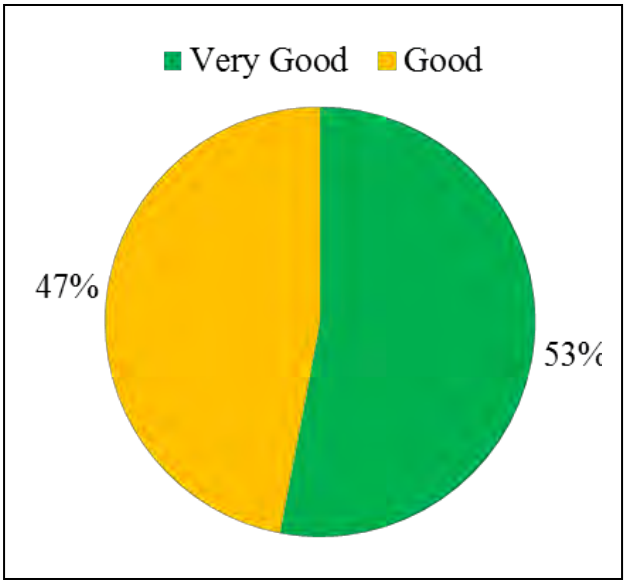
The results of evaluation are shown by the following figures. The Overall assessment of the organization was quoted very good and good by 99% of participants while the travel arrangements are qualified very good and good by 65% and 35% respectively. The registration at venue as well the local transport arrangement, meals and accommodations were well appreciated. However some participants recommended some improvements for the financial arrangements.



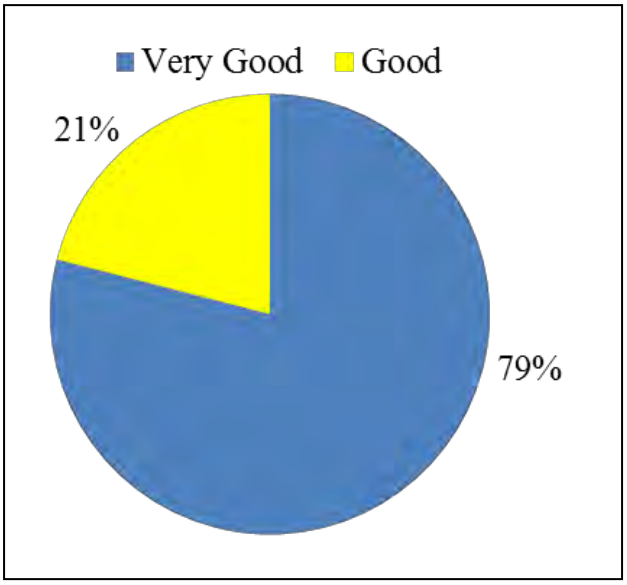
Overall assessment of organization



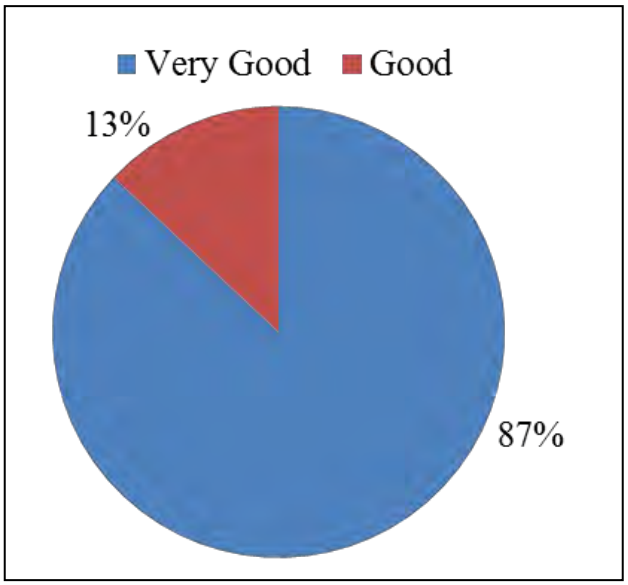
Travel arrangements



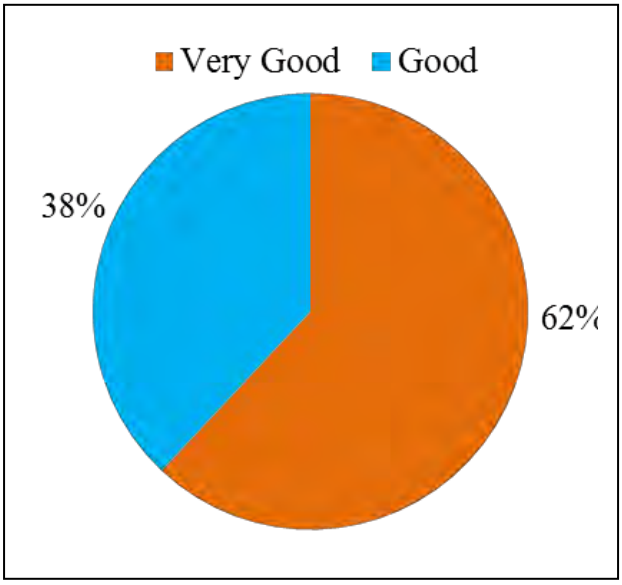
Reception at arrival



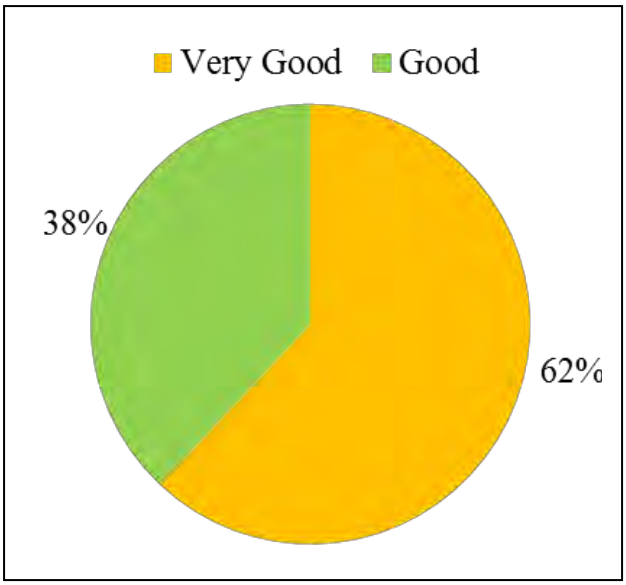
Registration at venue



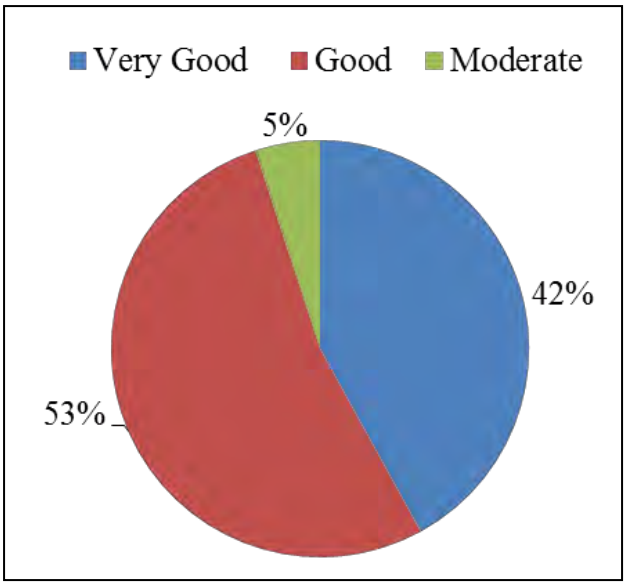
Local transport



Accommodation (Hotel)



Meals



Financial arrangement

4. Closing ceremony

Firstly a vote of thanks has been given by Professor DANSI. He expressed his gratitude to the partners of University of Lomé for the real support to the organizing committee of this training. He also thanked Mr Per Rudebjer and Dr Richard HALL for coming from so far away to build the capacities of young researchers in sub region in order to help them to write a good

research proposal to be financing by IFS. He then recommended to the participants to put the knowledge they have received into application in order to be funded and generate new knowledge on NUS for combatting malnutrition in Africa. To finish he mentioned some of the efforts been done by LAAPT/BIORAVE to further promote NUS in the sub-region like the establishment of WANPNUS network and the International Journal of NUS.

Mr **Per Rudebjer**, the representative of Bioversity International express his gratitude to Benin and Togo teams for successfully organizing this training course. He also recognized the champion spirit of Prof DANSI without who this organization may not be so successful as well as NUS promotion in the region.

On behalf of his organization, the International Foundation for Science, Dr Richard HALL thanked the participants for their enthusiasm and willingness to improve their skills in proposal written. To finish, he highlighted that he is ready to receive the participant applications at IFS by the end of December and thank all of them to be a good participant during the training course.

After him the representative of participants thank all the resource persons on behalf of all the participants for giving them this opportunity for proposal written capacities building. Then she promised that participants will apply the course to improve their individual proposal. To finish she fairly hope that for 2014 round of IFS grants many of their applications will get successful notification and wish good luck to NUS project and safe return to the resource persons.

Prof Batawilla from the University of Lomé thanked all participants for accepting to come at Lomé for this training. For him it will be interesting to put the course into practice because it is a great opportunity. To conclude, he guesses that each one of the participants will be in the future expert of IFS to promote the NUS under the new knowledge acquired.

Professor TOZO, the Vice Dean of the Faculty of Sciences of the University of Lomé took the floor for the closing remark. After thanking the organizing committee to allow this course to be held at Lomé, he highlighted that is not common to find an African people spending a week together for and talking about NUS. So he was very impressed by the initiative and urged the participants to put their new knowledge into application after returning to each of their countries in order to remove the NUS from their neglected status. He congratulated all the participants, apologize for any inconvenience they have encountered in Togo, wish them safe journey back to their home countries in expectation that they will visit Togo again. It is on this word he declare officially closed the training course on proposal written focus on NUS value chain.

The next step was certificate distribution to the participants associated with a T-shirt scratch with NUS promotion message.

Photo 28: Selected pictures showing participants receiving their certificate of attendance to the workshop as well T-shirt scratched with NUS promotion message from some resource persons

Photo 29: Sample of the certificate

Day 5 / SENSITIZATION ACTIVITY

The fifth day as mentioned in the program was devoted by an important sensitization events on NUS at University of Lomé organised by the projects partners. The objectives were:

- **Sensitise at least 100 young researchers from different laboratories of the University of Lomé on NUS value chains**
- **Inform young researchers on the past efforts of the University of Lomé in terms of research on NUS or Minor crops for the localisation of new stating points.**
- **Share with Togolese researchers Benin efforts in promoting NUS research and value chains for excitation**
- **Share with the young researchers the recommendations (edited by Bioversity International) of the third international conference on NUS held at Accra in 2013**

- **Introduce Bioversity International and IFS and their program on NUS to the young researchers**
- **Help Togolese to initiate like in Benin the alumni of IFS grantees**

The schools and laboratories involved were: school of food technology, school of agronomy, laboratory of botany, laboratory of plant physiology and laboratory of Pharmacology. The programme was as follow:

Time	Presentation	Responsibles
8.30 -9.00	Arrival and installation of the participants	Organisers
9.00-9h10	General introduction and welcome address	Prof. TOZO, Vice Dean of the Faculty of Sciences
9.10- 9.25	Diversity and Importance of Minor crops in Togo	Prof. Komlan Batawila
9.25- 9.45	Bioversity International and its NUS programme	Per Rudebjer
9.45- 10.05	IFS and its NUS and granting programme	Richard HALL
10.05- 10.25	Recommendations of Accra on NUS and introduction of key priority NUS in Togo	AKPAVI Sèminhivi
10.25-10.45	Status of NUS research and development in Benin	ADJATIN Arlette
10.45-11.05	Possibilities of valorisation of NUS through development of new food products to combat malnutrition and associated diseases	SANOUSSI Foaouziath
11.05-11.35	Initiation of IFS Alumni in Togo	Prof. TOZO and Dr Richard HALL
11.35- 12.00	Refreshment	Organisers

Over hundred young researchers selected from different laboratories of University of Lomé and important number of officials of university of Lomé as well the partners from Bioversity International and International Foundation for Science were the main participants at this event. The national televisions as well as some local food entrepreneurs promoting NUS were also invited. All the participants dressed T-Shirt scratched with different NUS promotion message prepared by LAAPT in Benin. After presenting the program of the event, the facilitator invited Professor TOZO, the Vice Dean of the Faculty of Sciences of University of Lomé, to give his welcome address. Professor TOZO firstly thanked the partners from Bioversity International and International Foundation for Sciences as well as those from LAAPT/BIORAVE (Benin Republic) for initiating this important event at University of Lomé. He welcomed all the participants at the NUS sensitization day and underlined that NUS /minor crops research in the

UEMOA region started from the laboratory of Botanic of the University of Lomé under the initiative of Professor AKPAGANA through a project funded by IRDC. He highlighted that his hope is that each of the participants became in their own field of specialization, respective laboratories and countries the NUS ambassadors in order to really promote these species for better health and food security in Africa.

Professor Batawila presented to the participants the different research works on NUS at Laboratory of Botanic and Ecology. According to him minor crops or NUS are rich in several vitamins and micronutrients which can help to alleviate several chronic diseases today and improve people nutrition status. However there are simply neglected by local population as well as agricultural program and researchers. To bring them out from this status several studies were carried out by the laboratory and a large diversity (more than hundred food plant species) of NUS was found in Togo. But the approach to be adopted by researchers will be the restitution of the results from their studies as well as recommendations to local populations in order to let them be aware and adopt then a good behavior. To conclude his talk, the speaker give as example the long life expectancy of our elders which are always feed with these NUS and then recommended that NUS be involved in developing food products for preserving our health and generate income for the populations.

Mr Per Rudebjer and Dr Richard Hall introduced their respective institutions and the several actions done to promote NUS species. Here after presenting Bioversity International and his mission, Mr **Per Rudebjer** introduced the EU-ACP 2014-2016 project on NUS value chain improvement, the different partners involved and the expected outputs. Then he share with the audience the results achieved with similar project in Bolivia on Quinoa and concluded that his expectation is to get similar results of very improved NUS value chain in Africa.

Dr Richard Hall said that IFS exists since 1972 and works in several research fields with about thousands scientific advisors for contribution to the advancement of research. He presented his institution strategies which are mainly based on competitive criteria, the kind of research they fund and the eligibility criteria.

Professor BATAWILA shared with the participants the recommendations of Accra on NUS and then the hard copy of the document was multiplied and distributed to all the participants.

Dr Arlette ADJATIN from Benin presented on “the overview of research activities on NUS in Benin”. Here the presenters highlighted the research activities on NUS at **LAAPT** (Laboratory of

Agricultural Biodiversity and Tropical Plant Breeding **now BIORAVE** – Laboratory of Biotechnology, Genetic Resources and Animal and Plant Breeding). She reported on the national fact finding study to assess the diversity and prioritize NUS, two national workshops (stakeholders' meeting; National innovation platform**),** the national workshop on NUS, several research activities on traditional leafy vegetables, grain legumes, minor tuber crops**;** the training of more than 70 young researchers on several topics related to NUS such as proposal writing, food system (from agronomy to human nutrition) and Scientific writing and communications; the development of the West African Network for the Promotion of Neglected and Underutilized Species (WANPNUS), the international journal of NUS (IJNUS), etc. For her, more efforts are still needed to overcome the food insecurity in Africa by proper valorization of NUS.

The last presentation of the session was delivered by Mrs Faouziath SANOUSSI on "Possibilities of Valorization of NUS for Combating malnutrition and related chronic diseases". With some WHO statistics indicating some alarming rates of prevalence of malnutrition, including under-nutrition (stunting, over-weight, vitamin A deficiency, Anemia, Goiter) and over-nutrition and several chronic diseases such as diabetics, hypertension, obesity in Africa, she highlighted evidence that there is a strong association between the dietary diversity and the nutritional status of people. She shared with the audience the nutritional value of several NUS and the possibilities of improvement of their value chain based on example from different countries especially Benin republic. She concluded with this message from Hippocrates, the father of medicine "**Let food be the medicine and medicine be the food**"

Professor TOZO and Dr Richard HALL initiated the creation of Alumni of IFS grantees in Togo. Here are selected picture of the event. A full TV report is attached on CD. The information is posted at the website of the University of Lomé.

From the left to the right Photo showing the sensitization day banners and the officials and partners during the opening ceremonies


From the left to the right photo showing the overview of the participants at the NUS sensitization day and Mr Per presenting Bioversity International

Photo showing the NUS promotion messages scratched on the back of the T-shirts of the participants and Dr Richard HALL presenting his institution and possibilities of project funding


From left to right: photo showing Dr ADJATIN presenting the NUS research at LAAPT and NUS foods products exposed by Togo entrepreneurs


From the left to the right: Photo showing Professor BATAWILA presenting the Accra recommendations on NUS to the participants and Professor TOZO and Dr Richard HALL with the IFS grantees that attended the event

The sensitization was then closed by refreshment break held at the restaurant of University of Lomé.

7. Acknowledgment

The Research Proposal Writing course with a focus on upgrading value chains of neglected and underutilized species of plants is entirely sponsored by **EU-ACP** through a grant contracted by **Bioversity International**. The contribution of all the partners' organizations and the local organizing committee to the success of this workshop is gratefully acknowledged.