REPORT OF THE

AFROFOODS SUB-REGIONAL COORDINATORS MEETING AND REGIONAL WORKSHOP

ON

FOOD COMPOSITION, DIETARY DIVERSITY AND FOOD SECURITY IN AFRICA

Rockview Royale Hotel Abuja, Nigeria

8th - 11th September, 2011

The International Network of Food Data Systems

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LIST OF ABBREVIATIONS

AFROFOODS	African Food Data Systems
BMD	Boiled Mung Bean
BV	Biological Value
CAADP	The Comprehensive Africa Agriculture Development
CAFOODS	Central African Food Data Systems
CD	Casein Diet
CRAN	Centre de Recherche en Alimentation et Nutrition
ECOWAS	Economic Communities of West African States
ESHA	Elizabeth Stewards Hands and Associates
FANUS	Federation of African Nutritionists Society
FAO	Food and Agriculture Organization of the United Nations
FBFI	Food Basket Foundation International
FC	Food Composition
FCD	Food Composition Data
FCDB	Food Composition DataBase
FDL	Federal Department of Livestock
FGN	Federal Government of Nigeria
FIAS	Food Intake Analysis System
GAIN	Global Alliance Initiative on Nutrition
HACCP	Hazard Analysis and Critical Control Points
HGSFP	Home-Grown School Feeding Programme
HKI	Hellen Keller International
IITA	International Institute for Tropical Agriculture
INFOODS	International Network of Food Data Systems
IRAD	Institute of Agricultural Research for Development

IYCN	Infant and Young Child Nutrition
MDG	Millenium Development Goals
NAIP	Nigeria Agriculture Investment Plan
NFA	National Fortification Alliance
NFD	Nitrogen Free Diet
NPU	Net Protein Utilization
NSN	Nutrition Society of Nigeria
PEM	Protein Energy Malnutrition
PER	Protein Efficiency Ratio
RMG	Raw Mung Bean
TD	True Digestibility
TMG	Toasted Mung Bean
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
VAD	Vitamin A Deficiency
VMD	Vitamin and Mineral Deficiencies
WAHO	West African Health Organization
WAFOODS	West African Network of Food Data Systems

EXECUTIVE SUMMARY

The 2011 African Food Data Systems (AFROFOODS) sub-regional coordinators'meeting and regional workshop was held at the Rockview Royale Hotel, Abuja, Nigeria from the 8th to 11th September, 2011. The meeting, which was attended by 42 participants from Burkina Faso, Cameroon, Ghana, Mali, Nigeria and Senegal, was jointly hosted by FAO and the University of Ibadan, Nigeria.

The meeting's main objectives were to review the situation of AFROFOODS since the last meeting in Dakar, 2009 and develop a workplan for one year to move AFROFOODS forward. The secondary objective included bringing more visibility to food composition activities in Africa, providing a discussion forum with other African scientists on how to mainstream food composition activities into food safety, trade, food security and the promotion of sustainable diets.

Slow progress has been made since the last coordinators meeting in Dakar. Reports from the different subregional coordinators showed that there was lack or slow pace of activities in the different subregions. This was generally reported to be due to a lack of coordination amongst in country and inter country experts in each sub region, lack of financial resources and a poor infrastructural facilities for generating food composition data. Furthermore, there is the challenge that food composition issues are not considered as priority for stand alone funding.

Other presentations on key scientific activities were made during the workshop. A total of fourteen presentations were made by different scientists from various universities and Federal Agencies in Nigeria A training was also conducted which was aimed at sensitizing scientists on the importance of food composition data in sustainable development, and building the capacity of those interested in generating and compiling Food Composition Data.

Several challenges were identified which were considered to hamper the integrations of food composition activties into developmental issues. Some of these included poor coordination at country levels, low level of awareness and poor advocacy.

Some of the recommendations made included developing a directory of experts to enhance the necessary leadership drive needed to upscale Food Composition and biodiversity at the various levels; establishing an AFROFOODS regional, subregional, and country level secretariat; conducting an institutional capacity assessment to identify laboratory facilities, publications and other materials needed for capacity building needed to support Food Composition activities; development of a catalog on local biodiversity to further develop local potential; partnership with regional and international bodies for effective network and support; and lastly, development of marketing/advocacy strategies for food consumption and biodiversity to support and promote local foods .

1.0 OPENING CEREMONY

The Special Guests for this workshop included the FAO Representative in Nigeria, Dr. Louise L. Setshwaelo, the representative of the West African Health Organization (WAHO) Dr. Ismael Thiam, the President of the Nutrition Society of Nigeria (NSN)- Professor Iginatius Onimawo and the AFROFOODS coordinator, Professor I.O. Akinyele.

In a welcome speech read on behalf of Professor Olusegun O. Akinyinka – the Provost of the College of Medicine, University of Ibadan, welcomed all participants to the meeting and highlighted the importance of food composition data which included promotion of trade, agricultural policies and food consumption studies. He also made reference to various challenges faced by AFROFOODS. He explained the need for decentralization of food composition activities and the coordination responsibility charged to the University of Ibadan as a centre for Nigeria's Food composition activities. He encouraged participants to deliberate on the way forward for AFROFOODS.He ended his speech by commiserating with the FAO representative in Nigeria Dr Louise Setshwaelo on the recent bombing of the UN house in Nigeria and further appreciated the collaboration of FAO-INFOODS for collaborating with the University of Ibadan on this activity.

The address of the Coordinator of FAO/INFOODS Dr. Ruth Charrondiere, was also read on her behalf as she could not be present due to the unfortunate incidence of the bombing of the UN House in Nigeria. As the INFOODS coordinator she promised to increase the visibility and activities of INFOODS in general and hopes that participants will plan how to do the same for AFROFOODS and also commended the AFROFOODS coordinator for organizing the meeting.

She gave a background to the establishment of INFOODs in 1984 specifying the objective as coordination of efforts to improve the quality and availability of food analysis data worldwide. She highlighted INFOODS achievements to include formulation of standards and guidelines and capacity development among others. She concluded by declaring that INFOODS members are expected to actively contribute to INFOODS work.

Good will messages were delivered by the President of the NSN who expressed delight on the conduction of the AFROOFOODS sub regional coordinators meeting and workshop especially since it will dovetail into the FANUS conference in Nigeria. He believed participants including himself, will learn more on Food Composition activities. He made reference to the unfortunate incidence of the UN house bombing and the effect it had on the workshop as well as the upcoming FANUS conference particularly with the loss of a very active member of the FANUS Local Organising Committee.

The WAHO representative, Dr. Ismael Thiam also spoke on the contribution of WAHO in the generation of the West African Food Composition Table, expressed his hope that lessons will be learnt from the experience of WAHO which the meeting will adopt to ensure the generation of an African Foods Composition Table.

The workshop was declared open by Dr. Louise Setshwaelo, the FAO representative in Nigeria who apologized for the conspicuous absence of the FAO technical officers and associated the unfortunate but necessary absence to restrictions placed by the organization on travel to Nigeria due to the UN house bombing. She presented the fact that meeting the MDGs in Africa still remains a challenge. She said availability of accurate information was important for assessing intake which will contribute to good health. She referred to the first publication of Food composition table by FAO in 1968 and the significant interest of FAO in food composition activities. She said FAO aims to achieve linkages between agriculture, nutrition and health and that food composition information is one of the links in

the chain. She referred to the convention on biological diversity, the cross-cutting initiative on biodiversity for food and nutrition which was established in 2006 and the AFROFOODS call for Action in 2009.She wished the participants successful deliberations.

2.0 ACKNOWLEDGEMENTS

Participants expressed their appreciation to FAO Rome for sponsoring the meeting and workshop, the FAO representative in Nigeria, Dr. Louise L. Setshwaelo, for declaring the meeting open in spite of the difficult situation caused by the bombing at the UN House in Abuja. The following organizations are also duly acknowledged for the respective additional contributions which led to the success of the meeting and workshop: University of Ibadan, Ibadan,West African Health Organisation (WAHO) Standards Oragnisation of Nigeria (SON), Federal Institute of Industrial Research (FIIRO),and the Food Basket Foundation International (FBFI).

3.0 OBJECTIVES OF THE MEETING

The aims of the meeting/workshop were:

1. To enable the AFROFOODS Sub Regional Coordinators review achievements and challenges since their last meeting in Dakar in 2009.
2. To bring more visibility to Food composition activities in Africa.
3. To provide a discussion forum with other African scientists on how to mainstream food composition activities into food safety, trade, food security and the promotion of sustainable diets.
4. To develop a strategic plan for the next one year which would allow AFROFOODS reposition herself to catch up with other INFOODS region including resource mobilization.

4.0 EXPECTED OUTPUTS AND OUTCOMES

The workshop is expected to produce a meeting /workshop report as well as a work plan to promote Food Composition activities and mobilize resources in the African Region.

5.0 ELECTION OF BUREAU MEMBERS

The meeting proceeded with the election of the following bureau members:

Chairman: Professor Isaac Akinyele (Nigeria)

Vice-Chairman: Dr. Akory (Representative, WAFOODS, Francophone)

Rapporteur: Ms. Paulina Addy,

Assisted by Ms. Folake Anjorin, Mr. Ibukun Afolami

6.0 TECHNICAL SESSIONS

6.1.1. PARTNERSHIP FOR FOOD COMPOSITION ACTIVITIES FOR DIETARY DIVERSITY AND FOOD/NUTRITION SECURITY

This presentation was made by Dr. Thiam Ismael from WAHO. He introduced his discussion with health statistics on Vitamin and Mineral Deficiencies (VMD). Stunting, a manifestation

of chronic undernutrition, was shown to be most prevalent in Niger (48.1%), Liberia (41.8%), and DRC (43%). Attention was pointed to the decline in agricultural production and the food and nutritional insecurity at household levels as a result of low investments in the Agricultural Sector and a weak collaboration between agriculture and health sectors. It was established that foods from West Africa's traditional food systems could ensure diversity in family diets. "He opined that there was now a growing consesus to promote the consumption of indegenous and traditional foods of the sub-region as strategies against malnutrition and diet-related chronic diseases". The benefits of research on their composition were highlighted as the following:

- Provision of added value.
- Facilitation of labeling and marketing.
- Contribution to the reduction of rural poverty.
- Contribution to demand creation and increase in incomes through small scale food processing units.
- Strenghtening of regional trade.
- Improvement of food and nutrition security at regional, national and household levels.
- Some of the problems of food composition activities were highlighted as low investment and a weak collaboration between agriculture and health sectors

Other problem areas discussed included the rather high prevalence of chronic malnutrition, anaemia, which poses a high risk to maternal mortality, Vitamin A and Zinc Deficiency – especially the under 5 – as well as obesity in all West African sub region.

A Life-cycle approach to chronic diseases was recommended i.e. from Pregnancy, infancy, adolescence to adulthood in addition to a multisectoral and interdisciplinary platform to promote the use of indigenous foods for a good health outcome. The value of dietary diversity against simplified diets and other dietary habits that predispose to poor health (obesity, diabetes, cardiovascular diseases, dental caries, etc) were also stressed.

While speaking on dietary diversity, it was mentioned that a diverse and adequate diet provides nutrients in combinations ideal to sustain and promote health. Emphasis was also made on the role of dietary diversity in meeting micronutrient needs "Dietary energy needs can be met without diversity, but micronutrient needs cannot be met without diversity". Some of the benefits of traditional/indegenous food in providing diverse diets were stressed. These include among others, their cost effectiveness and the fact that they are based on a better use of local diversity.

Some achievements of WAHO were also highlighted. These included:

- Publications: FAO/ECOWAS/Biodiversity (2010-2011) - Composition of selected West African Foods , West African Food Composition Table (in both English and French)
- Partnerships: WAHO, FAO, BDI, Research Institutions, CSO (ROPPA), ECOWAS Commission for Agriculture and CILSS
- INITIATIVES: Advocacy (ECOWAS commissioner, ECOWAS parliamentary session
- Capacity building on FC data compilation for young West African researchers

- Desk review of the current data available
- Resource mobilization
- Regional meetings: Ecowas Nutrition... (2006, and 2008).
- Feature in SCN news: 2 topics
- Support of CAFOODS Coordinator, Kouebou Christiant at the Regional Initiatives for the Promotion of Local Foods from West Africa held in Abuja on May 18th – 20th.

Some of the constraints being faced were also mentioned. These included:

- Lack of financial resources,
- Low support for Agriculture and research
- Low Human capacity for Food Composition Data compilation and the promotion of local foods and globalization.

Some key challenges mentioned were:

- Need for a paradigm shift i.e. there is need for Policy change to support research into traditional food systems.
- There is also need for Private-Public Partnerships, and Policy harmonization.

6.1.2. UPDATE ON FOOD COMPOSITION ACTIVITIES (WAFOODS ANGLOPHONE)

This presentation focused on just a few activities since according to Ms Addy, WAFOODS had no funding to make substantial progress. Fifteen peer-reviewed articles with published food composition data were to be included in the database. WAFOODS contributed to the publication of the Food Composition Table on *"Composition of selected foods from West Africa"* which was done in collaboration with the Food and Agriculture Organisation (FAO). Opportunities were also being exploited under the West African Agricultural Productivity Program (WAAPP) to fund food composition data analysis under its objective: new areas for research. Collaboration with the Ministry of Health was also indicated. WAFOODS recommended that AFROFOODS assist with attracting more funding to enable food composition activities in Africa to be more effective.

6.1.3. WAFOODS (FRANCOPHONE)

In this presentation, Dr. Akory outlined the various Food Composition activities being implemented in Mali. According to him, the Food Composition Activities in the country has resulted into the following:

- Publication of a Food Composition Table (2004).
- Study on Food diversification at Sikasso (rich area of Mali).
- Cotton oil fortification with Vitamin A (2008). .

He continued by outlining the activities being pursued in the area of Food Security. These included:

- Food security and early warning system.
- Landscape analysis.

Involvement with REACH, a UN program.

Activities in Nutrition Security included the following:

- A National forum on Nutrition, which was held in (2010).
- Focal point for Management Information System.
- National Policy on Nutrition, (strategic planning on course)
- Anchorage for Nutrition at the highest level

There were however, no activities on WAFOODs as there was no funding from the regional coordinator.

He explained the difficulties being encountered, which included lack of communication at all levels, lack of funding and the absence of a platform to support coordinators. Some perspectives were shared. These included strengthening advocacy, Joint meetings with AFROFOODS e.g. WHO/UNICEF etc.

The following were suggested as future considerations:

Improving communication through an AFROFOODS website, strengthened advocacy at high levels, development of an action plan on activities related to Food Composition and funding sources. He concluded by hinting that the under 5 and other vulnerable population be targeted and the quality of food can be promoted with a Food Composition Table.
In response to the issues raised in this presentation, the Chairman emphasized the need for collaboration in each country between the various ministries so they could in turn assist with advocacy with their Ministers for the necessary political commitments.

6.1.4. FOOD COMPOSITION ACTIVITIES IN NIGERIA

Professor Akinyele, AFROFOODS regional coordinator, introduced his presentation by emphasizing the importance of having a reliable Food Composition Database. He also emphasized the usefulness of such database in nutrition and health assessment, formulation of appropriate food dietary guidelines, nutrition education, food and nutrition training, epidemiological research on relationships between diet and disease, plant breeding, nutrition labeling, food regulations, consumer protection among others. He further supplied information on the efforts in Nigeria to develop and publish a comprehensive Food Composition Database, which dated back to the 1960s. Here he mentioned the following food composition tables in Nigeria:

- 1968 FAO FCD for use in Africa
- 1968 Oyenuga Nigerian Food and Feeding Stuffs
- 1995 Oguntona and Akinyele Nutrient Composition of commonly eaten foods in Nigeria (raw, processed and prepared)
- 1999 FCD established by Food Basket Foundation International

He also mentioned the Food Intake Analysis System (FIAS), which was a partnership project between the FGN, IITA, USAID, USDA, UNICEF, HKI and University of Texas School of Public Health, with the aim of developing a database using USDA data with substitution with the nutrient content of the collected food. He explained that even though the software

developed was not yet available for general use, the data were available on public domain. He later went ahead to talk about other software developed by ESHA research in collaboration with John Wiley and Sons Inc. In describing this, he explained that the database was such that local foods can be added to it, and that it enabled users to build a personal profile and a detailed record of dietary intake, which can be compared with recommended nutrient standards.

The current activities being carried out were also mentioned, which included:
Reactivation of the NIGERIAFOODS network by the department of Human Nutrition in the University of Ibadan, Nigeria, which was designated in 2010 as the national coordinating centre for food composition activities in Nigeria in order to strengthen the NIGERIAFOODS Database Network and begin training, data generation, collation and harmonization in the six geopolitical zones of the country.

He further explained that this will feed into a national and multistakeholder workshop to produce a comprehensive data set. He mentioned that activities were on-going in the six geopolitical zones of Nigeria to develop a computer software that will facilitate the assessment of dietary intakes of the Nigerian population.

He concluded by explaining the current challenges being faced, which includedlack of coordination amongst expert, low priority on the agenda of government, lack of financial resources, poor infrastructural facilities for food composition, poor understanding of the role of food composition activities and poor communication and knowledge-sharing among professionals

6.1.5. FOOD COMPOSITION & BIODIVERSITY IN CENTRAL AFRICA: LESSONS FROM THE COMPILATION OF CAMEROON DATA (CAFOODS)

In the course of the presentation, Dr. Achu explained that CAFOODS has put together a Team for Food Composition activities with the following objectives:

To make the group known.
To be able to draft and submit proposals as well as produce a directory and build a Data Production centre.
To develop a compiled database.

The Compilation process included:

Identifying food data production centres in Cameroon
Creating a directory of available data sources
Selecting and collecting available data sources
Capturing, verifying and harmonizing the compilation tool

Food data production centres were set up in different locations which included the Ministries (Agriculture, Scientific Research – CRAN and IRAD) and faculties of science in five state

universities. In addition, data for food compilation were sourced from publications available from the internet and public libraries.

In the process of their work there were challenges.These included

Lack of a unified nomenclature system in food composition tables.

Lack of availability of food composition data from public libraries and internet.

Less than 10% of the directory was considered satisfactory.

Some of the achievements included:

A four-step compilation approach

170 food items picked in the archival database

There were concerns about data quality for inclusion in the Food Composition Tables and the need to strategise to avoid the current fragmented approaches to Food Composition work, the use of obsolete equipment and the use of uncertified laboratories.

6.1.6. ECSAFOODS:CURRENT SCENARIO,PROPOSED AND ATTEMPTED ACTIVITIES

Ms Lukmanji, who was unavoidably absent, in her report sent to the meeting,, highlighted the poor representation from ECSA countries at meetings. She also reported that there was inadequate food composition tables perhaps due to inadequate perception or motivation and that where food composition tables were available, they weren't updated and available online. Major problems being encountered included lack of commitment and funding, lack of equipment, human resources, finance and other logistics for food analysis, lack of mechanism for coordination within ECSA or at Regional levels and lack of a forum for the exchange of information.

Activities accomplished included the following:

- Inventory of pre-existing food composition tables with their date of production and update. Initially, the sub-regional coordinator contacted participants in food composition trainings whose contacts could be found. According to Ms Lukmanji, several e-mails sent by the sub-regional coordinator were not delivered, while no response was got from those that were delivered with the Tanzanian trainees being an exception.
- In addition, closer inter-country linkages and increased interactions with Kenya and Uganda were also established. It was also reported that several attempts to contact trainees from the 2010 Pretoria training was unsuccessful. However, contact with AFROFOODS has been maintained and there have been participation in AFROFOODS meetings and in other International Food Composition-related conferences.
- Furthermore, training/Capacity building was organized in Dar es Salaam in collaboration with Tanzanian Food and Nutrition Centre (TFNC).

Food composition in ECSA in recent years was reported to include the following:

- Participation in the 5th International Graduate Course on Production and Use of Food Composition Data in Nutrition, which held in pretoria in November 2010,

- Creation of Mozambican Food Composition Database, which started in 1995 and is currently being updated,

- A joint programme between the nutrition unit of Ministry of Health with Ministries of Science and Technology, Agriculture and the University of Eduardo Mondlane.

Current activities being carried out in Ethiopia, Tanzania and Uganda were also reported:

Ethiopia: Food composition database produced were being utilized by incorporating them into courses.

Tanzania: Food composition tables were being revised to produce a second edition. It was reported that these FC tables were being used although not so extensively yet, and can be found on the Harvard School of Public Health and INFOODS/FAO websites. In addition, there are current plans being made to upload the website of Muhimbili University of Health Science. Some of the challenges reported were activities being "a one-man show" and lack of motivation and funds. At the Tanzania Food and Nutrition Centre there is currently a challenge of dearth of candidates whose capacity can be developed to continue with the food composition activities.

Uganda: Activities currently being undertaken include advocacy to create Uganda Food Composition tables. This is being carried out through meetings with representatives in the Health, Agricultural and Education sectors and development partners. Also, nutrition action is being carried out to scale up nutrition interventions with food composition tables as a priority on the agenda.

6.2. ACTIVITIES OF THE NATIONAL AGENCY FOR FOOD AND DRUG ADMINISTRATION AND CONTROL (NAFDAC) Nigeria

Mr. Ozigis began with a brief history of the National Agency for Food and Drug Administration and Control (NAFDAC). NAFDAC was established by Decree No. 15 of 1993. As a parastatal of the Federal Ministry of Health, NAFDAC has the mandate to regulate and control quality standards for Foods and other regulated products imported, manufactured locally and distributed in Nigeria. NAFDAC has various basic functions. According to the requirements of its enabling decree, the Agency was authorized to regulate and control the importation, exportation, manufacture, advertisement, distribution, sale and use of food and other regulated products. Conduct appropriate tests and ensure compliance with standard specifications designated and approved by the council for the effective control of quality of food, drugs, cosmetics, medical devices, bottled water, and chemicals.
Other functions include:

- Undertaking appropriate investigation into the production of premises and raw materials for food/other regulated products and establish a relevant quality assurance system, including certification of the production sites and of the regulated products.
- Undertaking inspection of imported foods and other regulated products and establish a relevant quality assurance system, including certification of the production sites and of the regulated products.

- Compiling standard specifications, regulations, and guidelines for the production, importation, exportation, sale and distribution of food and other regulated productsUndertaking the registration of food products and other regulated products.
- Controling the exportation and quality certification of food and other regulated products intended for export.

Mr. Ozigis mentioned that the Agency made efforts to kick-start the total diet study in their own laboratory through capacity building.

Concerning food composition activities, he mentioned that activities are currently limited to processed products and the parameters are as defined by Nigeria Industrial Standard and the law of the Federation. These parameters included: moisture content, food energy, protein, carbohydrate, minerals and vitamins

Beyond these parameters, analyses are carried out for contaminants, heavy metal limits, unpermitted additives such as melamine and bromate, radiation test is also carried out on some products. In addition to these, he gave some other achievements of the Agency:

- NAFDAC has provided guidelines for establishing food plants in Nigeria as well as the guideline for Good Manufacturing Practices and HACCP System in food plants.
- A base line study on HACCP practice by factories in Nigeria has been carried out by NAFDAC with the support of United State Department of Agriculture as a primer for food safety practice in Nigeria. Academic HACCP/Food Safety Network has also been put in place.
- Efforts have been made at inculcating good storage practice to check the abuse and misapplication of pesticides/agrochemical in food storage.
- NAFDAC is a member of the NFA and active in Nigeria fortification and IYCF programmes.

NAFDAC is willing to collaborate with stakeholders in Nigeria Food Safety Programme, total diet and food composition study.

6.3. FEDERAL MINISTRY OF FOOD AND AGRICULTURE AND RURAL DEVELOPMENT

In her presentation, Ms Fasanmi from the Federal Ministry of Agriculture and Rural Development explained the primary role of the Ministry, which was to develop policies and facilities and technologies for successful planning, implementation and monitoring of agriculture and rural development on a sustainable basis and the sustainable production of adequate nutritious food and raw materials. The Ministry also promoted cost effective and sustainable ways to increase access to and consumption of foods that are rich in nutrients, which are critical to human nutrition such as protein, iron, zinc and vitamin A. Promotion of cocoa consumption through Home-Grown School Feeding and Health Programme of the Federal Government was one of the programs but has ceased due to lack of funds.

It was mentioned that FDL enacted policies to improve the nutritional status of Nigerians through the domestic provision of high quality, protein-rich livestock products. The Ministry in an attempt to reposition agriculture through strengthening of the value chain process for sustainable growth and development embarked on initiatives as the CAADP that has

culminated into Nigeria Agricultural Investment Plan (NAIP), which carries out rehabilitation, completion and construction of silos for storage of agricultural produce to reduce the incidence of post harvest losses and to sustain the guaranteed minimum price for the Nigerian farmer

6.4. ENSURING THE QUALITY AND SAFETY OF FOODS THROUGH STANDARDS – THE IMPORTANCE OF FCD

Mrs Eshiett from the Standards Organization of Nigeria (SON) defined quality and safety and emphasized that safety was above quality as quality could be met but food could be unsafe. She gave various categories of Standards published by SON which are: product standard, codes of practice, test methods, quality management system standards, environmental management system standards and health safety standards

The emphasis was on the product and the system. She indicated that standards are subject to regular reviews in tandem with technological advancement and consumer expectation (eg zinc and folic acid in addition to others (Vitamin A, iodine). SON also has a list of Food product standard specification.

She reiterated the need for food composition data as an important tool for food standards in the face of limitations such as Codex data of foreign origin, lack of reliable Food Composition Data, global warming high Relative humidity (affecting drying of foods), among others. She indicated also that Risk assessment has not been done in the country.

There were questions which include how coordination could be improved since there has been nothing after the Dakar meeting but the way forward needs to be considered in the workshop. On standardized procedures, accredited laboratories were to be used as happens in the francophone countries.

6.5. FATTY ACIDS AND PHYTOCHEMCAL CONTENT IN COCONUT FLESH IN NIGERIA

In this presentation, Dr. Amaka showed the health benefits in the seed flesh and oil of coconut and that continuous eating did not result in high serum cholesterol. He mentioned that coconut is one food product that has some high level of lauric acid besides human breast milk. In addition, coconut contained phytochemicals, which are known to reduce the risk of cancer and cardiovascular diseases. The analysis entailed sampling plant, laboratory analysis using the Gas Chromatography. She indicated that the Fatty acid in coconut was mainly medium chain and as such it did not go rancid. Her results showed capric acid being predominant in coconut from the East, lauric acid dominant in those from the West. Other fatty acids were palmitic, stearic and oleic. Alkaloids were predominant in the lot from Northern Nigeria. They all had Glycosides, Resins and Tannins. Steroids, Terpenoids, Acidic compounds and flavonoids were however, absent.

In her conclusion, the beneficial property of coconut was clear although it contained saturated fatty acids but short chain as well as phytochemicals. There was therefore the need to promote the use of coconut as a functional food in Nigeria.

There were some concerns about Northern Nigeria not noted for coconut production and why samples had to be tagged as such. In her response their investigation indicated that the coconut came into Northern Nigeria form Niger and they were very different from all the others. Recent methods for phytochemical analysis and the determination of alkaloid levels were also recommended.

6.6. PREVENTIVE EFFECTS OF *Moringa oleifera* ON SOME DEFICIENCY DISEASES

In this presentation, Dr. Ndong, focused on the linkages between food intake and disease and also the Nutritional value of Moringa leaves, pod and leaf powder. The materials and analytical methods were indicated as well as animal study conducted (liver and serum, bone mineral density). The results showed that Moringa added to an iron deficient diet lowered serum and liver lipids, prevented ultrastructural changes in liver cells and improved bone health. Its use was recommended in lifestyle related diseases.

6.7. EFFECT OF DIETARY DIVERSITY ON NUTRITIONAL STATUS OF 37-59 MONTHS INFANTS IN AGUATA LGA ANAMBRA STATE NIGERIA

Ms Ezekannagha highlighted malnutrition, food security of vulnerable groups, biodiversity and dietary diversity as one of the cost effective methods of reducing malnutrition. The conceptual framework of UNICEF for malnutrition was used to highlight the predisposing factors of malnutrition. The study sample was 141 children between the ages of 37-59 months with their mothers from five communities in Aguata Local Government Area of Anambra State. The FAO individual dietary diversity score and anthropometric assessment were used. In the results, prevalence of malnutrition in children by gender showed the male was worse off and about 30% of the children ate from less than five food groups. There was an association between dietary diversity score and malnutrition. It was concluded that nutrition security cannot be achieved by funding research for only root and tuber and cereals, but rather, agricultural diversity is very important in reducing the double burden of malnutrition in children.

6.8. PROBLEMS ASSOCIATED WITH FOOD COMPOSITON DATA COMPILATION IN NIGERIA

Dr. Enujiugha emphasized the role of FCDB as an effective tool in achieving food and nutrition security towards achieving the MDGs by 2015. Some of the bottlenecks in compilation of data were emphasized to include the use of different nutritional values in data documentation, difficulty in data retrieval, limited food coverage as diversity is not well exploited, use of tag names which makes it difficult to adopt and match foods. It was also mentioned that traceability is difficult as sources are not specified. While speaking on recipes, it was noted that most data are on raw foods which are not enough for determining nutrient content, analytical tools were old and inaccurate with low sensitivity. Technical and regulatory barriers on effective data compilation included lack of instrument calibration, outdated methods of analysis, low precision data, inadequate sample distribution size, lack of standardisation and finally lack of funding.

He proposed a two-fold solution as Technical and Policy based:

S/N	Technical	Policy Solution
1.	Adequate sampling protocols	Release of funds
2.	New methods of analysis	Steering committee
3.	Training and retraining	Food data centres
4.	Data validation/verification	Sector partnerships
5.	Analytical software	Regulatory body for data
6.	Inter-laboratory cooperation	Data Dissemination
7.	Equipment calibration	
8.	Duty and job designation	

In his conclusion the need to harness local biodiversity was stressed in addition to linkages between different components involved in food Composition data activity.

6.9. STUDIES ON THE MICROBIOLOGICAL, NUTRIENT COMPOSITION AND SENSORY EVALUATION OF MAIZE FERMENTED FLOUR FORTIFIED WITH BAMBARA GROUNDNUT

Dr. Mbata, spoke on maize flour being widely used in Nigeria but low in protein both in quantity and quality, which cannot support vulnerable groups nutritionally. Statistics still indicate prevalence of anaemia, VAD and goitre which can be prevented through good nutrition. There was this the need for fortification, of which the use of maize and bambara groundnut could be prospective candidates.Guiding principles included safety, technology, cost constraints and availability. The nutrient composition, antinutritional factors, presence of microflora were all examined in maize flour fortified with bambara groundnut over a period of 72 hours. Viscosity and animal studies were also conducted. Results showed that adding bambara caused only a minimal change in proximate except for protein. Boiling, sprouting and fermentation reduced tannins and trypsin levels. Boiling the bambara before addition to the maize imparted a desirable flavour and the product was well accepted. In conclusion, bambara groundnut can promote the nutritional quality of traditional maize diets.

6.10. PROCESSSING OF MUNG BEAN AND ITS EFFECT AND POSSIBLE USE AS FOOD SECURITY PLANT PROTEIN FOOD

Professor Onimawo's study was conducted to evaluate the effect of different types of treatment on the nutritional value of mungbean (*Vigna radiata*). Diets, formulated with raw mungbean, toasted mungbean and boiled mungbean were fed to 21-day old albino rats, after an analysis of their nutritional value.Two other treatments consisting of nitrogen-free diet and casein diet, serving as negative and positive controls respectively. Results showed that the Protein Efficiency Ratio (PER) of mungbean was reduced by heat, with toasted mungbean having the lowest PER, and raw mungbean having the highest. However, it was observed that boiling and toasting resulted in some improvement in the Net Protein Utilization (NPU), True Digestibility (TD) and Biological Value (BV) of mungbean. It was concluded that mungbean could contribute significantly to plant protein intake of rural communities thus reducing food insecurity in such communities.

6.11. FORTIFYING MAIZE FLOUR AND SMALL VEGETABLE OILS IN SMALL CAPACITY PLANTS IN NIGERIA

In the course of the presentation, Mr. Tehinse explained that this initiative of fortifying maize flour and vegetable oils was a response from the government towards the achievement of a 50% reduction in VAD. He informed that a pilot food fortification plant has been established to provide the basis for full compliance and ensure long term sustainable reduction. He also explained that industry partners were involved in the small capacity maize milling plant with the objective of setting up a demonstration plant to fortify flour with premix blends in 10g moisture proof sachets distributed to producers through their respective organisations. He further explained that the plant operations are not too complicated and final fortification is achieved at the individual plants, which is done at a rate that will ensure compliance to the provisions of the food fortification regulations. He concluded that this technique has the potential of increasing household utilization of fortified maize flour and vegetable oils from the existing 6% and 20% to 80% by 2015.

6.12. DOCUMENTATION OF TRADITIONAL FOODS/RECIPES FOR THE PRODUCTION OF FCD FOR DIETARY ASSESSMENT: EXPERIENCE FROM THE SOUTH EAST ZONE OF NIGERIA

The speaker, Mrs Udenta , began her presentation by describing the prospects of the FCDB as a teaching aid and reference material. As regards the nutritive value of foods, it was mentioned that traditional foods vary with respect to location in recipes and nutrient composition. The objective of the study was the production of a baseline data on recipes/traditional foods used in the southern and eastern zones of Nigeria. The study was conducted under a project (Step B) with the aim of producing a Food Composition Data Base and computer software for the assessment of dietary intake of Nigerian population groups. In achieving the aims of the study, three clusters (Anambra and Enugu, Abia and Imo, Ebonyin states) were used, with four communities from each cluster. Results showed diversity in foods, recipes and consumption pattern, even though values were unrealistic and recipes incomplete. The experiences from this baseline study underscored the serious need for a more comprehensive food composition database that is not generic but one that will have biodiversity as its core. In addition, it also highlighted the need for capacity in the area of generating data suitable for inclusion in a food composition database. It was concluded that traditional food system and indigenous diets identified in these zones can form a basis for sustainable diets and improved nutrition if the recipes are harmonized and standardized to ensure accurate values for dietary assessment.

6.13. THE ROLE OF NIGERIAN UNDERUTILIZED GRAIN LEGUMES IN ALLEVIATING PROTEIN DEFICIENCY

In this presentation, Mrs. Oloyede explained that based on an increasing population and high price of animal foods and available staples in Nigeria, there is a need to promote the supplementation of diets with underutilized legumes. These underutilized legumes such as kidney bean, lima bean, jack bean, pigeon pea and bambara groundunts were suggested as possible supplementing diets that could help in alleviating protein deficiency and improve nutrition. The constraints leading to the underutilization of the legumes and the possible

strategies that can be adopted to popularize them were also dicussed. Some of the constraints discussed included cultural beliefs, westernization of diets, ignorance of taste and cooking time. Furthermore, in an attempt to increase popularity and acceptance, some of the nutritional values of these legumes were discussed.

6.14. EFFECTIVE MANAGEMENT OF TYPE 2 DIABETES WITH COMBINED ADMINISTRATION OF THE VEGETABLES *Oscimum gratisimum, Cucurbita pepo, Solanum anomolium* AND METFORMIN

In this presentation, Dr. Udedi outlined how these vegetables were effectively used to manage nine 65- year old diabetic patients that had been suffering from diabetes melitus for a long time. Results from this pilot study showed that the co-administration of these vegetables with metformin (a prescription drug for diabetes) brought down patients'blood glucose to the range of 150 – 180 mg/dl as compared to the range 250 – 280mg/dl blood glucose observed in patients after the administration of metformin alone.

6.0 COORDINATORS MEETINGS

The coordinators met several times during the two day meeting/workshop and agreed to produce a directory of African experts in Food Composition with their profiles, as a way of supporting Food Composition Activities in Africa. A contact person should be nominated and be made responsible for coordination at the country level. It was agreed that the President of the Nutrition Society of each country should be contacted for collaboration through advocacy.

7.0 TRAINING ON FOOD COMPOSITION DATABASE (FCDB) COMPILATION

This session of the workshop was aimed at sensitizing scientists on the importance of food composition data in sustainable development, building the capacity of those interested in generating and compiling Food Composition Data, and to familiarize them with terminologies in Food Composition Data. The session was facilitated by Prof. Akinyele, Dr. Enujiugha and Prof. Ene-Obong. The topics treated included methods of compiling FCDs, reasons for generating an FCD, setting the stage for an FCD, sampling methods, key elements in FCD management, data flow in FCD, data collation methods, considerations for effective FCD management, and the demand for a continuous updating of the FCDB. The guidelines for the use of the FCDB compilation tool (version 1.2.1) developed by FAO/INFOODS were also discussed briefly. The participants discussed extensively and concluded that the sensitization training was highly useful and must be repeated as a training of trainers course such that it can be replicated in different states ,zones and countries in Africa to ensure that there would eventually be a comprehemsive Food composition database for Africa. The AFROFOODS regional coordinator was therefore urged to work with the sub regional coordinators to raise funds for the training activities

8.0 GROUP WORK AND PLENARY SESSION

The group work and plenary sessions began immediately after the afternoon presentations. Participants were divided into four different groups to brain storm on how Food Composition

activities can be integrated into Developmental issues e.g. Climate Change, Food Safety, Food Security and Biodiversity. The summary is presented in table 8.1.

GROUP WORK 1: HOW DO WE INTEGRATE FOOD COMPOSITION ACTIVITIES INTO DEVELOPMENTAL ISSUES e.g. Climate Change, Food Safety, Food Security, Biodiversity etc

	GROUP 1	GROUP 2	GROUP 3	GROUP 4
Background	Climate change having a direct effect on plant and animals who in turn consume plants. Food security involves food preference, availability, and safety	Food Security: Availability and access and activities on Food Composition Data will enhance the availability of information. Food safety will lead to improved standards, agrobiodiversity will influence variety of plant and animal produce which may have different nutritional profile, climate change will lead to variation in food composition data	2007: FAO, BDI, WAHO meeting in B'faso 2008: Food Composition and Safety in ECOWAS Parliament 2009:Quality Control, Marketing and Food Composition Table issues addressed 2010:Development of Food Composition Table and Abuja Action Plan 2011: Food Composition Table updated 2004: Mali National Food Composition Table	Increasing population Global trends Malnutrition Global warming and climate change International trade
Current situation	Climate change results in variable weather conditions which lead to pest build up, heat stress, erosion and these all affect Food Composition Food Security: food prices are high and a lot may not be able to afford what they need Food Safety: Standard of hygiene is very poor (pollutants, roadside drying, street foods etc) Agrobio diversity: Worsened by migration of workforce to the city centre who are leaving the farm work hence decreased nutritional composition of foods especially micro-nutrients, increased use of herbicides due to low labour availability	No comprehensive or reliable Food Composition data	Government not committing enough resources ,poor coordination at country level, first time hearing of AFROFOODS, need for advocacy	Ignorance on the use of Food Composition Tables Lack of Quality data Lack of Political support Lack of good laboratories All these lead to uncompetitiveness Underutilisation of potential indigenous foods; Increase in nutrition related diseases; Poverty, increasing post harvest losses, low dietary diversification, increasing rejection of exported goods, prone to easy exploitation, Increased malnutrition
Challenge	Fewer food choices, Increased post harvest losses, decreased nutritional content of foods	Use of unrealistic data leads to unstable government policy	Low level of awareness Very little being done; Inadequate coordination and advocacy	Lack of funding Low capacity in the use of international standards

	GROUP 1	GROUP 2	GROUP 3	GROUP 4
Way forward	Encourage mechanization and specie diversification; Encourage farmers; Plant trees that can absorb carbon monoxide Train extension workers Ensure effective flow of information Adopt local adaptive measures	Political Will and a Monitoring and Evaluation (M&E)	AFROFOODS to use opportunities; Need for an AFROFOODS secretariat Identification of experts in the subregion Survey to identify labs and facilities in the region.	Advocacy; Sensitisation programs; Private Public Partnerships; Networking, information sharing, capacity building, Food composition data generation, Food composition data to be part of National agenda.

GROUPWORK 2: MOBILIZING RESOURCES FOR FOOD COMPOSITION-LINKED ACTIVITIES (LOCAL NATIONAL AND INTERNATIONAL LEVELS)

	GROUP 1	GROUP 2	GROUP 3	GROUP 4
Resources		**Human** • Staff/Personnel available but not enough in terms of number and quality • Need for a Directory with profile of experts at local level / zones. • Elect Convener/Desk officer • Letters to organisations/ Institutions etc • Organise Meetings **Material** • Institutional Capacity: • Identify the laboratories available, the type of analyses done there, the equipment available. • The type of training going on in zonal institutions so that more people can be trained in various skills needed • Identify Zonal biodiversity/ recipes and creation of a directory • Financial identification of local funding sources e.g. industries • Marketing strategy for Food Composition data: publications, production of calendars, etc	• Resources can be human, technical, financial as far as food composition-linked activities are concerned. These activities include collection of data, analysis, quality control and processing. • The sources of support for food composition activities are at Local National and International	

	GROUP 1	GROUP 2	GROUP 3	GROUP 4
		• Organise Seminars and invite potential funders • Contact with exporters • Advocacy at all levels		
Local	Source of support • Financial • Technical to aid production-provision of improved varieties, fertilizers. • Human resources-extension workers • Awareness creation - information about available foods and food accessibility • Other facilities Mobilization • Sensitization • Nutrition education/information. Target audience • Head of house holds • Farmers • Community leaders • Local and State governments • Associations • NGOs		At the local level it can be mobilized through • Proper coordination • Sensitization/awareness • Funding The target audience includes: • Producers • Families/individuals • Consumers • Government • NGO	• State Ministries of Agriculture • Agric Department of LGA's • FADAMA III (World Assisted Programme) • MDGs sector for agriculture • Food Industries within the vicinity • Research Institutes and the Academia • State Assemblies • Organised Private Sector e.g. Farmer associations, Fadama users associations Through sensitization, advocacy meetings and awareness using media • Advocacy meeting • Inclusion of Food Composition, Nutrition in local level Food Security goals and plans Target Audience • Head of Federal Ministries and Parastatals • Head of Development partners and NGO's at the local level • State Governors • Office of the First lady in

	GROUP 1	GROUP 2	GROUP 3	GROUP 4
				the State • State Assembly • State House of Representatives • Traditional rulers/Community leaders • Religious leaders
National	Source of support • Financial • Policy making • Capacity building • Technical support- data bank, central laboratory • Awareness through media • Sustainability Mobilization • Advocacy through workshops, seminars and sensitizations • Lobbying Target audience • Federal Government • NGOs • Private Organisations • Professional bodies • Research Institutions and Tertiary Institutions •		At the national level it can be mobilized through -Research institutes -Institutions -National agencies/Ministries -By means of advocacy, training/workshops/conferences -Networking The target audience includes: -Central governments -NGOs	• Federal Ministries (Agriculture, Health, Trade & Investment, Science & Technology and Education) and their Parastatals • MDG's (Presidency) • Senate • House of Representatives • National Food Security Programme • Relevant Development Partners • Professional Bodies Through Advocacy to • Development Partners, Int'l agencies and NGO's • Advocacy visits to Key Head of Ministries and Parastatals • Sensitisation Workshops • Awareness using print and electronic media Target Audience • Head of Federal Ministries and Parastatals • Head of Development Partners and NGO's • Key Programme Officers • The Presidency

	GROUP 1	GROUP 2	GROUP 3	GROUP 4
				• Office of the First Lady • National Assembly • House of Representatives
International	A. Source of support • Fund • Technical support • Capacity building B. Mobilization • Advocacy • Proposal writing • Collaboration • Target audience • UN agencies • International Organisations • International Institutions/Research centres • NGSs		At the international level it can be mobilized through: • Regional bodies e.g. ECOWAS, WAHO, AFROFOODS, INFOODS • UN agencies e.g. FAO, UNICEF • Networking/exchange programs/linkages. • Collaborations between institutions. • The target audience includes: o Countries o Regional bodies o NGOs	Heads of International Organisations • Program Managers • Heads of International Organisations • Regional Directors • Presenting concept notes linked to the Organizational goals • Letters of appeal for support Target Audience • WHO • FAO • ECOWAS • WAHO • GAIN • NEPAD • WORLD BANK • UNICEF • Foundations-Bill Gates, Bill Clinton, FORD • MI • IFPRI • HARVEST PLUS • SASSAKAWA GLOBAL 2000

9.0 WORKPLAN FOR FOOD COMPOSITION BIODIVERSITY FOR SEPTEMBER 2011 –

SEPTEMBER 2011

Description of Activities		**Responsible office /Officer**													
S/N			**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
1.	Disemminate proceedings of workshop	Regional and sub regional coordinators													
2.	Establish AFROFOODS Regional and Sub-regional Secretariat	Regional and sub regional coordinators													
3.	Identify national and local coordinators	sub regional /national /regional/zonal/local coordinators													
4.	Compile the list of experts	Sub regional /national /regional coordinators													
5.	Conduct Institutional assessment	Local coordinators													
6.	Disemminate the latest edition of the West African Food Composition Table (French and English)	WAHO													
7.	Document biodiversity, technical instituions etc in the various locations	local/country and subregional coordinators and technical assistance from FAO/WAHO/BIOVERSITY INT													
8.	Develop and implement advocacy and marketing strategies	AFROFOODS SEC/SUB REGIONAL SEC'T													
9.	M & E	Regional Coordinators and AFROFOODS													
	Coordinators Reports														

10.0 COMMUNIQUE BY PARTICIPANTS

The AFROFOODS sub-regional coordinators'meeting and workshop on Food Composition, Dietary Diversity and Food Security in Africa held in Rockview Hotel Royale, Abuja from 8th – 11th September, 2011. The meeting was attended by forty-two participants from Nigeria, Cameroon, Ghana, Senegal, Mali and Burkina Faso. The meeting's main objectives were to review the situation of the last meeting and develop a workplan for the next five years to move AFROFOODS forward. Presentations were made by coordinators of WAFOODS (Anglophone and Francophone), CAFOODS, AFROFOODS along with participants from universities, parastatals and federal ministries.

The following points were noted by participants :

The increasing burden of undernutrition and overnutrition in Africa was not acceptable
The need for reliable food composition data to support the promotion of local foods was a great priority
The lack of infrastructures and framework for effective food composition work in Africa. Was a greatbottleneck to progress
The need for a concerted and coordinated plan of action to move forward was a great necessity.

It was resolved from this meeting that urgent actions should be taken to immediately adopt the following measures to promote the work on Food Composition Data within member countries and the sub region as a whole. The following recommendations were made:

The Development of a Directory of Experts to enhance the necessary leadership drive needed to upscale Food Composition and biodiversity at the various levels.

The establishment of an AFROFOODS regional, sub-regional secretariat and country level secretariat which will be based where the coordinators reside. This will facilitate coordination and communication flow and also support advocacy.

A list serve be developed for sharing information.

An institutional capacity assessment to identify the laboratory facilities, publications and training opportunities, technical, financial and other relevant institutions that should build up staff capacity to support Food Composition and biodiversity activities.

The development of a catalogue on local biodiversity to know the food resources at the local level (recipes, predominant and rare foods and their values for the communities) to further develop local potential

Partnership with FAO, ECOWAS, WAHO, UNICEF, BIOVERSITY INTERNATIONAL and other regional and international bodies for effective networking and support.

The development of marketing/advocacy strategies for Food composition and biodiversity to support the promotion of local foods.

12.0 LIST OF PARTICIPANTS

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Annex 1: Meeting/Workshop Programme

Day 1 September 8th 2011
Arrival/Registration

DAY 2 September 9th 2011
Meeting/Workshop program

Chair	Professor Olusegun O Akinyinka Provost College of Medicine University of Ibadan
Rapporteurs	Mr. Ibukun Afolami, Ms. Oluchi Ezekannagha, Ms. Olufolakemi Anjorin
8:00 – 9:00am	Registration of participants (continues)
9:00 – 10:00am	Opening Ceremony
10 - 10:10am	Introduction of special guests
10:10 – 10:15am	Welcome Address- Professor O. O. Akinyinka
10:15 – 10:25am	Address by FAO Rome – Dr. Ruth Charrondiere (FAO INFOODS coordinator)
10:25 – 10:50am	Goodwill Messages
10:50 – 11:00am	Opening of the Workshop –Dr. Louise Setshwaelo FAO Representative in Nigeria
11.00 – 11.05am	Vote of thanks
11.05 – 11.15am	Group Picture
11.15 – 11:30am	Tea/Coffee break
11:30 – 11:40am	Election of Chair, Vice Chair and Rapporteur
11:40am – 12.00pm	Partnership for Food Composition Activities in Africa - Dr. Ismael Thiam. WAHO
12 - 1.00pm	Coordinators Reports- • WAFOODS (Anglophone) Ms. Paulina ADDY (Ghana) • WAFOODS (Francophone) Dr. Akory AG Iknane (Mali) • CAFOODS Dr. Mercy Achu (Cameroon) • ECSAFOODS Ms. Zohra Lukmanji (Tanzania) • NIGERIAFOODS Professor I. O. Akinyele (Nigeria)
1.00- 2.00pm	First business meeting of sub regional coordinators/ Lunch
2 – 2.30pm	Poster viewing/Networking
2:30 – 4:30pm	• Mr. A Ozigis - National Agency for FOOD and Drug Administration and Control • Dr. Nnena Okoronkwo - Federal Ministry of Science and Technology • Odenigbo Amaka - Fatty acids and Phytochemical Contents of Coconut Seed Flesh in Nigeria • Moussa Ndong - Preventive effects of Moringa oleifera (Lam) on some iron deficiency related diseases • Onimawo Ignatius - Processing of mung bean and its effects and possible use as food security plant protein food
4:30 – 5:00pm	Tea/Coffee break

5:00 – 6:00pm	• Group discussion – Integrating food composition activity into other developmental activities (Food security, food safety, agrodiversity, climate change) • Group report presentation
6:00 – 7:30pm	Poster viewing/Networking/Second Business meeting of sub regional coordinators
8:00 – 9:00pm	Reception

Day 3 – September 10th 2011

Workshop program

8:00 – 8.30am	Review of previous day's work
8.30 – 10:30am	• Ms. Omolara Fasanmi and Mary Ghumdia, Federal Ministry of Agriculture and Natural Resources - Activities of the federal ministry of agriculture on food composition, dietary diversity and food security • Federal Ministry of Commerce and Industry • Association of Food, Beverages and Tobacco Employers • Ezekannagha Oluchi - Effect of dietary diversity on nutritional status of 37-59 months infants in Aguata LGA Anambra state Nigeria • Enujiagha Victor - Problems associated with food data compilation in Nigeria • Mbata I. Theodore - Studies on the microbiological, nutrient composition and antinutritional contents of fermented maize flour fortified with Bambara groundnut (Vigna subterranean L)
10:30 – 11:00am	Tea/Coffee break
11.00am – 12pm	• Group discussion – Mobilizing resources for food composition-linked activities at the local, national and international. • Presentation of group reports
12 – 1.00pm	• Mrs. Essiett - Standards Organization of Nigeria • Mr. John Tehinse, Nigeria Food Fortification Program - Fortifying maize flour and vegetable oils in small- capacity plants in Nigeria • Fombang Edith - Nutritional and Functional Properties of Bambara Groundnut (Voendzeia subterrenea) Flour and Protein Isolates. • Udenta Elizabeth - Documentation of traditional foods/recipes for the production of food composition database for dietary assessment: Experience from the South-east zone, Nigeria • Oloyede Funmilayo - The Role of Nigerian Underutilized Grain Legumes in Alleviating Protein Deficiency
1.00 -2.00pm	Group Lunch
2:00 – 3:00pm	Discussions and Work planning session for AFROFOODS

3.00 – 3.30pm	Poster viewing/Networking
3:30 – 4:30pm	Adoption of workshop resolution and closing ceremony
4:30 – 5:00pm	Tea/Coffee break Departure

Day 4: Sunday, September 11th, 2011

Workshop program

8:00am – 4:00pm	Training on food composition, generation and compilation

Day 5: Monday, September 12th, 2011

Opening of the FANUS Conference interested delegates to attend