



FOOD
SAFETY & SECURITY

2016 AUTUMN INTERNATIONAL
SCIENTIFIC CONFERENCE
ON FOOD SAFETY AND SECURITY (FSaS)

16, 17 & 18 May 2016 ★ Johannesburg, South Africa

P R O G R A M M E

Welcome Message from the Chairman

Excellences, distinguished guests, delegates, colleagues, participants, ladies and gentlemen. For the first time, the University of Johannesburg (UJ) and the Human Sciences Research Council (HSRC) together with the Department of Science and Technology (DST), Agriculture Research Council (ARC), and the Department of Agriculture, Forestry and Fisheries (DAFF) with support from the National Research Foundation (NRF) and the Medical Research Council (MRC) of South Africa, have come together and taken the initiative to cover the topic of Food Safety and Security in an International Scientific Conference foreseen to bring together the perspectives of government, academia, stakeholders, industry, manufacturers, researchers, and consumers. It is therefore, with great pleasure as the chair of this conference that I extend a warm welcome to everyone attending this maiden edition of Food Safety and Security conference (FSaS 2016) tagged 'Improving Food Safety and Security for Sustainability in Africa'.

Recently, the United Nation's Food and Agriculture Organization (FAO) issued a warning that over 6.3 million people in the drought stricken Southern African region could face food shortages (Dec., 2015). I endorse the warning and emphasize that the effects from the strongest El Niño weather phenomenon in 18 years coupled with rising petrol prices places the continent at risk. This phenomenon is aggravated by population surge, political instability, economic meltdown, shift in interest from agriculture to oil as can be seen in the case of Nigeria, the gold rush in South Africa and lack of coordination amongst relevant agencies, etc. Facts and figures show a clear depiction that as a continent, we are in dilemma. Undoubtedly, sustaining livelihood is becoming a daunting task in a continent with huge potential yet with untapped resources. This situation therefore, necessitates that the topic of Food Safety and Security is placed top on the agenda by policy makers and academics.

Proponents of food security have suggested the integration of food safety and nutrition into food security programmes. We have taken the initiative to tackle the challenges head-on and prepare towards a food secure future consequently, hence the FSaS2016 call was launched. Critical technologies have been identified in areas of new methods of investigation, technologies of innovation and development for food safety and security, public policy on food safety, nutrition and security, instrumentation for hazardous contaminants, food and health risk assessment, risk communication, food control and regulation, impact of climate change on agriculture in developing countries, amongst others.

This conference is of great importance, hence the invariant support garnered from government, public and private parastatals as well as the professional bodies. This congress will provide the leverage for proper dialogue, dissemination and exchanges of ideas, as well as boast of high-level debates around food safety and (in) security nexus. We are confident that we have what it takes to improve on the food situation within the continent judging by the quality and caliber of our young scholars, delegates, and distinguished guests. It is expected that the results of our deliberations will be useful for the government, healthcare professionals, manufacturers and stakeholders alike to move the continent from the state of food insecurity to a food secure haven.

Preparations for the conference took a collaborative effort and I want to use this medium to express my sincere gratitude to our partners, sponsors, the university community, and members of organizing committee for all of their efforts in funding and or organizing this conference. Also, I immensely thank all those who took their time to take part in the review process to ensure that all the papers presented at this conference are of high quality and relevant in identifying or tackling food safety and security issues we aim to address.

In closing, I wish you all a fulfilling, wonderful and successful time at this conference. Have a pleasant stay here in South Africa.

Thank you!

Dr. Njobeh, Patrick Berka
Chairman, Organizing Committee,
2016 International Scientific Conference on Food Safety and Security



PROFILE OF 2016 FSAS CONFERENCE SPEAKERS

Profile of Honorable Minister Senzeni Zokwana



Mr. Senzeni Zokwana is the Honorable Minister of Agriculture, Forestry and Fisheries of the Republic of South Africa with effect from 26 May 2014. He is also Chairperson of the South African Communist Party, a member of the Central Committee and a Member of Parliament. Other activities of Minister Zokwana include serving as the President of National Union of Mineworkers (NUM) the position in which he was re-elected unopposed in 2003. He was elected as Deputy President in 1994; a position he held until 2000 when he was elected president. On 24 November 2007 his contribution as the custodian of worker struggle was recognized when in 2005, was elected at a Special Election as the President unopposed to lead a strong 20 million member International Federation of Chemical, Energy, Mine and General Workers' Unions (ICEM) and was re-elected in November 2011. He was also elected as Vice-President of Industrial Global Union at its founding congress on 19th June 2012. Minister Zokwana worked for the President Steyn Mine from 1980 to 1991 as an ordinary miner. In 1993, he graduated by experience to become a Shift Overseer and in 1995 appointed a Safety Officer, a responsibility he discharged for almost five years. It is against this background that he acquired a lot of knowledge pertaining to health and safety in mining and became an expert in his own right on health and safety matters in the mining industry. He subsequently moved up the ranks to become Branch Chairperson in 1987, Deputy Regional Chairperson in 1992 and Regional Chairperson from 1993 to 1994. He consolidated and expanded his knowledge by acquiring certificates such as Advanced Executive Programme (UNISA), Risk Assessment Programme, and Strata Control to mention a few. He represented labour at NEDLAC Executive Council and served as Board Member of the Minerals and Mining Development Board.

Profile of Prof. Crain Soudien



Professor Crain Soudien is the Chief Executive Officer of the Human Sciences Research Council, effective 1 September 2015. He is formerly a Deputy Vice-Chancellor at the University of Cape Town. He is a joint professor in Education and African Studies. He has published over 180 articles, reviews, reports, and book chapters in the areas of social difference, culture, education policy, comparative education, educational change, public history and popular culture. He was educated at the University of Cape Town, South Africa and holds a PhD from the State University of New York at Buffalo. He is involved in a number of local, national and international social and cultural organizations and is the Chairperson of the Independent Examinations Board, the former Chairperson of the District Six Museum Foundation, a former President of the World Council of Comparative Education Societies and had been the chair of the Ministerial Committee on Transformation in Higher Education and is currently the chair of the Ministerial Committee to evaluate textbooks for discrimination. He is a fellow of a number of local and international academies and serves on the boards of a number of cultural, heritage, education and civil society structures.

Profile of Prof. Sarah De Saeger



Prof. Sarah De Saeger is the Director of the Laboratory of Food Analysis in the Department of Bioanalysis, Food and Pharmaceutical Sciences, Ghent University in Belgium, which consists of a research group of about 16 PhD students and 3 full-time postdoctoral researchers. She is teaching all food-related courses such as bromatology, bioanalysis, practical, food safety, special nutrition in the same faculty. The laboratory of Food Analysis performs in general research on the issue of mycotoxins on both national and international level (including developing countries) in the last 3 years, 27 research projects were granted with funding from EU, FAO, EFSA, as well as national funding (HERCULES, FWO, FOD, BELSPO, IWT, BOF, VLIR-UOS). The laboratory focuses on 4 research lines: mycotoxin occurrence, human health, detection methods, metabolomics and untargeted analysis, and mycotoxin occurrence. The research covers the characterization (eg. masked mycotoxins), exposure and screening through biomarkers as well as the development of innovative detection methods such as 'molecularly imprinted polymers' and biosensors. Research results are published in more than 170 A1 peer-reviewed chromatographic and immuno-based techniques. Research results are published in more than 170 A1 peer-reviewed papers (h-index 30). Sarah De Saeger is coordinating the MYTOX platform (www.mytox.be). In June 2025, she established the Joint Laboratory of Mycotoxin Research of the Ghent University-Shanghai Jiao Tong University and the Chinese Academy of Sciences (Shanghai Institutes of Biological Sciences).

Profile of Ms. Petra Muller



Petra has a Master's degree in Nutrition from the University of Pretoria. In 2011, she was awarded the South African Association for Food Science and Technology (SAAFoST) Academic Achievement Award. She is a committee member of SAAFoST Northern Branch. Petra is a food labelling consultant and research analyst at Merieux NutriSciences in Midrand, South Africa and has been doing labelling since 2012 when she worked at Ultimate Sports Nutrition.

Profile of Dr. Tobais Takavarasha



Dr. Tobias Takavarasha is the Chief Executive Officer of the Food, Agriculture, and Natural Resources Policy Analysts Network of Southern Africa. In May 2003, he was appointed to a Presidential Land Review Committee to assist the Government of Zimbabwe to address land reform issues. In 1980, Dr. Takavarasha joined the Zimbabwe Ministry of Agriculture where he served as Farm Management Economist, Assistant Secretary for Agricultural Marketing, Chief

Agricultural Economist, Deputy Secretary for Agricultural Policy and Planning, and Permanent Secretary for the Ministry of Agriculture (later the Ministry of Lands and Agriculture). Dr. Takavarasha received his B.A. Hon. in Economics from Birmingham University, his MA in Agricultural Economics from the University of Leeds, and his Ph.D. in Agricultural Policy from the University of Zimbabwe. He has wide experience on regional and international agricultural policy issues and has published several papers on agricultural marketing and food security policies.



Profile of Dr. Y. Martin Lo,

Dr. Y. Martin Lo, CEO & President of Biointellipro LLC, decided to step aside from his 20 years of academic career to focus on his belief of applying "adequate and affordable" technologies to help those in need. He has been instrumental in organizing interdisciplinary teams to strategize effective approaches so that the resources could be best utilized. Dr. Lo is a well-published food bioprocess engineer with renowned research programs in value-added bioconversion of food and agriculture byproducts as well as development of food safety strategies. His technical expertise include intervention strategies for microbial control in food processing facilities, post-harvest preservation technologies, recovery of renewable ingredients to add value to agriculture products and byproducts, reduction of trans fatty acids in food, creation of nutritionally balanced products for humanitarian purposes, assessment of nano-safety in food, and fermentation optimization. He continues to serve as the Editor-in-Chief for two important journals in the field, namely the Journal of Food Processing & Preservation and Food Science & Nutrition. Dr. Lo currently serves as the first Ambassador for the International Union of Food Science and Technology (IUFOST) and received from White House the US Presidential Volunteer Service Award in 2012. As a FDA-recognized Process Authority, he reviews and certifies scheduled process for food companies to meet FDA/USDA regulations on high risk acidified and low-acid canned foods. Dr. Lo constantly hosts training courses, including Better Process Control School (BPCS), Good Manufacturing Practices (GMP), Hazard Analysis and Critical Control Points (HACCP), and Implementation of Safe Quality Food (SQF). He assists Maryland Department of Health and Mental Hygiene (DHMH) in assessing processing protocols and has helped Mid-Atlantic regional food companies and the farming communities develop new quality products. He served as the President of the Chinese American Food Society and the Chair of Food Engineering Division in the Institute of Food Technologists (IFT), and was selected twice as a Distinguished Lecturer for IFT. Dr. Lo continues to serve on the international training team for Commercially Sterile Packaged Foods (CSPF) and Good Agriculture Practices (GAPs). He has conducted a spectrum of workshops in developing countries, including CSPF (Morocco and China), Food Safety Risk Minimization (Nigeria), Food Quality Lab and Nutrition Labeling (El Salvador), US Food Safety Modernization Act (China), and GMP & HACCP (Bangladesh).



Profile of Prof. Peter J. Cotty

Prof. Peter J. Cotty is at United States Department of Agriculture (USDA) School of Plant Sciences, University of Arizona, Tucson, USA. He is a Research Plant Pathologist and Lead Scientist for the Agricultural Research Service (ARS) of the USDA. He leads the USDA Laboratory based in the School of Plant Sciences at the University of Arizona in Tucson and serves as an Adjunct Professor at his host University. He has contributed insights into the population biology and physiology of aflatoxin producing fungi and the management of aflatoxin contamination. An authority on

years. She has completed research fellowships at Griffith University's law faculty in Brisbane, Australia; Birkbeck School of Law in London, UK; and the BRICS Policy Centre in Rio de Janeiro, Brazil. Prof Bohler-Muller has represented South Africa in multilateral fora such as BRICS (Brazil, Russia, India, China, South Africa) and is leading the Blue Economy Core Group of IORA (Indian Ocean Rim Association).

Profile of Prof. Hussaini Makun



Hussaini Anthony Makun is currently working as Professor of Biochemistry in the Department of Biochemistry, Federal University of Technology, Minna where he has been since 1992. He is also the Director of the Directorate of Research, Innovation and Development in the same University. He completed his PhD in 2007 in Biochemistry (Toxicology) from same University. The researcher was a National Research Foundation Postdoctoral Fellow (PDF) with Food Environment and Health Research Group of the University of Johannesburg (UJ) between 2008 and 2010. He is teaching basic and advanced courses in biochemistry, and toxicology related courses at both undergraduate and postgraduate levels. He has supervised and graduated over seventy B-Tech and ten M-Tech students and two PhDs. He is currently the researcher with the Food and Toxicology Research Group (FTRG) of the Lead University. FTRG conducts researches on environmental health monitoring and mycotoxins at national and international levels. In last 5 years, 6 research projects were granted with funding from NRF, South Africa and TETFUND, Nigeria. He is a member of Mycotoxicology Society of Nigeria (Vice President (North), Experts on Mycotoxins in Food, Food Hygiene, Food Import/Export Inspections and Certification System of the National Agency for Food and Drug Administration and Control (NAFDAC) of Nigeria, National Codex Committee of Nigeria, African Union Expert Committee on Contaminants in Food (2011 to date) and Joint FAO/WHO Expert Committee on Contaminants in Food (JECFA) (2012-2016). He coordinated the writing of the "discussion paper on fungi and mycotoxins in Sorghum" which was adopted as a document of the Joint FAO/WHO Experts Committee on Food Additives (JECFA) in 2012 and participated in the writing of "Proposed draft annex for "prevention and reduction of aflatoxins and ochratoxin A in sorghum" in the existing code of practice for the prevention and reduction of mycotoxin contamination in cereals (CAC/RCP 51-2003)". Prof Makun has 57 publications, mostly on mycotoxins in peer review journals, technical papers and books and is currently the Director of Research, Innovation and Development, Federal University of Technology, Minna.

Profile of Dr. Yemisi Jeff-Agboola



Dr Yemisi Jeff-Agboola is currently a Senior Lecturer in the Department of Biological Sciences, University of Medical Sciences (UNIMED) Ondo. Dr Jeff-Agboola is passionate about agricultural development and she holds a Doctorate degree in Food Microbiology from the Federal University of Technology, Akure, Nigeria and her principal research fields are food microbiology, food/feed mycotoxicology and food safety with a marked interest in mycotoxin control in foods and feeds. As a dynamic researcher with global repertoire, she has proffered and developed some solutions to the problem of mycotoxin in Africa. Dr Jeff-Agboola is a post-doctoral Fellow of the African Women in Agricultural Research and Development (AWARD), a CGIAR Gender and Diversity program that equips top women agricultural scientists across sub-Saharan Africa to accelerate agricultural gains by strengthening their research and leadership skills. In addition to her academic work, she works with smallholder farmers, coordinates skill transfer sessions, provides technical advisory services, organizes innovative programs to empower the rural poor community for wealth creation, and contributes to improving food security status in Nigeria through her applied research. She is the founder of the Voice of Women in the Development of Agriculture – a Non-Governmental Organisation whose vision is to

Day 2 - 16th May, 2016

Registration	
Plenary Session 1	
Science, Technology, Innovation and Development for Food Safety and Security (Sub-theme 1)	
Session Chair – Prof. Narnia Bohler-Muller	
09:00 – 09:20	Food Safety Risk Management at Household and National Levels through Science and Technology Prof. Sheila Okoth – University of Nairobi (UoN), Kenya.
09:20 – 09:45	Paths to Making Food Processing Technologies Impact Positively on Food Safety and Food Security at Household, Local And National Levels in Africa Prof. Gabriel Adegoke – University of Ibadan (UI), Nigeria.
09:45 – 10:05	Food Safety in the Fresh Produce Industry of South Africa Prof. Lise Korsten – University of Pretoria (UP), South Africa
10:05 – 10:30	Mycotoxin Analysis: Challenges and Perspectives in a Changing World Prof. Sarah De Saeger – Ghent University (UGent), Belgium.
10:30 – 11:00	Role of Agricultural Biotechnologies in Sustainable Food Systems and Nutrition Dr Phil Mjwara , Director-General, Department of Science and Technology (DST), South Africa.
11:00 – 11:15	Session Closing Remarks Prof. Narnia Bohler-Muller , Executive Director, Democracy, Governance and Service Delivery, HSRC.
Tea Break	
11:15 – 11:45	Session 2: Agriculture and Food Security Moderator: Dr. Hema Kesa Venue: Gold Room
11:45 – 13:15	Food in the Basket Of Different Socio-Economic Groups. Schönfeldt, H. University of Pretoria, South Africa.
11:45 – 12:00	Impact of Cooperatives on Food Security and Economic Performance among Small Scale Producers in Gauteng, South Africa. Chagwiza, C. University of South Africa, South Africa.
12:00 – 12:15	Potentials for Improved Household Food Security through Institutional Support among Smallholder Farmers in South Africa. Taruvinga, B. Agricultural Research Council, South Africa.
12:15 – 12:30	Fresh Biomass and Nutritional Content of <i>Cleome gynandra</i> L. as Affected by N- Fertilizer and Vermicompost Application. Seetseng, K.A. Agricultural Research Council, South Africa.
12:30 – 12:45	The role of Indigenous Knowledge Systems (IKS) in enhancing grassroots innovation for food security. Ms. Mammone Tang , Department of Science and Technology
11:15 – 11:45	Session 1: Department of Science & Technology Led Session (Dedicated to International Year of Pulses) Moderator: Mr. Daan du Toit Venue: Titanium Room
11:45 – 12:00	Opening Remarks – Mr Daan du Toit , Deputy Director General: International Cooperation and Resources , Department of Science and Technology (DST), South Africa.
12:00 – 12:15	Global Pulse Production and Consumption Trends: The Potential of Pulses to Achieve the Food and Nutritional Security Goals Global Health, Nutrition. Dr. Tobias Takavarasha – United Nations Food and Agriculture Organisation (FAO) Representative for South Africa.
12:15 – 12:30	The Importance of Scientific Research in Enhancing the Production of Pulses. Dr. Hangwani Muedi – Agricultural Research Council (ARC), South Africa.
12:30 – 12:45	Inhibitory Properties of Bambara Protein Hydrolysate against Angiotensin Converting Enzymes, Renin and Free Radicals. Arise A.K. Durban University of Technology, South Africa. Hidden Health Foods – Some Traditional Wheat-based Diet of the Kingdom of Lesotho. Mosala, M. Agricultural Research Council, South Africa.
12:30 – 12:45	Phenolic Content, Antibacterial and Anti-Proliferative Activities of <i>Momordica balsamina</i> Leaf Extracts. Nkambule, T.P. University of Nottingham, United Kingdom Determinants of the Realization of the Right to Adequate Food of Children (1 – 5 Years Old) And Their Primary Caregivers Living in Rural And Urban

12:45 – 13:00	(DST) Mr. Dean Miller – Alliance Grain Traders.	South Africa.	Areas in One Region Of The Cacadu District in The Eastern Cape: Jenkins, T. Stellenbosch University, South Africa
13:00 – 13:15	Question and Answer	Resettlement, Food Security and Sustainable Livelihoods in Ethiopia: The Comparative Study of Amhara and Southern Regions. Alemu, K.T. Ethiopian Civil Service University, Ethiopia.	Challenges in Evaluating the Nutritional Value of Indigenous Vegetables. Mavengaphama, S. Agricultural Research Council, South Africa.
13:15 – 13:30	Vote of Thanks and Closure Food Tasting for Session Participants	Nematocidal and nematocidal phytonematocides residues in tomato plants. Shadung, K.G. Limpopo Agro-Food Technology Station, South Africa.	Effect of Dietary Supplementation with Hibiscus Sabdariffa Calyces Meal on Meat Quality of Japanese Broiler Quail (<i>Coturnix coturnix</i>). Ndlovu, N. University of the Witwatersrand, South Africa.
13:30 – 14:00		Question and Answer	Question and Answer
14:00 – 15:30	Lunch and Exhibitions		
14:00 – 14:15	Session 4: Food Microbiology and Biotechnology Moderator: Prof. Hussaini Makun Venue: Titanium Room	Session 5: Agriculture and Climate Change Moderator: Dr. Phokele Maponya Venue: Gold Room	Poster Session 1 Moderator: Dr. Yemisi Jeff-Agboola Venue: Asgard
14:15 – 14:30	Simulating Effect of Relative Humidity, Atmospheric Temperature and Rainfall Variation on some Microbial Load on Field Sourced Lettuce. Oyinlola, L.A. Federal University of Agriculture Abeokuta, Nigeria. A Transcriptomic Analysis of Cassava (<i>Manihot esculenta</i> Crantz) On A High Performance Computing Cluster Has Food Security and Food Sovereignty Implications. Matshidiso, A. University of the Witwatersrand, South Africa.	The Impact of Climate Change on Agricultural Output in South Africa. Cheteni, P. University of Fort Hare, South Africa. Successful Youth Farmers Projects, a Solution to Food Safety and Security in Africa. A Case of Zimbabwe, Masvingo Province. Mapopeta, B. Cranefield College of Management, Zimbabwe.	Agriculture and climate change Food laws, Standards and Legislation
14:30 – 14:45	Molecular Identification of Bacterial Community in Dried Yam (<i>Gbodo</i>) During Steeping Process. Babajide, J.M. Federal University of Agriculture Abeokuta, Nigeria.	Influence of Graded Dietary Energy (Gde) On Dynamics of Biochemical Parameters in Trypanosoma Congolense (Tc) Infection in Goats. Ameen, S.A. University of Ilorin, Nigeria.	
14:45 – 15:00	Study of Biochemistry Parameters in Bovine Affected with Reproductive Conditions. Keltretse, M. North West University, South Africa.	Food Security – Land Hunger Nexus: The South African Experience. Akinola, A.O. University of KwaZulu-Natal, South Africa.	
15:00 – 15:15	Antimicrobial Resistance Profiles of <i>Listeria monocytogenes</i> Isolates From Raw Meat, and Meat Products in South Africa. Matle, L. Agricultural Research Council, South Africa.	Vulnerability to Food Insecurity and Sustainable Smallholder Enterprise Development in South Africa. Ndlovu, P. Agricultural Research Council, South Africa.	
15:15 – 15:30	Question and Answer	Question and Answer	
15:30 – 15:45			

15:45 – 16:00	Nutrient and Antinutrient Compositions of some Edible	Moderator: Dr. Emmanuel Mwendera Venue: Gold Room	Development Moderator: Dr. Nwinyi Obinna Venue: Silver Room
			Characterization of Food Products by GCXGC-TOFMS: A Food-Omics Approach. Pletse, M.

	Moderator: Dr. Oluwatosi Ijabademi Venue: Titanium Room	Moderator: Dr. Emmanuel Mwendera Venue: Gold Room	Development Moderator: Dr. Nwinyi Obinna Venue: Silver Room
15:45 – 16:00	Nutrient and Antinutrient Compositions of some Edible Insect Species in Northern Nigeria. Oblokpa, F.I. Federal University of Technology Minna, Nigeria.	The Application of Geographic Information Systems (GIS) On Climate Change, Agriculture and Food Security. Hlahane, K. The University of Cape Town, South Africa.	Characterization of Food Products by GC/MS-TOFMS: A Food Omics Approach. Pieterse, M. LECO, South Africa.
16:00 – 16:15	Nutritional Composition, Physical and Functional Properties of Bambara Groundnut Grown in Zimbabwe. Oyeyinka, A.T. University of KwaZulu-Natal, South Africa.	Barriers to Upscaling Participation of Smallholder Farmers in Organic Value Chains in Africa: The Case of Kenya. Pophiwa, N. Human Sciences Research Council, South Africa.	Phytochemical and Biological Study of the Native Plants <i>Zoriteschia aethiopia</i> . Pelo, S.P. University of Johannesburg, South Africa.
16:15 – 16:30	Hard-To-Cook Phenomena in Legumes: Improving Domestic Processing of Bambara Groundnut (<i>Vigna subterranea</i> L. Verdc.) To Enhance Food Security in Southern Africa. Technology. Mubaiwa, J. Wageningen University, The Netherlands.	An Analysis of the Potential of Nigerian Poultry Value Chain as a Panacea for Household Food Security Problems. Ezekwesili, A.O. Royal Veterinary College, University of London, United Kingdom.	Nutrients and Indigenous Food Processing Techniques of Promising Lesser Known African Foods: A Key in Africa Food Security. Akanya, H.O. Federal University of Technology Minna, Nigeria.
16:30 – 16:45	Antibiotic and heavy metal resistance profiles of potential food-borne and probiotic bacteria isolated from hot springs, Limpopo, South Africa. Jardine, J. University of Johannesburg, South Africa.	Biocontrol And Biofertilizer Potentials Of Rhizobacteria From Bambara Groundnut (<i>Vigna subterranea</i>) Ajlogba, C.F. North-West University, Mmabatho, South Africa.	Development of Maize Fortified Weaning Food Using Starter Culture. Wakli, S.M. University of Ibadan, Nigeria.
16:45 – 17:00	Promoting Bambara Starch Utilization through Complexation with Lipids. Oyeyinka, S.A. Durban University of Technology, South Africa.	Social Protection as a Coping Strategy to Impacts of Climate Change in the Rural Communities of South Africa. Nhundu, K. University of Fort Hare, South Africa.	Chemical composition, amino acid profile and sensory properties of soy-enriched 'ipekere ogbode' (a Nigerian traditional maize-based snack) Oluwamukomi M.O. Federal University of Technology, Akure.
17:00 – 17:15	Question and Answer	Question and Answer	Question and Answer
Day 3 - 17th May, 2016			
Plenary Session 2			
Time	Public Policy on Food Nutrition, Safety, and Security and Impact of Climate Change on Agriculture in Developing Countries (Sub-theme 2 and 5)		
09:00 – 11:15	Session Chair – Mr. Busani Ngcaweni, Deputy Director General, Private Office of the Deputy President, Republic of South Africa		
09:00 – 09:20	Food Insecurity and Risk Assessment outcomes on Health Indicators: Status in South Africa	Prof. Tsakani Ngomane – Department of Planning, Monitoring and Evaluation (DPME), Presidency South Africa	
09:20 – 09:45	Recent Efforts Towards Strengthening National Food Control System and Safety in sub-Saharan Africa	Dr. Sunday Uhiene – Technical Adviser to the DG/CEO of National Biotechnology Development Agency (NABDA), Abuja Nigeria.	
09:45 – 10:05	Food Labelling Requirements in South Africa and the European Union: A Comparison	Ms. Petra Müller – South African Association of Food Science and Technology (SAAFoST), South Africa	
10:05 – 10:30	Challenges and Outlook of Food Safety, Nutrition, and Health in Developing Countries	Dr. Martin Lo – CEO & President of Biointellipro LLC, USA.	
10:30 – 11:00	Keynote Address – Public Policy on Food Safety, Nutrition and Security	Dr. Shadrack Moeophuli – CEO, Agricultural Research Council (ARC), South Africa.	
11:00 – 11:15	Session Closing Remarks	Mr. Busani Ngcaweni – Deputy Director General in The Presidency of South Africa	
Tea Break			
11:15 – 11:45	Session 2: Agriculture, Climate Change and Food Security		
11:45 – 13:15	Session 1: Food Toxicology and Food Microbiology		
Session 3: Food Processing, Packaging and			

amongst dairy farmers in the Gauteng province of South Africa. In this study, a socio-demographic survey on dairy farmers in Gauteng (n = 15) was conducted through the use of open and closed-ended self-administered questionnaires focusing on general mycotoxin knowledge, feed handling and storage habits, feed consumption patterns and possible mitigation strategies on general risk as a whole. However major gaps were identified with up to 50% of the respondents had general knowledge of the mycotoxin mitigation strategies to minimize the mycotoxins risk from farm-to-fork and only 20% having attended mycotoxin awareness workshops in the past. Hence, this highlights the need to raise awareness amongst dairy farmers on issues pertaining to mycotoxins. It is further hoped that relevant recommendations will be made to individual farmers on how to minimize mycotoxin exposure among animals in South Africa. Research is on-going to establish multimycotoxin exposure among dairy cows owned by the same studied population.

Key words: Dairy cattle, feeds, mycotoxins, exposure.

DETERMINATION OF AFLATOXIN M1 IN FRESH MILK IN THE NGAKA MODIRI MOLEMA

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 Ofentse, O.T.S., *Mwanza, M.
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Abstract
 Aflatoxins are carcinogenic compounds produced predominantly by certain strains of the *Aspergillus* genus. Contamination of milk and milk products from aflatoxin M1 is a risk to human health. Aflatoxin M1 is relatively stable during milk pasteurization and storage during the preparation of various dairy products. In this study, 188 raw milk samples were obtained randomly around dairy farms North West province. Ninety samples were tested for Aflatoxin M1 (AFM1) contamination by ELISA (Enzyme Linked Immune Assay) and 25 samples by HPLC (High Pressure Liquid Chromatography) technique. Results obtained showed that 58 (64.4%) of the 90 samples analysed using the ELISA were positive to aflatoxin M1 (AFM1) and all 25 (100%) of samples analysed on HPLC were positive to AFM1. Among them, some samples 11 (12.2%) and 14 (56%) respectively on HPLC had concentrations above the 0.05 ppb as per EU and South Africa regulations. The presence of AFM1 in milk could be explained by the feeding of aflatoxins contaminated feed to animals. It is then concluded that the widespread occurrence of AFM1 in milk samples are considered to be possible public health hazards especially in children and at long term to adults.

Key words: Aflatoxin M1, raw milk, HPLC, ELISA, carcinogenic.

EVALUATION OF FUNGAL AND MYCOTOXIN CONTAMINATION OF MAIZE CONSUMED IN THE NORTH WEST PROVINCE OF SOUTH AFRICA

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Abstract
 Contamination of foods by fungi and mycotoxins has been linked to various health and economic implications to both man and animals. This study was carried out to evaluate the incidence of fungal species and mycotoxins contaminating maize grains in the North West province of South Africa. A total of 100 maize samples were randomly collected from commercial and small-scale farmers across the province. Samples were investigated for fungal contamination using conventional and molecular methods to identify fungal species. Mycotoxin analysis was done using IAC, TLC, HPLC and ELISA. The percentage incidence of different genera isolated revealed the predominance of *Fusarium* (82%), *Penicillium*, (63%) and *Aspergillus* species (33%). Among the species, *Fusarium verticilloides* had the highest incidence of 70 and 76% in commercial and small-scale maize respectively, while *P. digitatum* had 56% total incidence and *Aspergillus fumigatus* (27%). Mycotoxin analysis revealed that FB₁ was the most contaminant mycotoxin in the small-scale and commercial samples with incident rate of 100 and 98.6% respectively. Aflatoxins contamination in samples occurred at incidences of 26.7% in small-scale samples and 25.0% in commercial samples. Furthermore, OTA had a high incident rate of 97.8% and 93.0% and ranged from 3.60-19.44 to 1.60-9.89 µg/kg respectively in small-scale and commercial maize samples. Zearalenone (ZEA) occurred in 50 and 55% of small-scale and commercial samples respectively. The results showed that maize from small-scale farmers may contribute to dietary exposure to mycotoxins. Farmers and consumers should be aware of the dangers of mycotoxin contamination of maize with resultant health risks.

Keywords: Maize, mycotoxins, Thin Layer Chromatography (TLC), ELISA, Immuno affinity column (IAC), High Performance Liquid Chromatography (HPLC), North West Province.

PRESENTER
 AFLATOXIN M₁ IN BREAST MILK, COW MILK AND MILK PRODUCTS IN MINNA, NIGERIA AND THEIR PREDISPOSING FACTORS
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Abstract

Herein is a focus on incidence and levels of Aflatoxin M₁ (AFM₁) in milk of breast feeding mothers, cow milk and vended milk products within Minna, Nigeria obtained by analysis of 140 samples of milk and milk products using high performance liquid chromatography (HPLC). The findings reveal; incidence of 77.5% (0.0662±0.0178) in human milk, and suggests that diet, socioeconomic status and ethnicity influence exposure. Nomadic cow milk samples had the highest incidence of 80% (0.0109-1.3543 µg/L), cheese had 40% (0.1045-1.5302 µg/L) incidence, nono had 35% (0.2342-1.2516 µg/L) incidence, commercial cow milk had 25% (0.0464-0.0992µg/L) incidence and yoghurt had 10% (0.5835-0.6470 µg/L) incidence in decreasing order. In a total of 69 contaminated samples, 51 were at levels above (0.05 µg/L) the EU and Nigerian legislated limit. Exposure to AFM₁ from milk and milk products at concentrations demonstrated in this investigation is of great concern as infants in the country are encouraged to be exclusively breast fed for six months after which alternative milk intake sometimes from animal origin can be sourced. Established carcinogenicity and growth impairing potentials of AFM₁ stands as sources of concern and hence the need for enforcement of the legislated limit by regulatory agencies in Nigeria.

Keywords: Aflatoxin M₁, Diet, Socioeconomic status, Breast milk, cow milk.

INCIDENCE AND MYCOTOXIGENIC POTENTIALS OF FUNGI ISOLATED FROM SOME TRADITIONALLY FERMENTED FOODS IN NIGERIA

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Abstract

Fungi and their toxins have drawn global attention due to the significant threat they pose to food safety. This study assessed the occurrence of fungi in some traditionally fermented foods (TFF) and evaluated the toxigenic potential of the fungi isolated from the TFF. Cluster sampling procedure was used to obtain 18 samples each of fermented maize gruel (FMG), fermented locust beans [FLB] and fermented melon (FM) from different markets in Southwest, Nigeria. The fungal load of the samples was determined and macroscopic, microscopic and molecular identification of isolated fungi species was done. The potential of the fungi isolates to produce aflatoxins, deoxynivalenol, fumonisin, ochratoxin and zearalenone was determined using thin-layer chromatography. The mean fungal load of the FMG, FLB and FM samples were 8.0 x 10³ CFU/ml, 9.4 x 10³ CFU/g and 7.9 x 10⁵ CFU/g, respectively. A total of 164 fungal isolate from nine genera; *Aspergillus*, *Penicillium*, *Fusarium*, *Rhizopus*, *Saccharomyces*, *Pichia*, *Mucor*, *Candida* and *Rhodotorula* were identified from the samples. The dominant fungi isolates in FM samples were *A. flavus*, *A. parasiticus*, *F. verticillioides* and *P. rugulosum* while *S. cerevisiae* was identified from all the FMG samples. A total of 99 potentially toxigenic isolates of *Aspergillus* (56), *Penicillium* (24) and *Fusarium* (9) species were recovered from the samples. All positive extracts for aflatoxin G1 and zearalenone had spots with retardation factors ranging from 39 - 41mm and 80 - 85mm, respectively. Of all the *Aspergillus* species from the FLB isolates (23), only 65% were positive for aflatoxin B1 by giving a light blue fluorescence under ultraviolet light while 14% of the fungi extracts from the FM samples were positive for fumonisin B1 from *F. verticillioides*. The TFF are unsafe for consumption due to high fungi load and the consequent presence of mycotoxigenic fungi.

Keywords: Aflatoxin, fermented foods, fumonisin, fungi, incidence.

AFLATOXIN B₁ (AFB₁) DEGRADATION BY A SPOROSARCINA STRAIN

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Abstract

Aflatoxin (AF) contamination continues to present one of the most insidious and daunting challenges to combat in food safety. Its adulteration of foods and feeds represent an important safety concern as evident in the numerous health and economic challenges associated with exposure of humans and animals alike to this toxin. In spite of attempts at preventing their occurrence along the food chain, these toxins still persist. This has propelled and necessitated a demand for effective strategies to combat this menace as aggravated by the increased contamination of AFs in these commodities, especially in sub-Saharan Africa. Microbial degradation has been considered an economical, environmentally-friendly and better means of detoxifying aflatoxins in foods. Microbial degradation of AFB₁ by liquid cultures, lysates and protease inhibited lysates (addition of protease inhibitor cocktail prior to cell lysis) of a *Sporosarcina* sp. isolated from a South African gold mine aquifer were investigated in this study. The liquid cultures, lysates and protease inhibited lysates were respectively incubated with AFB₁ (2.5 µg/mL) for 3, 6, 12, 24 and 48 h, while AFB₁ degradation was monitored on high performance liquid chromatography (HPLC). In 12 h of incubation, the protease inhibited lysates completely degraded the AFB₁, as compared to both the liquid cultures and uninhibited lysates which yielded an AFB₁ degradation of 47 and 25% respectively. Further experiments showed that the degradation by this strain is enzymatic, while results from cytotoxicity studies reveal that the degraded extracts are non-toxic to human lymphocytes. Addition cytotoxicity studies on both the liquid cultures

