

Pesticide Discussion Forum Summary Digest

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Food Risk Assessment and Sampling Plans for Pesticides

Food safety risk managers and policy-makers charged with protecting public health and safety are working in an ever more complex world. They must make sound choices to address public health risks but there are often economic, social, and political impacts that also need to be considered. Stakeholder perspectives and views must be taken into account, and decision processes are often subject to media attention. Faced with this complexity, risk managers and policy-makers can be aided by structured methods that are based on multiple decision factors.

About the Presenter



Nkoum Metou'ou Ernest currently works as an Agricultural Engineer (Direction of Regulation and Control of Agricultural Inputs and Products) at the Ministry of Agriculture and Rural Development in Cameroon. Mr Nkoum holds a Professional bachelor in Phytosanitary risk and a Professional Masters in Norms Control Quality Option: Plants Productions. He worked as Chief of Agricultural Extension Station from 2011-2016 for the last three years before he was posted as Agricultural Engineer. His fields of expertise include assessment of pesticides toxicity in food and human health, environmental assessment of pesticides toxicity (ecotoxicology), management of pesticides packages, sustainable alternatives in plant protection and integrated plant protection management.

DISCLAIMER: The information below represents the opinions of members participating from different countries expressed during the discussion and shall not necessarily be taken to reflect the official opinion of the DEH, UCT, SIDA or Keml.

THE DISCUSSION WAS STRUCTURED AROUND THREE QUESTIONS AND THE KEY DISCUSSION POINTS ARE PRESENTED UNDER EACH.

Question 1: Do you manage the reduction of chemical risks in food in your country or the country you work in? If yes, explain the methods you use and give examples of any evidence-based decision-making methods. If no, what methods are you aware of that are used in your country for food safety assurance, if any?

ESWATINI: In eSwatini, there is very little if at all anything is done to reduce chemical risk in the produce. Large corporations send their samples to laboratories in South Africa for analysis. The method used for testing food quality is liquid chromatography. The agricultural extension services promote IPM. Many farmers who produce for export normally adhere to voluntary standards such as the Global gap, which gives some guidelines on MRL values.

BELIZE: Belize Agriculture Health Authority manages the reduction of chemical risks in our food. The entity has the department structure and legislation in place, however, there is zero monitoring and enforcing.

MALAWI: There are many stakeholders involved in food safety assurance but the main players are the Malawi Bureau of Standards. They seem to be guided by codex standards in their work.

NIGERIA: Yes, we manage the risk in food in Nigeria through NAFDAC in collaboration with stakeholders from the food industry, Nigeria's Medical Association, and Government's concerned parastatals like.

ZIMBABWE: The Standards Association of Zimbabwe monitors the levels of additives in food. Suspect samples are also sent to

the Government Analyst Laboratory for guidance. Radio isotopes are checked from random samples. International guidelines are used for quality control purposes. Management of chemical risks in food in Zimbabwe is done mainly through the department of research and specialist services the pesticide Registrar's office. The border entry points would also monitor the registration status of every product entering in Zimbabwe.

TANZANIA: There are no evidence-based methods used for the reduction of chemical risks in food. Few studies or no studies on the bases of scientific evidence-based methods for Hazard identification and characterization (toxicological and human studies) were conducted in Tanzania. The methods used by some stakeholders engaged in agriculture especially the horticultural industry are: a) Reduction of the dependence of synthetic pesticides b) IPM, c) Bio pesticides d) Ecological organic farming, conservation agriculture, e) Practice on Good Agricultural Practices and training of stakeholders.

SOUTH AFRICA: DAFF has recently amended Food Act (Act 36,1947) in 2017 to aligned MRL in South Africa inline with international norms. Food samples are randomly selected collected from food retailers as per The National Department of Health mandate. Sampling is carried out in variable intervals spread over the financial year.

Question 2: How are maximum pesticide residue limits addressed in your country's legislation or in international policies? If there are separate MRL for local consumption and export, why is this the case

ZIMBABWE There is no method that monitors the MRLs in Zimbabwe on the locally consumed products. The products, which are exported, are the ones, which are evaluated for MRLs following international policies. Food products are checked for the levels of MRL from either random sample submitted by the industry or from adhoc inspections.

MALAWI There are fixed standards used for MRL that are supposed to cater for both local consumption and export market. However, goal posts are sometimes adjusted depending on the needs of the country of export.

SOUTH AFRICA	The act covers the MRL's in food for the export market but not the local market. SA follows EU MRL's because Europe is the majority of exports. The Directorate Food Safety and Quality Assurance in the Department of Agriculture liaise with other government department in addressing the MRLs. Food inspectors takes periodical or random food samples for exporting and importing from other countries at the port of entry. Other guidelines used are Codex Alimentarius standards and guidelines; The Fertilizers, Farm Feed, Agricultural Remedies and Stock Remedies Act, 26 of 1947.
NIGERIA	NAFDAC is the government's established independent agency in collaboration with other stakeholders concerning food and consumer safety that regulate the residue of pesticides and other chemicals in food. Farm produce or processed produce meant for exportation must be subjected to the export promotion council scrutinization by NEPC and NEPZA. The ministry of agriculture will have a department in place to monitor the residues of local farm produce, but enforcement is challenging.
UGANDA	Only processed foods are monitored by the Uganda Bureau of standards to compare with the MRLs and any that fall short is recalled from the market for fresh produce like vegetables, MRLs are not followed for the local market.
BELIZE	The Food Safety Department of the Belize Agricultural Health Authority provides sanitary certification of export products. This certification is based on a system of inspections, audits, and testing of MRLs. However, there is no mechanism set in place for the monitoring of MRLs of local consumption. The export industry in Belize has to abide by the other countries regulations they are exporting to. However, we are deficient in this area for locals.
TANZANIA	The maximum pesticide residue limits are addressed in the Plant Health Act No. 4 of 2020. We are currently developing the Plant Health Regulations, and the issue of the setting of MRLs for the country will be covered and the guidelines will be developed using guidance from international policies and organizations. Currently, we are using the MRLs set by the Codex Alimentarius and other international policies for the local and export of agricultural crops.
ZAMBIA	The ministry of health through the Food safety Act of 2019 gives them the mandate to ensure the protection of the public against health hazards and fraud in the manufacture, sale and use of food. They use the WHO standards on MRLs.
ESWATINI	No legislation that addresses MRLs in food, it is only food products intended for exportation that is monitored based on the requirement of the export market. The Food Regulations, 1974 only addresses quality of food without specific reference to MRLs. There is also a voluntary standard (Food Safety Standard: ISO 22000) which is not mandatory but it covers MRLs.
PRESENTER NOTES	Support the aims of the subsequent stages of risk management in 4 parts: Hazard identification; Hazard characterization; Exposure assessment; Risk characterization.

Question 3: Explain how and by whom is residue sampling conducted in your country or the country you work in. What is needed to improve management of pesticide residues in your country or the country you work in?

UGANDA: the Bureau of standards periodically takes samples on the processed foods on the markets to monitor on the pesticide residues.

ZIMBABWE: Residue sampling is normally done by quality controllers in the private sector during food production and they use their own laboratories for analysis. Environmental health staff conducts adhoc sampling from food outlets. Sampling is rarely done in the field for small-scale holder farmers and commercial farmers do their own sampling.

ESWATINI: Need to operationalise its Pesticide management Act, construct well up to standards food Laboratories as the one we have is does not cover testing of chemicals and have monitoring of local foods at the local market. We need enforcement and adopt the standards by the codex Alimentarius. Regional collaboration with Mozambique and South Africa could help.

NIGERIA: It is stipulated under the list of documents that industries must come with test results of their products prior to registration. The test is to be conducted at a reputable institution, paid for by the industries and supervised by NAFDAC. However, it is time we started stimulating the public through policy briefs and other awareness programs to hold industries accountable for what they produce.

SOUTH AFRICA: Residue sampling is conducted by the Department of Agriculture and verified by SABS. Random sample collection done by food or environmental inspectors. Proactive routine testing of food residue should be done at local market, retail shops etc. Community education on pesticide residue with the same status as exported products should be done. Discouraging excessive use of pesticide and use of alternative safer methods is encouraged.

SOUTH AFRICA: Department of Health/District Municipality randomly collects samples which analysed by an approved Laboratory. Management of pesticide residues: a) Funding is a challenge, therefore adequate funds should be allocated for food sampling program. b) The government should encourage the researchers to develop bio-pesticides to minimize the use of HHPs. c) Develop training programs on IPM to control pests and disease in crops.

ZAMBIA: Companies exporting have to make arrangements on these tests, normally they send samples to either the EU or South Africa. They use accredited laboratories.

MALAWI: Department of Health / District Municipality randomly collects samples which analysed by an approved Laboratory. Management of pesticide residues: a) Funding is a challenge, therefore adequate funds should be allocated for food sampling program. b)The government should encourage the researchers to develop bio-pesticides to minimize the use of HHPs. c) Develop training programs on IPM practices.

TANZANIA: The residue sampling conducted by the Government chemistry laboratory, Tanzania Bureau of standards, Tanzania Atomic Energy Commission, and the Tropical Pesticides Research Institute-TPRI. The management of pesticide residues in food can be improved by the following measures: a) Practice IPM to control pests and disease in crops. b) Encouraging ecological organic agriculture, and practice of conservation agriculture. c) Strengthening the capacity of the staff of the national regulatory authority.

BELIZE: The Food Safety Department of the Belize Agricultural Health Authority is mandated to look after the food safety of the country. However, there is no residue sampling that is conducted in country outside of the Taiwanese funded project, The Good Pesticide Management Program that ended in 2014.

Resources and Further Reading

1. Quality Management Systems and Risk Analysis in the Agri - Food Chain Choice module 3: Risk analysis in the agri – food chain (2018). Prof. dr. Ir. Liesbeth Jaxsens Ir. Elien De Boeck Department of Food Safety and Food Quality, Faculty of Bioscience Engineering Ghent University. ([PDF attached](#))
2. Food safety risk management evidence-informed policies and decisions, considering multiple factors Fao guidance materials (food and agriculture organization of the united nations Rome, 2017): <http://www.fao.org/3/i8240en/18240EN.pdf>
3. The International Code of Conduct on Pesticide Management (World Health Organization Food and Agriculture Organization of the United Nations Rome, 2014): http://www.fao.org/fileadmin/templates/agphome/documents/Pests_Pesticides/Code/CODE_2014Sep_ENG.pdf

4. <http://www.fao.org/pesticide-registration-toolkit/information-sources/maximum-residue-limits/en/>
5. Department of Food Technology, Safety and Health Faculty of Bio Science Engineering Ghent University AJ 2017 – 2018 Quality Management Systems and Risk Analysis in the Agro - Food Chain Choice module 3: Risk analysis in the agro – food chain Prof. dr. ir. Liesbeth Jacxsens Prof. dr. ir. Pieter Spanoghe Ir. Elien De Boeck. **(PDF attached)**
6. Risk Analysis for Crop Protection Products Michael Houbraken, Laboratory for Crop Protection Chemistry 29 Nov 2018 Safety and Health Faculty of Bio Science Engineering Ghent University **(PDF attached)**
7. MRL – Dr. ir. P. Spanoghe – 04/11/2014 Faculteit Bio-Ingenieurswetenschappen – Labo Fytofarmacie ; Ghent University.
8. Food Control journal homepage: www.elsevier.com/locate/foodcont 2015
9. A risk-based pesticide residue monitoring tool to prioritize the sampling of fresh produce Ilse Delcour a, Michael Rademaker b, Liesbeth Jacxsens c, Jessie De Win a, Bernard De Baets b, Pieter Spanoghe. **(PDF attached)**
10. Sampling plans in International standards Liesbeth Jacxsens (12/10/2017) **(PDF attached)**
11. Ciboris July 2017 How can agro-food companies optimize the use of sampling plans? Dr. Ir. Liesbeth Jacxsens Ciboris/ Liesbeth.Jacxsens@ciboris.org **(PDF attached)**

The **Division of Environmental Health (DEH)** Pesticide Discussion Forum is a bi-monthly online seminar for pesticide regulators and resource persons, as well as students in the Post-Graduate Diploma in Pesticide Risk Management (DPRM). Our aim is to provide support for managing pesticide risks and implementing risk reduction strategies. DEH is based in the School of Public Health and Family Medicine at the University of Cape Town (UCT). **This Digest was produced by: Tatum Louw** | Forum Administrator | lwxtat001@myuct.ac.za. **Prof Andrea Rother** | Forum Moderator | andrea.rother@uct.ac.za
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