



THE UNITED REPUBLIC OF TANZANIA

NATIONAL AUDIT OFFICE

**PERFORMANCE AUDIT REPORT ON THE MANAGEMENT OF PESTICIDES
IN AGRICULTURE**



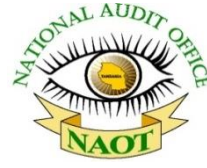
A REPORT OF THE CONTROLLER AND AUDITOR GENERAL

MARCH 2018



THE UNITED REPUBLIC OF TANZANIA

NATIONAL AUDIT OFFICE



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PREFACE

The Public Audit Act No. 11 of 2008, Section 28 authorizes the Controller and Auditor General to carry out Performance Audit (Value-for-Money Audit) for the purposes of establishing the economy, efficiency and effectiveness of any expenditure or use of resources in the MDAs, LGAs and Public Authorities and other Bodies which involves enquiring, examining, investigating and reporting, as deemed necessary under the circumstances.

I have the honour to submit to His Excellency, the President of the United Republic of Tanzania, Dr. John Pombe Magufuli and through him to Parliament the Performance Audit Report on the Management of Pesticides in Agricultural Activities in Tanzania as conducted by Ministry of Agriculture and Tropical Pesticides Research Institute (TPRI).

The report contains conclusions and recommendations that directly concern the Ministry of Agriculture and Tropical Pesticides Research Institute. Conclusion and recommendations have focused mainly on the extent of availability of registered pesticides in the market; implementation of pesticides registration activities; training to pesticides sellers, farmers and agricultural extension officers; inspection to pesticides sellers and point of entry; and coordination and monitoring of registration activities, training and Inspection.

The managements of the Ministry of Agriculture and the Tropical Pesticides Research Institute have been given the opportunity to scrutinize the factual contents of the report and come up with comments on it. I wish to acknowledge that the discussions with the audited entities have been very useful and constructive in achieving the objectives of the audit.

My office intends to carry out a follow-up at an appropriate time regarding actions taken by the Ministry of Agriculture and Tropical Pesticides Research Institute in relation to the recommendations in this report.

In completion of the assignment, the office subjected the report to the critical reviews of the following experts namely; Dr. Francisca Francis Katagira - retired Assistant Director Plant Health Services Section, from the Ministry of Agriculture and Dr. Bakari S. Kaoneka - retired from TPRI who came up with useful inputs on improving the output of this report

This report has been prepared by Mariam Francis Chikwindo (Team Leader), Janeth Rutagengwa and Gerald Anthony (Team Members) under the supervision and guidance of Ms. Esnath Henry Nicodem -

Audit Supervisor, Eng. George C. Haule - Assistant Auditor General and Ms. Wendy W. Masoy - Deputy Auditor General.

I would like to thank my staff for their devotion and commitment in the preparation of this report. My thanks should also be extended to the the Ministry of Agriculture and Tropical Pesticides Research Institute for their fruitful interaction and cooperation with my office

A handwritten signature in black ink, appearing to read 'Mussa Juma Assad', with a long horizontal stroke extending to the left.

Prof. Mussa Juma Assad
Controller and Auditor General
United Republic of Tanzania
28th March 2018

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LIST OF ABBREVIATIONS AND ACRONYMS

FAO	-	Food and Agriculture Organisation
PHS	-	Plant Health Services
LGAs	-	Local Government Authorities
NEMC	-	National Environment Management Council
NPPAC	-	National Plant Protection Advisory Committee
PARTS	-	Pesticides Approval and Registration Technical Sub-Committee
PO-RALG	-	President's Office - Regional Administration and Local Government
SDGs	-	Sustainable Development Goals
TPRI	-	Tropical Pesticides Research Institute

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EXECUTIVE SUMMARY

The use of pesticides in agricultural activities was reported to increase rapidly in the past decades in developing countries including Tanzania. Based on the study conducted from July to December, 2015 in Morogoro, Arusha and Mbeya regions by Seeds of Expertise for the Vegetable Industry of Africa -SEVIA, it was shown that 84% of 135 farmers were using pesticides in horticulture production.

It was reported that, managing the quality of pesticides is faced with various challenges such as high and uncontrolled importation of pesticides; increase in pesticides registration resulting into increase of pesticides importation; loss of revenue; increased human health problems; and increased risk to the environment.

The audit objective was to determine whether the Ministry of Agriculture through the Crop Development Division and the Tropical Pesticides Research Institute (TPRI) efficiently manage the quality of pesticides to safeguard against human health risks and environmental degradation in order to ensure sustainability of land productivity.

The audit focused mainly on determining whether the: Pesticides available in the market are fit for farming; Implementation of pesticides registration activities are adequately conducted; Trainings to farmers, Pesticides sellers and agricultural extension officers are timely and properly conducted and contribute to proper pesticides management.

Also, to determine whether Inspection of Pesticides sellers is functioning well and ensures availability of registered and good quality pesticides in the market; Coordination of activities for pesticides registration, training and inspection is in place and functioning well; and Monitoring of activities for pesticides registration, training and inspection is in place and functioning well.

The audit focused mainly on three categories of pesticides that are highly used in agricultural activities namely, insecticides, herbicides, fungicides and rodenticides. For the purpose of obtaining strong evidence other key players such as President's Office - Regional Administration and Local Government (PO-RALG), selected Local Government Authorities, Ports of Entry, Pesticides sellers and Farmers' Associations were covered. The audit covered the period from July 2015 to December, 2017.

Main Audit Findings

Presence of un-registered and Certified Pesticides in the Market

It was noted that unregistered pesticides were found in all districts and regions of Tanzania, but it was reported to be very common in regions and districts that are bordering other countries for example, in Mtwara, Mbeya, Kigoma, Tanga, Kagera and Arusha regions.

There were pesticides namely; Abamite, Doom, Boss, Lava, Lethal, and Romectin that were sold in the market without being registered by TPRI. It was further reported that, these pesticides are not fit for Tanzania market. This is because these pesticides were not tested by TPRI to examine their efficacy as far as Tanzania agricultural environment is concerned.

The availability of unregistered pesticides in the market was reported to be caused by various factors including: Few and unqualified inspectors; Inadequate awareness creation campaigns among pesticides users, sellers and farmers; Unavailability of list of registered pesticides to key users; Illegal importation of pesticides; Weak implementation of sanction to pesticides sellers; and Existence of porous borders.

Illegal Importation of Pesticides

There were pesticides that were illegally imported in the country without following procedures such as obtaining and paying for importation permits as well as being registered by TPRI.

This happened because of the weaknesses in the inspections conducted at Ports of Entry as explained below: Inspections conducted at Ports of entry were not sufficient due to inadequate modern inspection tools to facilitate proper inspections. Inspectors were lacking necessary working tools such as motor vehicles, GPS, gloves, mask, gumboots, pesticides quality scanner as well as pesticides inspection checklists to facilitate proper inspections.

It was further noted that inspectors at Ports of entry were not well skilled in the area of pesticides inspection as compared to inspectors from TPRI. They informed auditors that, their inspection on pesticides are conducted based on the knowledge they acquired when attended colleges and universities.

Moreover, review of inspection reports showed that, inspections to pesticides sellers were not regularly conducted, something that

motivated the selling of unregistered pesticides that had been illegally imported in the country.

Weak Implementation of Pesticides Registration Activities

Inadequate assessment on health and environmental related with pesticides uses

There were inadequate evaluations and assessments made by the Ministry of Agriculture and TPRI to identify health and environmental problems related to the use of pesticides.

Farmers employed in large plantations are the only ones tested to check whether they meet the requirements of exporting produced crops to European, Asian and American markets. Small and medium scale farmers who account for almost 81% of the whole population in the country were not covered as they cannot afford payment of the testing fees, and also due to lack of awareness.

There is soil contaminations caused by use of pesticides, the contamination might be higher than what is known. Since few assessments have been done, the impact is not known and documented. High concentration of mentioned pesticides in the soil resulted into soil contamination and infertility; and ground and surface water contamination.

Inadequate Implementation of Mechanism to ensures only Registered Pesticides are Sold in the Market

There were several mechanisms that were used to ensure pesticides sold in the country are registered as per Plant Protection Act No. 13 of 1997 requirements. However, established mechanisms to ensure that only registered pesticides are sold and used in the market were not adequately implemented as: list of registered pesticides was not frequently updated and shared to all key users; and inadequate inspections conducted to pesticides sellers and Ports of entry.

Insufficient Updating of the List of Registered Pesticides

The list of registered pesticides was not periodically updated, because Pesticides Approval and Registration Technical Committee (PARTS) and National Plant Protection Advisory Committee (NPPAC) meetings were not frequently conducted since funds were not adequate and timely released. These delays in registering pesticides prompted distributors and pesticides sellers to illegally sell their pesticides without being

registered. This act to a large extent has contributed to the presence and increase of unregistered pesticides in the market.

Inadequate Dissemination of Knowledge on Pesticides Management

There was no documented training plan in place for guiding the provision of pesticides trainings to be provided to pesticides sellers, farmers as well as agricultural extension officers.

Implementation of mechanisms used by Ministry to facilitate dissemination of pesticides knowledge to farmers, agricultural extension officers and pesticides sellers were inadequate.

Farmers and agricultural extension officers were not adequately trained on pesticides management. This resulted to improper use of pesticides affecting the quality and quantity of produced crops, human health and the environment. Furthermore, Pesticides sellers were not sufficiently trained on pesticides business requirements, and for those who were trained there was no follow-up training.

Insufficient Inspection Conducted to Pesticides Sellers and Ports of Entry

There was no documented inspection policy and procedures in place to elaborate what, how and when to inspect as well as processes of taking actions against defaulters. Similarly, there were no risk data base showing location, types of pesticides sold and stock of pesticides in the shops. As a result, conducted inspection activities did not take into consideration risky items such as remoteness of some regions, pesticides formulation and quantity.

Inspectors from the Ministry of Agriculture were less experienced and skilled as they were not regularly involved in inspecting pesticides sellers, and not trained in managing pesticides. 33 out of 50 Ports of Entry have inspectors whom were not approved by the Minister.

Inspections conducted were not adequately executed to ensure that only registered pesticides were sold in the market. This was because not all Ports of entry were inspected. Furthermore, not all pesticides sellers were inspected and re - inspections were not frequently conducted.

There were also weak follow-ups or re-inspections to assess the level of implementing interventions for the identified non-compliance.

Inadequate Coordination of Pesticides Training, Registration and Inspection Activities

There were no coordination framework and plans to facilitate coordination of activities regarding registration of pesticides; training to farmers, pesticides sellers and agricultural extension officers; and inspections conducted to pesticides sellers. There was no platform to coordinate their plans despite of limited resources to facilitate implementation of some activities

Inadequate Monitoring of Pesticides Training, Registration and Inspection Activities

Inadequate monitoring was conducted on the pesticides registration, training and inspection activities. Furthermore, there were no implementation reports sent to the Ministry of Agriculture either from TPRI or PO-RALG regarding status of implemented activities in pesticide training, inspection and registration. This was caused by weak reporting mechanism.

The audit concluded that, the Ministry of Agriculture through Crop Development Division and Tropical Pesticides Research Institute is not adequately managing the quality of imported and locally produced pesticides. The Ministry fails to control distribution and usage of pesticides which causes health and environmental effects as well affecting the quality and quantity of produced agricultural crops.

Recommendations

The Ministry of Agriculture should:

1. Establish pesticides management policies in the country and ensure that the registered pesticides are adequately regulated during the implementation;
2. Monitor and evaluate the effectiveness of pesticides trainings provided to pesticides sellers, farmers and agricultural extension officers;
3. Ensure that risk-based inspection plans for proper implementation of inspection to pesticides sellers and Ports of Entry are developed and guide the focus of inspections;
4. Ensure availability and proper allocation of qualified pesticides inspectors to ensure maximum and effective coverage of pesticides sellers and Ports of Entry during inspections;

5. Develop a coordination mechanism that will take into account and guarantee that all government entities responsible for implementation of registration, training and inspection of pesticides are working together and avoid duplication of efforts; and
6. Establish monitoring and evaluation framework that will ensure that there are set key performance indicators, M&E implementation plans, timely performance reporting of registration, training and inspection of pesticides activities.

The Tropical Pesticides Research Institute should:

1. Set up mechanism to facilitate periodical update and record of all registered pesticides and ensure that the updated list of registered pesticides and accompanied recorded information are accessible to all users;
2. Update and improve the existing registration procedures and establish re-registration procedures of pesticides in the country and ensure that the registered pesticides are adequately regulated during the implementation; and
3. Ensure that health and environmental risks associated with pesticides used in the country are periodically identified, evaluated and reported to the Ministry of Agriculture;
4. Strengthen mechanism in place to ensure that pesticides sellers, farmers and agricultural extension officers are periodically trained on the proper use and handling of pesticides;
5. Strengthen mechanism in place to ensure pesticides sellers are inspected before commencement of pesticides business;
6. Ensure re-inspection is timely conducted before renewal of pesticides business permit to determine compliance with pesticides business requirement and implementation of corrective actions issued to pesticides sellers; and
7. Update and improve the existing procedures guiding inspection and re-inspection of pesticides in the country and ensure that corrective actions against defaulters are taken in accordance to the law.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Audit

The International Code of Conduct on Pesticides Management issued by Food and Agriculture Organization in 2014 defines pesticides as any substance or mixture of substances of chemical or biological ingredients intended for repelling, destroying or controlling any pest or regulating any plants. Pesticides list include: insecticides, herbicides, fungicides, arboricides, acaricides, molluscicides, nematicides, plant growth regulator, rodenticides and defoliants¹.

The use of pesticides in agricultural production was reported to increase rapidly in the past decades in developing countries including Tanzania. Based on the study conducted from July to December, 2015 in Morogoro, Arusha and Mbeya regions by Seeds of Expertise for the Vegetable Industry of Africa -SEVIA, it was shown that 84% of 135 farmers were using pesticides in horticultural production.

The increase is mainly due to the expansion of new areas of production such as horticulture; highly practiced in Northern regions like Arusha, Kilimanjaro and Tanga as well as Southern highlands regions namely, Mbeya, Iringa and Njombe. Other crops with high uses of pesticides include coffee, cashew nut, cotton and tobacco.

Another reason for increase in pesticides use is a need for farmers to increase agricultural production in order to meet demands of feeding the ever increasing populations. It is reported that 81% of pesticides in Tanzania are used for agricultural activities², and most used pesticides are insecticides, herbicides and fungicides. However, the total volume of pesticides used in Tanzania is not well documented because of fragmented data system³.

In Tanzania, farmers depend on pesticides to control and regulate the growth of their crops. Small-scale farmers are estimated to be 81% of the whole population; are the ones dominating the agricultural sector

1

https://webcache.googleusercontent.com/search?q=cache:Dpvohvrln3QJ:https://www.tanzania.go.tz/egov_uploads/documents/The_Tropical_Pesticides_Research_Institute_Act,_18-1979_sw.pdf+&cd=1&hl=en&ct=clnk&gl=tz

Emmy Lema et al, Agrochemicals use in horticulture industry in Tanzania and their potential impact to water resources, 2014

3 Government Chemist Laboratory Agency in collaboration with International Panel on Chemical Pollution, Evaluation Report on UNEP Guidance Documents, 2012

in Tanzania and account for most of the food produced in the country⁴. But these small-scale farmers are the ones who are more vulnerable to pesticides poison due to limited knowledge about pesticides and safe application techniques.

Some studies have shown that Tanzania is mostly importing pesticides from European and North America countries⁵. The importation increased following the liberalization of agrochemicals trade in the country. For example, number of pesticides importation permits issued to pesticides companies was reported to increase from 320 to 388 in financial years 2014/15 and 2015/16 respectively. Similarly, for the year 2017, pesticides importation was 4,039,243 litres, 4,514,345Kg. This huge increase in number of permits issued without adequate controls led to an increase of fake pesticides, uncontrolled distribution of pesticides in communities and unnecessary uses of pesticides⁶.

Food and Agriculture Organisation (FAO) International Code of Conduct on the distribution and use of Pesticides (2010), indicates that, although pesticides play an important role in agriculture, it poses risks to human health and the environment. This is because of their potential toxic and residual characteristics that are compounded with diverse applications in case they are not handled well. This calls for a need to have sound pesticides management in the country. Pesticide risk reduction and risk management systems are therefore essential to the proper and responsible use of pesticides⁷.

The Ministry of Agriculture is obliged to manage the quality and use of both locally manufactured and imported pesticides in the country so as to facilitate improved agricultural productivity, safeguard health of human being as well as protection of environment. In doing so, the Ministry of Agriculture through the Parliament enacted the Plant Protection Act, No. 13 of 1997 and its Regulations of 1999, and appointed the Tropical Pesticides Research Institute (TPRI) as a competent authority to control quality of both imported and locally manufactured pesticides on its behalf.

1.2 Motivation of Audit

The conduct of this audit was due to high and uncontrolled importation of pesticides; increase in pesticides registration; loss of revenue;

⁴Government Chemist Laboratory Agency in collaboration with International Panel on Chemical Pollution, Evaluation Report on UNEP Guidance Documents, 2012

⁵Aiwerasia V. Ngowi, Health Impact of Exposure to Pesticides in Agriculture in Tanzania, 2002

⁶Government Chemist Laboratory Agency in collaboration with International Panel on Chemical Pollution, Evaluation Report on UNEP Guidance Documents, 2012

⁷International Code of Conduct on the distribution and Use of Pesticides, 2010

increased human health problems; increased risk to the environment; and priority area of the government and Sustainable Development Goals.

(a) High and Uncontrolled Importation of Pesticides

African Newsletter, on Occupational Health and Safety, Volume 24, Number 3, 2014 reported an increase in the pesticides importation and registration. From July 2013 to June 2014 the reported increase of imported pesticides was about 11,481.5 metric tons.

Also, it was reported that through the African Stockpile Program, Tanzania has spent about 12 billion shillings for disposing harmful pesticides, some of which were illegally imported, banned from use or restricted in the country, and some were imported or donated in quantities larger than the demand. Since Tanzania has no facilities for disposing-off pesticides, they were all exported abroad for disposal, an activity which was very expensive.

Consequently, the government is losing revenue collection since some of the pesticides enter the market illegally without being issued importation permit that could increase government revenues through import charges.

(b) Increase of Pesticides Registration

Between July 2013 and June 2014, a total of 1182 different types of pesticides were registered, of which 11.2% (132) were provisionally registered, 83.4% (986) were fully registered and 5.5% (64) were restricted.

Table 1.1 shows registration for three categories of pesticides that are highly used for agricultural activities in Tanzania.

Table 1.1: Top Three Registered Pesticides for Agriculture Activities in Tanzania

S/N	Category of pesticides	Year			Total registered pesticides per category
		2014	2015	2016	
1	Insecticides	131	145	157	433
2	Herbicides	81	102	111	294
3	Fungicides	77	92	101	270

Source: Registered Pesticides Reports, United Republic of Tanzania, 2014 - 2016

Table 1.1 shows the increase on pesticides registration of three highly used pesticides for agricultural activities in Tanzania from 2014 to

2016, where insecticides category registered a total of 433 different types of pesticides for three years.

The increase in pesticides registration was contributed by the introduction of high value crops such as cut flowers and expansion of agricultural land. This resulted in increase of requests for importation permits as shown in Section 1.1 leading to an increase on the importation of pesticides in the country.

(c) *Availability of Counterfeit and Illegal Pesticides in the Market*

Crop life⁸ through African Newsletter Volume 24, Number 3 of 2014, reported that, it is estimated that about 40% of pesticides in Tanzania are counterfeit and illegal. This poses dangers to farmers and consumers as well as land degradation.

The same problem of having counterfeit and illegal pesticides in the market has been reported several times⁹ in 8:00am news broadcasted by Independent Television (ITV) and Tanzania Broadcasting Corporation (TBC). The broadcast information was from pesticides inspectors from the Tropical Pesticides Research Institute (TPRI) as a result of their inspections at pesticides sellers' shops. The inspectors found large amounts of counterfeit, illegal and expired pesticides for sale in shops.

In 2016, Tanzania Cotton Board reported a big drop in cotton production that had impact on economy of the farmers and the nation. Hundreds of cotton growers were devastated as pests destroyed their farms despite the large quantity of pesticides used. The Board complained that counterfeit and illegal pesticides were responsible.

Pesticides sellers import or formulate counterfeit pesticides because they want to make super profit. Normally, counterfeits and illegal pesticides are mislabeled and not registered for use in Tanzania as they pose risks to human health and the environment. Also, counterfeit and illegal pesticides can lead to severe damage or even total loss of crop and they can result into trade bans of crops exports by our potential customers around the world.

⁸African Newsletter, on Occupational Health and Safety, Volume 24, number 3, 2014

⁹ Reported on the Independent Television (ITV) and Tanzania Broadcasting Corporation (TBC) on 20th November, 2015, 24th June, 2016, 17th and 26th July, 2016 and 26th October, 2016.

(d) Increased Human Health Problems

Pesticides have been linked to a wide range of human health impacts which range from short-term impacts such as headaches, nausea, skin, eye irritation, dizziness, and fatigue; to chronic impacts like cancer, reproductive effect, and endocrine disruption. According to the 2009 World Health Organization estimation, there are 3 million cases of pesticide poisoning each year and up to 220,000 deaths, primarily in developing countries.

In spite of Tanzania being experiencing this Acute Pesticide Poisoning (APP), the magnitude of health problem in Tanzania is not well known as only few health surveillance studies have been conducted that were also not well documented. Few available studies indicated that, farmers are highly poisoned with pesticides but they lack knowledge on early identification of symptoms associated with contamination as well as how to protect themselves.

A proportion of 25 percent of farmers out of 433 were detected to have cholinesterase levels below the acceptable tolerance of 24.4u/g per gram Haemoglobin (Hgb) concentration during an investigation conducted by Tropical Pesticides Research Institute in 2015. Also, a household survey involving 121 farmer heads of households in Arumeru District, Arusha region, indicated that 92.5 percent of these farmers had previous histories of being poisoned with pesticides especially insecticides, fungicides and herbicides which are highly used to control pests, fungal diseases and weeds, respectively.

Emmy *et al.*, 2014, conducted a study on Agrochemicals use in horticulture industry in Tanzania and their potential impact to water resources. The study noted that huge number of registered pesticides products reflects potential human health risks, particularly due to poor agricultural practices, which are common in developing countries.

(e) Increased Risk to the Environment

Poorly implemented agricultural activities have the potential to contribute heavily to environmental pollution, decreasing land productivity and even threatening future sustainability of industries. This is because most pesticides do affect non target organisms such as honey bees, butterflies, earthworms and the like.

For instance, most of the horticultural farms in Northern Tanzania are located on gently sloping land adjacent to water bodies; this makes the water from rivers and lakes around those areas unsafe for the

surrounding communities that are highly dependent on surface water for drinking and other domestic uses¹⁰.

(f) *Priority areas of the Government*

Sustainable agriculture is among the priority areas of the government of Tanzania. Also, it is one among five priority areas that the National Audit Office of Tanzania (NAOT) through Performance and Specialized Audit Division is focusing in order to make improvements in the government system.

It is also among the major concerns in promoting sustainable development of any country as described in the United Nation's 2030 Agenda for Sustainable Development Goals (SDGs). It directly supports four (4) out of 17 Sustainable Development Goals of the United Nations. Those four SDGs are:

a) *Good Health and Wellbeing*

In this aspect, this SDG's target is to substantially reduce the number of deaths and illnesses caused by hazardous chemicals; air, water and soil pollution and contamination by 2030. The promotion of adequate production, distribution and use of pesticides in agriculture contributes to the achievement of this goal by reducing the contamination cases resulting from use of fake or unsuitable pesticides;

b) *Zero Hunger*

This SDG is targeting to end hunger, achieving food security, and improving nutrition and promote sustainable agriculture. Safe use and handling of pesticides can boost the productivity of agricultural sector on which poor communities depend. However, when poorly managed, pesticides can pose significant risks to human health, cause pollution and land degradation, impacting livelihoods in the agricultural sector that might affect achievement of Zero hunger goal.

c) *No poverty in all its forms*

This SDG is targeting to end hunger that has impact to the welfare of people. Therefore, sound management of pesticides contributes to increased agricultural productivity that ensures food security as well as increased income per household level. This leads to the

¹⁰Emmy Lema *et. al*, Agrochemicals use in horticulture industry in Tanzania and their potential impact to water resources, 2014

achievement of poverty alleviation in all its forms since farmers are in a position of accessing other basic needs.

d) Clean Water and Sanitation:

This goal is focusing on ensuring availability and sustainable management of water and sanitation. Pesticides application in agricultural activities, have impact on the surface water bodies and ground water (by leaching), and can travel long distances affecting communities depending on those water sources for household uses and biodiversity in areas far from where pesticides were used. This means that proper pesticides management ensures availability of safe water.

In this regard, the Controller and Auditor General decided to carry-out a performance audit on the Management of Pesticides in Tanzania, as proper pesticides management will positively influence agricultural sustainability in the country.

1.3 Audit Design

1.3.1 Audit Objective

The audit objective was to determine whether the Ministry of Agriculture through the Crop Development Division and the Tropical Pesticides Research Institute (TPRI) efficiently manage the quality of pesticides to safeguard against human health risks and environmental degradation in order to ensure sustainability of land productivity.

Specifically, the audit focused mainly on determining whether the:

- a) Pesticides available on the market are up to standard and registered for use in Tanzania;
- b) Implementation of pesticides registration activities are adequately conducted and guarantee that only safe pesticides registered are sold in the country;
- c) Trainings to farmers, Pesticides sellers and agricultural extension officers are timely and properly conducted and contribute to proper pesticides distribution and use;
- d) Inspection of Pesticides sellers is functioning well and ensures availability of registered and good quality pesticides in the market;
- e) Coordination of activities for pesticides registration, training and inspection is in place and functioning well; and
- f) Monitoring of activities for pesticides registration, training and inspection is in place and functioning well.

1.3.2 Audit Scope

The Ministry of Agriculture was the main audited entity. Within the Ministry of Agriculture, the audit mainly focused on the Crop Development Division and the Tropical Pesticides Research Institute. Both are reporting to the Ministry and are charged with the duty of managing the quality and use of locally manufactured and imported pesticides in the country.

The audit focused mainly on the availability of registered pesticides in the market; adequacy of coordination and monitoring activities for registration of pesticides, training and inspection activities; proper implementation of pesticides registration; training to farmers, Pesticides sellers and agricultural extension officers; and adequacy of inspection of Pesticides sellers to verify whether there is proper pesticides distribution and uses in the country.

The audit examined if pesticides available in the market fits to be used by farmers. On the coordination, the audit focus was to examine the existence of coordination framework as well as presence and adherence to the coordination plans between different actors. Under monitoring the following issues were covered: existence of functioning monitoring plan and framework; monitoring indicators, set targets and goals; how monitoring activities are executed and reported.

Similarly, the audit examined the implementation of pesticides registration activities and covered aspects such as evaluation of health and environment risk; establishment of registration procedures and its implementation; mechanism in place for ensuring only registered pesticides are sold in the market; periodic updating of all registered pesticides; and existence of re- registration procedures and its implementation.

Also, the audit focused on examining trainings conducted to farmers, pesticides sellers and agricultural extension officers and covered aspects such as establishment of training plan; adequacy of training conducted to pesticides sellers, farmers and agriculture extension officers; mechanism in place to ensure farmers and agriculture extension officers are properly trained; and if monitoring and evaluation was conducted to establish effectiveness of conducted trainings to farmers, pesticides sellers and agriculture extension officers.

Moreover, inspection activities to pesticides sellers and Ports of entry were examined. Under this aspect the focus were on establishment of inspection policies and procedures; inspection plan based on identified risk; availability and allocation of qualified inspectors; implementation

of inspection activities; authority of inspectors to enforce action as well follow up on action taken.

The audit focused mainly in three categories of pesticides that are highly used in agricultural activities namely, insecticides, herbicides, fungicides and rodenticides. These pesticides are distributed to farmers through pesticide sellers.

For the purpose of obtaining strong evidence other key players such as President's Office - Regional Administration and Local Government (PO-RALG), selected Local Government Authorities, Ports of Entry, Pesticides sellers and Farmers' Associations were covered.

The audit covered the period from July 2015 to December, 2017. The selected period enabled the auditors to establish performance trend including the current picture regarding management of pesticides in the country; and were able to develop reliable conclusions relating to the findings.

1.3.3 Sampling, Methods for data collection and Analysis

The audit team gathered reliable and sufficient audit evidences to address the audit questions in order to achieve objective of the audit. Data was gathered from various entities in different regions through different methods namely, document review, interview and observation.

(a) Sampling Techniques Used

The Audit team used non-probability sampling method to select regions and districts that were visited. All regions in Tanzania mainland were grouped into five agricultural zones which are Southern Highland, Northern, Lake, Eastern and Central Zones.

The audit covered the entire country. However, the audit team visited six regions and six Local Government Authorities (LGAs). Purposive sampling was used during the selection of visited regions and LGAs by considering criteria such as agricultural geographical zones, types of crops produced and level of pesticides uses as well as level of contribution to national food reserve.

Regions and Local Government Authorities (LGAs) that were visited are:

- a) Arusha Region - Meru District Council was visited since horticulture which involve high usage of pesticides is highly practiced;
- b) Simiyu Region - Itilima District Council was visited due to high usage of pesticides among cotton growers;
- c) Tabora Region - Urambo District Council was visited since Urambo is among the top districts in the country where tobacco is highly grown;
- d) Morogoro Region - Morogoro Rural District Council was visited since is involved in horticulture as well as other food crops;
- e) Mtwara Region - Masasi District Council was visited due to high cultivation of cashew nut that involve high usage of pesticides at different phases; and
- f) Njombe Region - Njombe Town Council was visited since there is high cultivation of Irish potatoes and horticulture that involve usage of pesticides for different stages of growing.

(b) Methods Used for Data Collection

Both qualitative and quantitative data were collected to provide strong evidence regarding pesticides management in Tanzania. Three different methods were used to collect the required qualitative and quantitative data which are *interviews*, *review of documents* and *physical observations*. The details for each method are provided below:

(i) Documents Review

Various documents from the Ministry of Agriculture, Tropical Pesticides Research Institute, President's Office - Regional Administration and Local Government, six selected LGAs¹¹ and Pesticides Committees were reviewed. The documents were reviewed with an intention of gaining comprehensive and reliable information on the management of pesticides in areas of pesticides registration, training, inspection and coordination. Also, to be able to identify the risks/impact and possible causes and thereafter be able to gather evidences and come up with clear findings and recommendations.

Reviewed documents were for the period starting from July 2015 to December, 2017 and included Policies, Legislations, Plans, Performance reports, Guidelines, Researches and Evaluations. Category

¹¹ Meru DC, Itilima DC, Urambo DC, Masasi DC, Morogoro DC and Njombe DC.

of documents reviewed and reasons for their reviews are detailed in **Appendix Three of this report.**

(ii) Interviews

Different Officials were interviewed from the Ministry of Agriculture, Tropical Pesticides Research Institute, President's Office - Regional Administration and Local Government and six selected LGAs. Officials interviewed from the visited entities were the agricultural officials, inspectors, pesticides registrar, and legal officials responsible for pesticides management.

Pesticides sellers and farmers were interviewed to assess how they comply with pesticides requirement as well as their level of knowledge on pesticides management. Also, audit team interviewed agricultural extension officers on how they disseminate knowledge on pesticides management to farmers and on how they were assisting farmers in their respective areas.

Members of the Pesticides Approval and Registration Technical Committee (PARTS) and National Plant Protection Advisory Committee (NPPAC) were also interviewed to assess their involvement in pesticide registration activities specifically scrutinizing the quality of pesticides submitted for testing and their recommendations and approvals.

During the interviews, audit team was guided by the interview questions developed depending on the responsibilities of the interviewed officials. **Refer Appendix four** for more details on interviewed officials.

(iii) Physical Observation

The audit team visited eight (8) villages in 6 sampled LGAs to observe pesticides activities that were taking place during the visit. Upon observation process which took place in twelve (12) farmers' households and twelve (12) farms, auditors interviewed farmers to assess their knowledge concerning pesticides management and made observations on how they apply and use pesticides as well as storage of pesticides in their households.

Also, agricultural extension officers were observed on how they assisted farmers on applying and using pesticides whenever need arise. List of villages visited were determined during the interviews with respective LGAs' agricultural officials. The criteria for selection of villages were: level of pesticides use per village, level of agricultural activities taking place in those villages and whether training to farmers on pesticides management had been conducted.

Auditors accompanied pesticides inspectors during their inspections to assess how they deal with observed violations by the visited pesticides sellers. In each LGA, auditors visited two pesticides sellers, making the total of twelve (12) pesticides sellers in 5 visited LGAs. Prior to the observation, auditors communicated with pesticides inspectors to get their activity plan and their prepared schedule which shows where and when they would join them.

The criteria for selection of areas to accompany pesticides inspectors were: areas with high risk (pesticides sellers i.e. those with high volume of pesticides in their shops and those with registered pesticides that have high risk to human health and environment). Farmers were visited to assess their knowledge level and how they handle and use pesticides. In all visited areas, auditors were taking notes and pictures as evidence of what have been observed.

(c) Methods for Data Analysis

The audit team analyzed data gathered through documents review, interviews and physical observations by separating and grouping them into qualitative and quantitative data so that they could be easily analysed using different approaches.

Quantitative data were analysed by organising, summarizing and compiling them using spreadsheets as well as different statistical methods of data computations. The analysed data were presented using data tabulations in tables, histograms and graphs with quantitative labels on indicators, charts and percentage distribution. The presented data were then explained in order to answer the ‘what’ and ‘how many’ questions.

Qualitative data were described, compared and related so that they could be extracted and explained in order for the data to be contended, defended and extended to bring into a finding as compared to audit objective. The analysis involved looking for categories such as events, descriptions, looking for consistencies or differences so as to develop theory from the gathered data.

The information was structured and divided to audit questions and sub-questions followed by text compilation. Then the text compiled (whether it has been obtained from documents or interviews) into these categories.

The audit questions and sub-questions were recorded in the columns and different interviews or reviewed documents in the rows. Keywords

indicating the relevant evidence were recorded in the cells to get an overview for analysis of similar threads and differences.

Depending on the number of interviews and documents reviewed, the information was transformed into quantitative data by going through interviews/documents to see how many of them included a positive statement about a certain issue, or how many have made similar statements. A calculation was made, expressing the percentage of investigated documents or interviews that include a particular type of statement.

1.3.4 Assessment Criteria

The assessment criteria were extracted from various sources such as policies, legislations, guidelines and best practices as described below:

Implementation of Pesticides Registration Activities

International Code of Conduct of 2010 and 2014 require the Ministry of Agriculture and Tropical Pesticides Research Institute to evaluate/assess health and environment risks associated with regulated pesticides used in the country. It also requires the Ministry of Agriculture to ensure policies and procedures to guide registration of pesticides in the country are developed;

According to the Plant Protection Regulations of 1998, section 19, the Ministry of Agriculture through Plant Health Services Section and TPRI are required to regulate pesticides sold in the country by registering them in accordance with established policies and procedures.

Similarly, Plant Protection Act No 13 of 1997, section 18 (5) required the Ministry of Agriculture through Plant Health Services Section and TPRI to conduct periodic review of previously approved pesticides.

The Ministry of Agriculture and Tropical Pesticides Research Institute are required to keep record of all registered pesticides and make the recorded information accessible to users (*Plant Protection Act No. 13 of 1997 section 18 (5) and the International Code of Conduct on distribution and Use of the pesticides, 2010 and 2014*)

Training of Pesticides Sellers, Farmers and Agricultural Extension Officers

International Code of Conduct in Pesticides Management of 2014 required the Ministry of Agriculture to plan on dissemination of education on pesticides management in the country, and set proper performance target setting and monitoring;

The Tropical Pesticides Research Institute is required to train pesticides sellers on pesticides business requirements, and proper pesticides handling and uses (*Plant Protection Regulation of 1998, Section 31 (2) (a) and (3) (a); and International Code of Conduct on Distribution and Use of the Pesticides, 2010 and 2014*)

The Ministry of Agriculture through Plant Health Services and Tropical Pesticides Research Institute is required to ensure farmers and Agriculture extension officers are capacitated with pesticide knowledge. This will facilitate proper use and handling of pesticides in order to attain Good Agricultural Practices (GAP) that include pesticides management (*Plant Protection Regulation of 1998, Section 31 and Code of Conduct on Distribution and Use of the Pesticides, 2010 and 2014*)

The Ministry of Agriculture and TPRI are required to monitor and evaluate pesticides training provided to pesticides dealers, farmers and Agricultural Extension Officers (*International Code of Conduct on Pesticides Management, 2014 and FAO Training Manual on Good Agricultural Practices (GAP) on Horticultural Production for Extension Staff in Tanzania, 2010*).

Inspection of Pesticides Sellers

The Ministry is required to develop and communicate pesticides inspection policies and procedures that clearly state roles and responsibilities of pesticides inspectors in controlling pesticide business and usage (*International Code of Conduct on Pesticides Distribution, 2010*)

The Ministry of Agriculture and TPRI are required to have a risk- based plan for proper inspections of pesticides distribution in the country to ensure distribution of the registered pesticides only. They are also required to recruit sufficient number of qualified and registered pesticides inspectors, and allocate the required resources so that required dealers inspections are effectively completed (*Plant Protection Regulation of 1998, Section (10) and International Code of Conduct on distribution and Use of the Pesticides, 2014*).

Pesticides Inspectors are required to conduct inspections in accordance with the risk based inspection plan, applicable legislation, regulations, policies and procedures (*International Code of Conduct on Pesticides Distribution of 2010, and Code of Conduct on Pesticides Management of 2014*).

The Ministry of Agriculture and Tropical Pesticides Research Institute are required to authorize pesticides inspectors to enforce regulations / business requirements on pesticides dealers; and confirm that Pesticides sellers are implementing corrective actions required by pesticides inspectors. The Ministry is also required to take action to correct areas where deficiencies exist as well as where pesticides inspectors do not have sufficient authority to carry out their assigned roles and responsibilities (*Plant Protection Act No. 13 of 1997, Section (34)*).

Coordination of Required Activities on Pesticides Registration, Training and Inspection

The Ministry of Agriculture is required to develop a plan to coordinate and monitor pesticides activities in the country and take action to address problems that arise (*Agricultural Policy of 2013, The Strategic Plan of the Ministry of Agriculture, 2011 - 2016; and International Code of Conduct of 2010 and 2014*)

1.4 Data Validation Process

The Ministry of Agriculture, Food Security and Cooperatives through the Crop Development Division and Tropical Pesticides Research Institute were given an opportunity to go through the draft audit report.

Both, the Ministry of Agriculture and Tropical Pesticides Research Institute confirmed the accuracy of the information presented in this report. The comments and responses of Crop Development Division and Tropical Pesticides Research Institute are shown in ***Appendix One***.

1.5 Standards Used for the Audit

The audit was conducted in accordance with the International Organization of Supreme Audit Institution's (INTOSAI) performance auditing standards. The standards require the audit team to plan and perform the audit so as to obtain sufficient and appropriate evidence as well as, provide a reasonable basis for findings and conclusions based on audit objective(s).

The audit team believes the evidences obtained provide a reasonable basis for the findings and conclusions based on the audit objectives.

1.6 Structure of the Report

This audit report consists of five chapters whereby the remaining chapters cover the following:

- *Chapter Two* presents the description of the system for managing the quality of pesticides in the country. Legal framework, processes, key players and stakeholders together with their responsibilities concerning management of quality of pesticides have been covered;
- *Chapter Three, Four and Five* presents the findings of the audit covering all six sub-objectives of the audit;
- *Chapter Six* provides overall conclusion and specific conclusions for the audit; and
- *Chapter Seven* outlines the audit recommendations that can be implemented by the Ministry of Agriculture and Tropical Pesticides Research Institute so as to improve the system for the management of pesticides quality in the country.

CHAPTER TWO

SYSTEM FOR MANAGING THE QUALITY OF PESTICIDES IN AGRICULTURAL ACTIVITIES IN TANZANIA

2.1 Introduction

This chapter describes the system for managing the quality of pesticides in agricultural activities in Tanzania. It also covers legal and administrative framework, key stakeholders involved and their main responsibilities and processes for management of pesticides in the country.

2.2 Policies, Laws and Regulations for Management of Pesticides

2.2.1 National Agricultural Policy of 2013

This is the main policy governing agricultural sector in the country; it calls for more access, appropriate use and storage of pesticides for the purpose of increasing agricultural productivity as well as meeting international market standards for agricultural products.

2.2.2 Governing Legislations

Management of pesticides in agricultural activities is mainly regulated by two legislations namely, the Plant Protection Act No. 13 of 1997 and its Regulations of 1998, and the Environmental Management Act No. 20 of 2004.

Table 2.1 summarizes the main legislations in the area of pesticides management and responsible entities for their enforcement:

Table 2.1: Main Legislations for the Management of pesticides in the country

Legislation	Issues on Pesticide Covered in the legislation	Responsible Entities
<i>Plant Protection Act, No. 13 of 1997 and its Regulations of 1998</i>	It describes the roles of various stakeholders regarding the management of quality of pesticides, procedures for importation, registration, certification and approvals of pesticides; and conditions for the licensing and keeping record of the pesticides. Pesticides	Ministry of Agriculture, Tropical Pesticides Research Institute,

	labeling, packaging and storage requirement are also stated in this act.	
<i>The Environment Management Act No.20 of 2004</i>	Emphasize the need for establishment of the Environment Section for each Sector Ministries, power to regulate persistent organic pollutants; procedures for handling certain hazardous chemicals and pesticides	Ministry of Agriculture and National Environmental Management Council

Source: Extracts from the Plant Protection Act, No. 13 of 1997 and its Regulations of 1998 and the Environment Management Act No.20 of 2004

2.2.3 Established Goals and Objectives for Managing Pesticides

Among the objectives of the Ministry of Agriculture is ensuring that:

- Levels of agricultural production, productivity and quality are raised;
- Development, promotion and use of appropriate agricultural technologies increased; and
- Strengthened Capacity of Local Government Authorities to ensure improved quality of agricultural services.

Functions of Crop Development Directorate in relation to Pesticides

- Formulate, coordinate, review and monitor implementation of crop development policies, legislations and rules;
- Develop crop development strategies and programmes;
- Build the capacity of Regional Secretariats (RSs) and Local Government Authorities (LGAs) in crop development; and
- Promote sustainable agriculture

Functions of Tropical Pesticides Research Institute

Tropical Pesticides Research Institute has three out of nine objectives related with management of quality of pesticides. These objectives are to ensure:

- Users are supplied with pesticides of the right quality;
- Consumers, crop exporters, importers and farmers are continually provided with authentic information on pesticide exposure and residues in foods and the environment; and
- Skills for handling pesticides are available for effective functioning of the pesticides subsector.

2.2.4 Strategies for Managing the Quality of Pesticides in Tanzania

To ensure that there is proper management of the quality of pesticides in order to control its associated risks to human health and environment, the Ministry of Agriculture established the following strategies:

- a) Recruitment of 75 pesticides inspectors, pesticides registration Officers and Agriculture Extension officers;
- b) Establishment of various guidelines and plans to assess Impact of Agriculture activities which include pesticides application on Environment. These include Agriculture Sector Environment Impact Assessment Guideline, 2013 and Agricultural Sector Environment Action Plan (ASEAP) of 2012 - 2017.
- c) Train at least 80 percent of all Gazzeted Inspectors on pesticides inspection and certification by December, 2020.
- d) Authorization of Tropical Pesticides Research Institute to retain fee from pesticides registration and importation by July 2016 which improved inspection to pesticides sellers which is conducted in quarterly basis.
- e) Monitoring of Health and environment Impact assessment related with pesticides uses annually.

2.3 Roles of Key Players and Stakeholders

The system for managing pesticides in agricultural activities involves various players such as the Ministry of Agriculture, Tropical Pesticides Research Institute (TPRI), President's Office - Regional Administration and Local Government (PO-RALG), National Plant Protection and Advisory Committee (NPPAC), Pesticides Approval and Registration Technical Committee (PARTC), Pesticides Dealers, Users, Tanzania Bureau of Standard, National Environment Management Council and Non-Governmental Organisations.

Detailed responsibilities of each of the above mentioned key players and stakeholders:

2.3.1 Roles and Responsibilities of Key Players

(i) Ministry of Agriculture

The Ministry of Agriculture is the main overseer of the agricultural activities in the country. Among such activities is the control of quality of pesticides. It consists of eight divisions of which two are directly responsible for the management of pesticides; and these are Crop Development and Agricultural Research and Training Development Divisions.

The Ministry of Agriculture through the Plant Health Service Unit which is under the Crop Development Division, is responsible for the provision of regulatory services on the registration of pesticides and control of quality and standards of plant protection substances. This Unit is also responsible for enforcing the implementation of plant protection legislations. Other functions of this Unit are to promote the use of information, communication technology, develop and maintain plant health data bank and to monitor bio-safety and bio-security aspects in agriculture.

The Ministry of Agriculture in collaboration with Tropical Pesticides Research Institute is responsible for registering pesticides in the country. This is done in collaboration with the National Plant Protection and Advisory Committee (NPPAC) and the Pesticides Approval and Registration Technical Sub - Committee (PARTS) as advisory bodies during registration process.

Assistance Director of Plant Health Services Section under the Crop Development Division is chief in - charge for inspection of pesticides and other plant related materials in the country.

(ii) Tropical Pesticides Research Institute

According to Section 32 of the Plant Protection Act No. 13, 1997, the Tropical Pesticides Research Institute is responsible for participating in the monitoring of locally manufactured and imported pesticides. It is responsible for conducting testing and analysis of pesticides before submitting to Pesticides Approval and Registration Technical Committee (PARTS)¹² for approval process.

¹² This is a sub-committee of the National Plant Protection Advisory Committee which is responsible for provision of recommendations for pesticides approval and advises the registrar on registration issues

This is done to ensure that pesticides are effective for the control of crop pests and diseases and pose minimum effects to human, animal and environment.

(iii) National Plant Protection Advisory Committee - NPPAC

NPPAC is responsible for approval of pesticides after being recommended by Pesticides Approval and Registration Technical Committee (PARTS). It is also responsible for coordinating plant protection activities that include pesticides management of its sub-committee. Furthermore, it maintains a system of collaboration with any national or international body dealing with plant protection.

This committee is required to meet quarterly every year to deliberate and propose to the Minister of Agriculture areas on plant protection legislations which need to be updated.

The committee is composed of members from various Ministries¹³, Academic institutions¹⁴, plant protection substances manufacturer, importer, distributor, consumer and promoters of safe uses and sub-committee involved with plant protection substances.

(iv) Pesticides Approval and Registration Technical Sub - Committee (PARTS)

This is a sub-committee of the National Plant Protection Advisory Committee which is responsible for provision of recommendations for pesticides approval. In annual basis, this committee receives pesticides registration requests with attached testing results from Registrar for further analysis before recommending to the Minister through National Plant Protection Advisory Committee for the approval.

The committee is composed of members including: Registrar of Pesticides, Director of Research of the Ministry of Agriculture, Officers in-charge (from veterinary services, commodity standards control and Department for crop Science of SUA), Chief Government Chemist, environmental toxicologist from National Environmental Management Council (NEMC) and Representatives from Chemical and Process Engineering Department of UDSM and from TPRI.

2.3.2 Roles and Responsibilities of other Stakeholders

There are various stakeholders responsible for implementing pesticides activities; these include President's Office - Regional Administration

¹³Ministry of Agriculture, Health, Natural Resources, Environment, Justice and Finance, Agriculture of the Revolutionary Government of Zanzibar;

¹⁴ University of Agriculture

and Local Government (PO-RALG), pesticides sellers and farmers, Tanzania Bureau of Standards and National Environment Management Councils. Roles of each stakeholder are as explained below:

President's Office - Regional Administration and Local Government

According to the Functions and Organization structure of PO-RALG of February, 2015, PO-RALG is responsible for coordinating and implementing agricultural programs and activities in Local Government Authorities. This is done through Economic and Productive Sectors Section which is under Sector Coordination Division. Among other activities, the Economic and Productive Sectors Section is responsible for:

- a) Participating in overseeing implementation of various national agricultural priority initiatives; and
- b) Facilitating organization and management of Agriculture sectors' Extension Service delivery in Regional Secretariats and Local Government Authorities;

As shown in the Strategic Plan of PO-RALG for the period from 2011/12 to 2015/16, activities will be implemented through:

- a) Provision of capacity building on agricultural issues to extension officers in Local Government Authorities;
- b) Conducting supervision visits to monitor the implementation of various agricultural activities in Local Government Authorities; and
- c) Prepare and disseminate various guidelines on agricultural issues including pesticides management.

Pesticides Sellers

These are responsible for selling pesticides to end users/farmers. They are also responsible for providing technical advice to farmers on the proper usage of pesticides for controlling crop pests and diseases in agricultural products without posing effects to human/animal health and protect environmental pollution.

They are also responsible for supervising all technical operations on their areas to ensure that pesticides are distributed in a safe manner.

Farmers

Farmers are key users of the pesticides during agricultural activities. They are responsible for ensuring that they use appropriate protective gears during the application of pesticides; safe storage and

proper dispose of pesticides containers or unwanted quantities of pesticides.

The National Environmental Management Council

The National Environmental Management Council was established under part III (d) (16)-1 of the Environment Management Act, of 2004. Its mandate is to undertake enforcement, compliance, review and monitoring of environmental impact assessment. It exercises general supervision and coordination over all matters relating to the environment in the country.

The Council is required to collaborate with relevant sector ministries to:

- a) Carry-out surveys which will assist in the proper management and conservation of the environment i.e. Environmental Impact Risk Assessment; and
- b) enforce and ensure compliance of the national environmental quality standards.

Non- Governmental Organizations

Non-Governmental Organizations (NGOs) play a role of being watchdogs on the use of pesticides in the country. They are responsible for dissemination of knowledge to farmers, pesticides sellers and agricultural extension officers regarding management of pesticides.

Some of the well known NGOs that are active on promoting best practices regarding management of pesticides in the country include:

- a) *Cultivating New Frontiers in Agriculture (CNFA)* that work with government entities and communities to build customized local and global partnerships that meet the world's growing demand for food;
- b) *Tanzania Agricultural Market Development Trust (TAGMARK)* that focuses on ensuring that incomes and employment opportunities of poor Tanzanians are increased in agricultural Value Chains in Tanzania through interventions that improve smallholder farmers and market access; and
- c) *AGENDA for the Environment* which is very active in pesticides industrial chemicals used in the country especially issues on human health and environment.

2.4 Allocated Resources for Managing Quality of Pesticides

In managing quality of pesticides, the responsible government entities have allocated resources both human and financial as detailed below:

2.4.1 Financial Arrangement for the Management of Pesticides in the Country

At Ministerial Level

The Ministry of Agriculture depend on various revenue sources such as government subvention, own sources and donor funds for financing activities for the management of quality of pesticides. These activities are performed by Plant Health Service Section (Crop Development Division) and Tropical Pesticides Research Institute.

Table 2.2 provides the Financial Commitment from various sources for implementing agriculture activities including Pesticides activities in the country.

Table 2.2: Financial Commitment for Implementing Agriculture Activities from July 2015 -June 2018 at National Level

Entity/Division/Section	Budgeted Funds Financial Years (Million TZS)					
	2015/16		2016/2017		2017/2018	
	Budgeted	Released	Budgeted	Released	Budgeted	Released
Ministry of Agriculture	206,816	82,736	210,359	92,490	214,815	48,465
Crop Development	92,086	28,745	53,586	37,360	53,270	14,442
Plant Health Services	2,364	1,442	690	-	957.6	897.3
TPRI	1,231	906k	839	780	1,626	1,579
Registrar	345	345	576	576	412	412

Source: Ministry of Agriculture's *Medium Term Expenditure Framework & Annual Report 2015/16, 2016/17 & 2017/18 (2018)*

At Local Government Authority Level

Local Government Authorities are planning and budgeting for the implementation of agricultural activities that include managing pesticides as shown in Table 2.3

Table 2.3: Financial Commitment for Agricultural Activities from July 2015 -June 2018 at Local Government Level

Name of LGAs	Funds for each Financial Year (In Million TZS)					
	2015/16		2016/2017		2017/2018	
	Budgeted	Released	Budgeted	Released	Budgeted	Released
Meru DC	35	7	32	17	43	6
Morogoro DC	380	1,009	274	6	212	5
Itilima DC	261	17	140	7	91	12
Urambo DC	85	13	84	63	72	10
Njombe TC	56	9	62	12	97	9
Masasi DC	30	-	118	88	285	67

Source: Auditor Analysis (2018) from Medium Term Expenditure Framework for Individual LGAs for 2015/16, 2016/17 & 2017/18

2.4.2 Allocated Human Resources in Responsible Entities

Human resources such as pesticides inspectors and registration officers play important role towards effective management of pesticides quality in Tanzania.

Pesticides inspectors are responsible for ensuring only pesticides that are fit for farmers' consumption are sold in the market through inspection at pesticides seller's shops and at entry point. Similarly, Pesticides registration officers are responsible for examining the efficacy of the pesticides before registered. The required human resources under each institution are as follows:

Table 2.4: Human Resource status at Plant Health Section and Tropical Pesticides Research Institutes

Entity	Type of Human resource	Number of Staff required	Number of staff allocated	Shortage staff	Percentage of Shortage
Ministry of Agriculture	Inspectors	230	165	65	28
Tropical Pesticides Research Institute	Inspectors	20	9	11	55
	Pesticides registration officers	10	4	6	60

Source: Auditors' Analysis (2018) from IKAMA of Visited Audited Entities

Table 2.4 shows that, there is shortage of human resources to facilitate pesticides management activities at both the Ministry of Agriculture and Tropical Pesticides Research Institute. The Ministry of Agriculture has a shortage of inspectors by 28%, while TPRI has a

shortage of inspectors by 55% and shortage of pesticides registration officers by 60%.

2.5 Processes for Management of Pesticides in Agricultural Activities

The sound management of quality of pesticides includes the registration and the importation of pesticides, certification of pesticides business; compliance and enforcement of pesticides business/usage and coordination among the key stakeholders involved in the management of pesticides in the country. Below is the detailed information for each stage:

2.5.1 Registration of Pesticides

Plant Protection Regulation of 1998, Section (19) requires the Ministry of Agriculture and Tropical Pesticides Research Institute to register all pesticides before selling them in the market.

Pesticides sellers are required to initiate the application process by filing an application form and submit it to the pesticides registrar at Tropical Pesticides Research Institute. TPRI has to ensure that pesticides are tested and analyzed.

2.5.2 Knowledge on Pesticides Business

According to Section 31 of Plant Protection Regulation of 1998, training on pesticides is one of the requirements for certification of pesticides business dealers. This is because dealers are required to have pesticides knowledge and skills to ensure safety to human, animals, plants and environment during the distribution and use of pesticides by educating farmers on proper pesticides handling. In this regard, Tropical Pesticides Research Institute is required to conduct training to all pesticides business dealers.

Similarly, pesticides sellers have to ensure farmers are equipped with pesticides knowledge when purchasing pesticides from their shops.

2.5.3 Inspection of Pesticides Sellers and Ports of Entry

As described in Plant Protection Regulation of 1998, section 10, inspection of pesticide business for compliance is carried out by qualified and skilled Pesticides Inspectors from Tropical Pesticides Research Institute and the Ministry of Agriculture (Plant Health Services - PHS).

Inspection activities involve checking if pesticides sellers and importers are adhering to the pesticide business requirements such as being registered. Also, to find out if they have the necessary permits, abide to the safety requirements, keep records, pesticides containers are proper labeled, packing and storage of pesticides.

2.5.4 Coordination of Pesticides Activities

Pesticide management involves different Ministries and other levels of government. Coordination of these activities is therefore important, within the government and among the broad range of stakeholders¹⁵. According to Agriculture Policy of 2013 and Strategic Plan of the Ministry of Agriculture of 2011 to 2016, the Ministry is responsible for coordinating and monitoring agriculture activities. Some of the activities are related with pesticides registration, training and inspection.

The coordination is conducted through sharing of reports on implementation of pesticides registration, training and inspection activities. Also, Ministry has to coordinate steering committee meetings with key players such as Tropical Pesticides Research Institute, and President's Office Regional Administration and Local Government for the purpose of discussing efficiency and effectiveness of pesticides registration, training and inspection.

Table 2.5 indicates actors that are directly involved in different pesticides activities in the country:

Table 2.5: Actors Involved in Managing Pesticides Activities

No	Activity	Main Actor
1	Registration of Pesticides	Ministry of Agriculture, Tropical Pesticides Research Institute, National Plant Protection Advisory Committee (NPPA) and Approval and Registration Technical Sub-committee (PARTS)
2	Knowledge on Pesticides Issues	Ministry of Agriculture, Tropical Pesticides Research Institute, National Plant Protection Advisory Committee and PO- RALG
3	Pesticides Inspection	Ministry of Agriculture and Tropical Pesticides Research Institute, National Plant Protection Advisory Committee
4	Manufacturing, importation and Distribution	Private Sector and Civil Society Organization dealing with plant protection substances
5	Management of hazardous (Disposal of Pesticides)	National Environment Management Council

Source: Auditors' Analysis (2018) from Plant Protection Act No. 13 of 1997 and the Environment Management Act No.20 of 2004

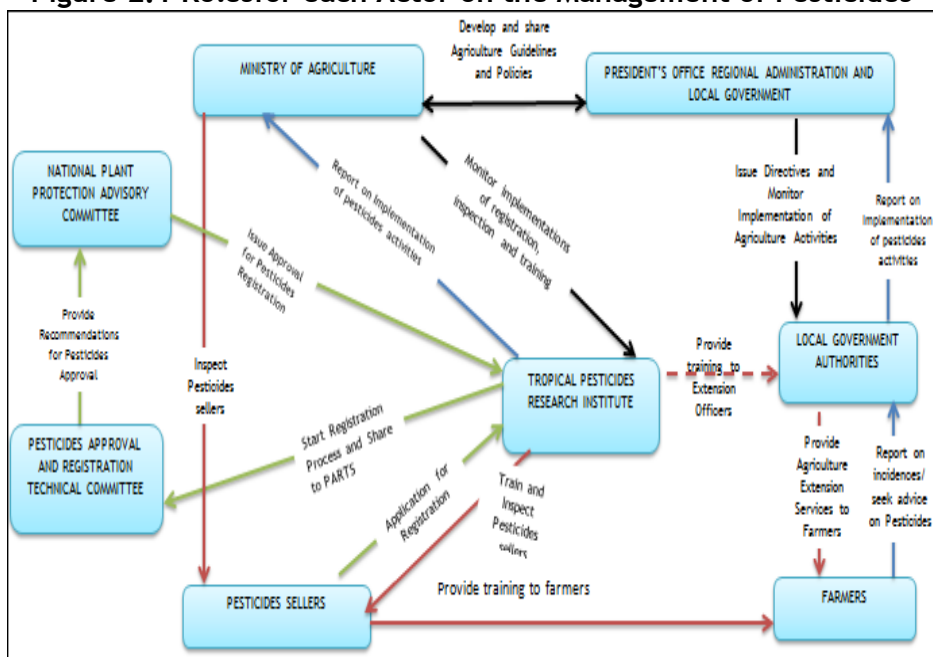
¹⁵International Code of Conduct on the Distribution and Use of the pesticides - Guidance on Pest and Pesticides Management Policy Development (2010)-

2.5.5 Monitoring of Pesticides Activities

Among the key role of the Ministry of Agriculture as shown in the National Agriculture Policy of 2013, is to monitor the overall performance of agricultural sector. This includes pesticides management activities.

The monitoring is conducted through supervision as well as reporting on the progress of activities regarding management of pesticides such as registration, inspection and training. Tropical Pesticides Research Institute is required to report on the implementation of pesticides activities to Permanent Secretary of the Ministry of Agriculture. These activities are performed by different actors as shown in table 2.4 above.

Figure 2.1 Roles for each Actor on the Management of Pesticides



CHAPTER THREE

AVAILABILITY AND IMPLEMENTATION OF PESTICIDES REGISTRATION ACTIVITIES

3.1 Introduction

This chapter presents findings on the performance of the Ministry of Agriculture through Crop Development Division and Tropical Pesticides Research Institute on availability and implementation of pesticides registration activities in the country.

The findings are addressing two specific audit objectives described in **Section 1.3.1** of this report:

- a) Extent of the problems related with the standards of pesticides available in the market for farmers consumption; and
- b) Adequacy of the implementation of pesticides registration activities conducted and guarantees that registered pesticides sold in the country are safe to use.

3.2 Extent of Availability of Unregistered Pesticides in Market

Presence of un-registered Pesticides in the Market

Audit team interviewed officials from the Ministry of Agriculture, Tropical Pesticides Research Institute, entry point of Namanga, Ministry's zone office of Tengeru and six visited LGAs to verify availability of unregistered pesticides in the market.

Based on the same interview, it was noted that unregistered pesticides were found in all districts and regions of Tanzania. However, this was more prevalent in regions and districts that are bordering other countries, for example, Mtwara, Mbeya, Kigoma, Tanga, Kagera and Arusha regions.

Reviewed inspection reports prepared and published by Tropical Pesticides Research Institute and stakeholders meeting reports¹⁶ revealed the same problem of having unregistered pesticides circulating in the market.

The audit team reviewed twelve (12) inspection reports for the period of July 2016 to December, 2017 that were conducted by TPRI aimed at processes involved in inspecting pesticides such as importation, selling and labeling and found out that, there were pesticides such as Abamite, Doom, Boss, Lava, Lethal, and Romectin that were sold in the market without being registered by TPRI.

It was further reported that, these pesticides were not fit for Tanzania market. This is because these pesticides were not tested by TPRI and other Agricultural Research Institutes (ARIs) to examine their efficacy as far as Tanzania agricultural environment is concerned. It was further reported that, almost all pesticides shops in Mwanza and Shinyanga regions were found selling these types of unregistered pesticide.

Furthermore, through the review of these inspection reports, the audit team noted that, Twiga Gamma pesticides that was found in Shinyanga region was registered by TPRI but it was no longer fit for farmers consumption in the country. These pesticides had been removed by TPRI from a list of registered pesticides due to its effect in human health.

During the visit to eight villages¹⁷ in six LGAs¹⁸, farmers and agricultural extension officers also revealed the same problem of having unregistered pesticides in the market. Unregistered pesticides including Dudu- All 450 EC, Ninja Plus - 5EC, Dudu - Acelamectin 5% EC, and Sevin Dudu Dust were found in 7 out of 13 visited pesticides shop in all six LGAs as shown in **Photo 3.1**.

¹⁶Stakeholder Meeting, Dar es Salaam, September, 2017, Cotton Farming stakeholders meeting, Mwanza, July 2017 and Multi-Stakeholders' Workshop on Monitoring Programme of Severely Hazardous Pesticides Formulations, November 2016

¹⁷ Lakitatu, Ndatu, Urambo, Mvuha, Lagangabilili, Utalinguru, Napata and Magumuchila

¹⁸ Meru, Urambo, Itilima, Morogoro, Njombe and Masasi District Councils

It was found out that, before operationalization of Plant Protection Act No 13 of 1997, in July 1, 2001, there were 150 approved inspectors in the country out of which only 15 were posted at TPRI. This number was reported to decrease each year as some of them retired, died or were promoted to other senior positions.

Currently, the remaining qualified inspectors who have been approved by the Minister are 90 at the Ministry of Agriculture and nine (9) at TPRI. This number is very small compared to 1935 pesticides retail sellers who have to be regularly inspected. Despite of these 90 inspectors being qualified inspectors, they are neither regularly inspecting these pesticides sellers nor reporting on inspection conducted. When Auditors asked for inspection report at the Ministry of Agriculture none could be produced.

Even if all 99 inspectors were to be deployed to inspect pesticide sellers, the current ratio of qualified inspectors to pesticides sellers would be 1:20 resulting in a gap of 76 required pesticides inspectors. If the required number of pesticides inspectors were available as required by the Ministry and TPRI, the ratio would be 1:11 which would guarantee maximum impact from the pesticides inspections to be conducted.

Furthermore, through the interviews held with the Ministry of Agriculture and TPRI officials it was established that, apart from the existence of few skilled inspectors to facilitate pesticides inspections at Ports of entry and pesticides sellers' shops, still the available inspectors were un- evenly allocated leaving some entry points without inspectors.

Reports on Status of Inspections at Ports of entry from the Ministry of Agriculture noted that, 33 out of 50 Ports of entry have inspectors most of whom were not approved by the Minister. It was also indicated that 17 out 58 inspections points were not inspected because there were no inspectors allocated to the inspection points.

Similarly, TPRI which has a key role to play in regulating pesticides has only 9 inspectors entitled to conduct pesticides inspections throughout the country. Meanwhile, TPRI who are based and operating from Arusha are also operating at only three (3) Ports of entry; Tunduma, Mwanza and Dar es Salaam.

Table 3.1 shows inspectors that have been allocated at TPRI and the Ministry of Agriculture compared to actual requirements.

Table 3.1: Allocation of Pesticides Inspectors Vs Requirements

Work Station	Number of inspector required	Number of Inspectors allocated	Shortage of inspectors	Percentage of requirement (%)
TPRI	20	9	11	55
Ministry of Agriculture	230	165	65	28

Source: (Staffing Level requirements) IKAMA from Visited entities (2018)

Table 3.1 shows shortage of pesticides inspectors at both TPRI and the Ministry of Agriculture by 55 and 28 percent respectively.

Moreover, inspectors were not evenly allocated; this was because there were Ports of Entry and zonal offices under the Ministry of Agriculture with few or no inspectors to facilitate inspection activities.

Further review of the report on the list of Ports of Entry and Staffing Level requirements (IKAMA) as of September, 2017 revealed the existence of the same problem of inadequate number of inspectors at the Ministry of Agriculture.

The given reason for the inadequate allocation of inspectors was due to insufficient number of inspectors employed. There were delays in approving employment permit by President's Office Public Service Management leading to weak and insufficient inspectorate services. For example, TPRI requested employment permit for 49 officials between 2015/16 to 2017/18 but only received 5 officials.

(b) Unavailability of List of Registered Pesticides to Key Users

The audit team noted that list of registered pesticides was not known to key users such as agricultural extension officers and pesticides sellers. For example, interviewed agricultural extension officers in six visited LGAs revealed that, there were no distributed lists of registered pesticides.

Also, field visits conducted to pesticides sellers showed that there were no lists of registered pesticides in their shop, despite of TPRI being required to update and share the list to all key stakeholders annually.

(c) Illegal Importation of Pesticides in the Country

Interviews conducted with officials from the Ministry of Agriculture, TPRI, Ministry of Agriculture's zonal offices and Ports of entry showed existence of pesticides that were illegally imported in to the country. This was more prevalent in the regions that are bordering other countries in East and Central Africa such as Mtwara, Mbeya, Kigoma, Tanga, Kagera and Arusha.

This was evidenced through the inspection reports prepared by TPRI aimed at finding out information such as importation, selling and labeling of pesticides. The finding of the inspections showed that, there were pesticides that were imported in the country without following importation procedures such obtaining and paying for importation permits as well as being registered by TPRI. Table 3.2 shows status of illegally imported pesticides in various places.

Table 3.2: Status of Illegal Imported Pesticides to Few Inspected Regions for the period from 2016 to 2017

Period Inspection Conducted	Region Visited	Name of Illegally Imported Pesticides	Volume Per Pesticides	Responsible Supplier
2016	Mwanza, Geita, Shinyanga, Singida and Tabora	Mo - Karatep, Movil, Kumulus, Mo - Durs, Movor, Quickphos	Approximately 2000 litres	Agripro Tanzania Limited
2017	Dodoma, Morogoro and Singida	Shumba Super	2 cartons	Un named Supplier from Dar es Salaam
		Movil	5 Cartons	
		Mo - Karatep	4 Cartons	
		Mocron	4 Carton	
2017	Morogoro, Iringa, Tanga, Singida, Dodoma, Kilimanjaro and Mbeya	Mo 2, 4 -D, Amine Mo-Durs 48 EC, Movil 5 EC, Mo - Karatep5% EC, movor - 68 WP and Mocron 720 EC	No amount, only large quantity was stated in the report	Mocrops Tanzania Limited

Source: Inspection Reports from TPRI from 2015/2016 to 2017/2018

Also, when audit team visited Namanga Border Post in October, 2017, inspectors stationed at this border reported the same challenge of illegal importation of pesticides. They said that usually the importers

are carrying pesticides in small quantities either through porous or officials borders. Sometimes, in large quantities are hidden in the middle of stock to be imported.

Auditors did further review on reports¹⁹ prepared by TPRI and found that among major concerns during meetings was illegal importation of pesticides. These concerns were raised by pesticides sellers, agriculture extension officers and village based agro dealers.

This happened because of the weaknesses in the inspections conducted at Ports of Entry as explained below:

i. Lack of Modern Inspection Tools at Border Points

According to ISO/IEC 17020:2012(E), Requirements for the operation of various types of bodies performing inspection such as the Ministry of Agriculture and TPRI are supposed to have inspection tools to facilitate inspection of pesticides imported in the country.

According to the interviews held with pesticides inspectors from the Ministry of Agriculture and TPRI, it was noted that, inspections conducted at Ports of entry were not sufficient due to inadequate modern inspection tools to facilitate proper inspections. This was verified by interviewed officials from Namanga Border Post who reported lack of necessary tools such as gloves, mask, gumboots, pesticides quality scanner as well as pesticides inspection checklists.

This in turn has limited the capacity of inspectors stationed at Ports of entry to effectively inspect all the consignment at those Ports of Entry to establish whether imported pesticides are meeting the quality standards required.

The analysis of the availability of inspection tools at the Ministry of Agriculture and TPRI was made by assessing the availability of inspection tools against the required as shown in Table 3.3:

¹⁹Capacity Building Towards Multi - stakeholder Monitoring Program on Severe Hazardous Pesticides for the Implementation of Rotterdam Convention, November, 2016. And Stakeholders Meeting Report for Pesticides Sellers of July and September, 2017

Table 3.3: Status of Tools to Facilitate Inspection at Entry Point

Name of Entity	Name of Tool	Total Required	Total Available	shortage
Ministry of Agriculture	Protective Footwear	50 pcs	Nil	50 pcs
	Coverall/ Long sleeve Shirts	50 pcs	Nil	50 pcs
	Hat	50 pcs	Nil	50 pcs
	Safety Glasses/ Face Shield	50 pcs	Nil	50 pcs
	Respiratory Protective Devices	50 pcs	Nil	50 pcs
	Gloves	30 boxes	Nil	30 boxes
TPRI	Motor vehicles	3	1	2
	GPS	3	0	3

Source: Inspection Reports and Auditors' Analysis

Table 3.3 shows that, the Ministry of Agriculture and Tropical Pesticides Research Institute were lacking necessary working tools such as protective gears, motor vehicles and Global Positioning System (GPS) necessary for facilitating inspection of pesticides at Ports of entry. This implies that not all pesticides that were imported through our Ports of Entry were adequately inspected by the inspectors from the Ministry of Agriculture or TPRI.

ii. Low level of Pesticides Inspection Skills

It was further noted that the Ministry's inspectors at Ports of entry were not well skilled in the area of pesticides inspection as compared to inspectors from TPRI as shown in details in Section 5.2.3 of chapter five of this report.

iii. Frequency of Inspection

Review of inspection reports showed that, inspections to pesticides sellers were not regularly conducted creating an opportunity that allowed the selling of unregistered pesticides that had been illegally imported in the country. It was also noted that sometimes it took up to

fifteen (15) years without conducting re-inspecting of pesticides sellers²⁰ as shown in Section 3.3.3(b) of this chapter.

(d) Weak Implementation of Sanction to Pesticides Sellers and Importers

Through Section and 34 of the Plant Protection Act No 13 of 1997, Inspectors have been given power to implement sanctions when they find out that pesticides sellers or importers are guilty of not complying with the legal requirements governing the management of pesticides in the country.

However, it was noted that, inspectors were not effectively implementing required sanctions to pesticides sellers and defaulting importers.

This was due to the fact that, inspectors were not applying various sanctions as stated in the law. It was also noted that actions taken to pesticides sellers were mostly issuing warning letters. Very rarely, sanctions such as fines, impounding and prosecutions were implemented.

For example, some of reviewed inspection reports for the pesticides inspections conducted between July 2016 and December, 2017 showed that, only one case regarding the distribution of pesticides that were not fit for consumptions involving Chinese Supplying Company in Mtwara region was taken to court of law. The case ended by requiring the supplier to transport the substandard pesticides to Dar es Salaam for storage before they were destroyed, also he was charged a fine of TZS 44,800,000/=.

The rest of defaulters received warning letters from registrar even though some of their cases deserved to be punished by much tougher sanctions such as imposing fines or prosecutions in court.

It was further noted that, despite issuing the warning letters, there were no regular follow ups to examine the level of implementing the issued sanctions. This was because re - inspections were not frequently conducted to pesticides sellers who were previously sanctioned

²⁰ Inspection reports from 20 Pesticides sellers filers

(e) Existence of Porous Borders

Interviewed officials from Tropical Pesticides Research Institute and the Ministry of Agriculture, reveal that, Tanzania is bordered with eight countries namely, Kenya, Uganda, Malawi, Mozambique, Rwanda, Burundi, Congo and Zambia with many porous borders.

For example, there were about 360 illegal routes on Tanzania-Kenya border as of October, 2016, while along Tanzania and Burundi and Congo there were more than 200 illegal routes as of December, 2016. With these eight bordered countries, Tanzania is reported to be at high risk of having illegally imported pesticides.

3.3 Implementation of Pesticides Registration Activities

3.3.1 Identification, Evaluation and Reporting of Health and Environmental Risks Associated with the Use of Pesticides

Pesticides used are reported to cause health and environment problems if they are not handled as required. Interviews conducted with officials from the Ministry of Agriculture and TPRI revealed that there were inadequate evaluations and assessments made to identify health and environmental problems related to the use of pesticides as elaborated below:

(i) Health Evaluation/assessment Related with Pesticides Uses

Officials from the Ministry of Agriculture and TPRI reported that not much was done in conducting health assessment.

Review of the Ministry of Agriculture's Medium Term Expenditure Framework for the financial year 2016/17 and 2017/18, showed that, the Ministry was budgeting for conducting community based monitoring of the pesticides effect on health and environment. But when requested by the audit team to furnish the implementation status of the budgeted activities, they were not able to do so since nothing was done despite the activity being budgeted for.

Based on the interviews held with the officials from the Ministry of Agriculture, it was noted that, failure to implement budgeted activities on monitoring the effect of pesticides to the health of human being particularly the users of pesticides and people living within the surrounding environment was due to funds not being released to

support the implementation of such activity apart from being budgeted as shown in Table 3.4.

Table 3.4: Allocated fund for Monitoring of Pesticides effect on health and environment by the Ministry of Agriculture

Financial Year	Budgeted Amount (Millions)	Amount released (Millions)
2015/16	Nil	Nil
2016/17	111	Nil
2017/18	17	Nil

Source: The Ministry of Agriculture's MTEF 2015/16-2017/18

TPRI also, revealed that, they conduct Health Assessments before and after registration of pesticides. Before the registration, they conduct toxicological, Mechanistic Studies and related Chemicals to ensure that registered pesticides are safe for use. After the registration, they conduct Health Assessments to test pesticides exposures to farmers.

The audit team reviewed a report on Monitoring of Farmers Safety of 2015 issued by Tropical Pesticides Research Institute, and noted that, for the year 2015, 433 farmers working in large plantations were tested to determine the level of exposure to cholinesterase. A total of 108 farmers out of 433 tested farmers (equivalent to 25 percent) were detected to have cholinesterase levels below the acceptable tolerance of 24.5 U/G per gram Haemoglobin.

Similarly, for the period from January to December, 2016 399 farmers employed in large plantations were also tested to determine the level of exposure to cholinesterase of which 81 (equivalent to 20 percent) had pesticides exposure below the acceptable level of 24.5u/g per gram Haemoglobin.

For the year 2017, 160 farmers from large plantations were tested to determine the level of exposure to cholinesterase and results showed that 40 farmers (equivalent to 25 percent) were exposed to the cholinesterase below the acceptable level of 24.5u/g per gram Haemoglobin.

All these tests were implemented to fulfill one of the TPRI'S strategic goals which required TPRI to ensure review of consumers, crop exporters, importers and farmers are continually provided with authentic information on pesticides exposure and residues in foods and the environment.

Reviewed Biological Monitoring Reports conducted to farmers from November, 2016 to July, 2017 by TPRI, showed that the use of pesticides can cause a farmer to have low level of Haemoglobin below the acceptable level of 24.5u/g per gram Haemoglobin. The audit team reviewed 9 Biological Monitoring Reports prepared by TPRI and found out that there were farmers with Haemoglobin below acceptable level. **Table 3.5** shows the details of the reviewed Biological Monitoring Reports.

Table 3.5: Exposure of the Level of Pesticides to Tested Farmers from Arusha Region

Date	No of Staff tested	Results		Percentage%of tested below
		Normal	Below	
July,2017	7	7	-	0
May,2017	25	17	8	32
April,2017	33	30	3	9
April,2017	18	17	1	5
April,2017	19	19	-	0
April 2017	24	21	3	12.5
July,2017	7	7	-	0
July,2017	17	10	7	41.2
November,2016	160	122	38	23.8
Total	310	250	60	19.3

Source: TPRI Biological Monitoring Reports from November, 2016 to July,2017

Table 3.5 shows the level of pesticides exposure to the 310 tested farmers working in 9 large plantations to check whether they are complying with the set standards on pesticides management in the country such as wearing protective gears when administering or handling pesticides. The results show that, 60 out 310 (equivalent to 19.3 percent) farmers were affected due to over exposure to pesticides use.

Auditors conducted further reviews on the Report regarding Capacity Building towards a Multi-Stakeholders Monitoring Programme on Severely Hazardous Pesticides Formulation for the Implementation of the Rotterdam Convention. The report provides the results on the health assessment conducted at Kilolo - Iringa and Meru - Arusha with the objective of strengthening the national capacity and collaborative efforts for data collection, monitoring and reporting on pesticide poisoning incidents. Results are showing that 75.9 percent of farmers at Kilolo District in Iringa region and 41.3 percent of farmers from Meru

District in Arusha region had exposure level below acceptable level of 24.5u/g per gram Haemoglobin.

However, based on the interviews held with officials from the Ministry of Agriculture and TPRI, the audit team noted that, despite of the increase on the use of pesticides among farmers in the country and occurrences of pesticides poisoning cases, Post Health Assessments to farmers to identify health risk and documenting the identified risk were insufficiently conducted.

It was reported that, even the pesticides manufacturing companies and big pesticides importers were not conducting post health surveillance to key pesticides users, to determine impact of pesticides they manufacture and distribute as required by International Code of Conduct on Pesticide Management.

Similarly, through the interviews held with farmers from eight villages in all six visited LGAs, the audit team noted that farmers do see changes in their health such as skin irritation, dizziness, chest pain etc. and some of them knew it is because of the pesticides they are using but they did not know where to report, therefore effects are not documented. This implies that the reporting system was not in place.

Farmers employed in large plantations are the only ones tested to check whether they meet the requirements of exporting agricultural produce to the European, Asian and American markets.

It was further revealed that, small scale farmers who accounts for almost 81 percent of the whole population in the country are not well covered during the Post Health Assessment conducted by TPRI because of the associated high cost of the testing. A farmer is required to pay 31,000/= per individual and if found exposed he/she is advised to repeat the assessment until found normal. Taking into account that a farmer is supposed to cover that cost on his or her own, most of them find it expensive and unaffordable.

Through the interviews held with officials from TPRI responsible for testing pesticide exposures, it was noted that, farmers are responsible for paying for their own tests. The Ministry of Agriculture is not financing anything regarding the Post Health Assessment.

Another reported reason for inadequate testing of the level of exposure on cholinesterase was inadequate awareness of the benefits on testing for pesticides exposure since they were not known by most

farmers in six visited LGAs. This implies that, consumers and farmers are not continually provided with adequate information on effects of pesticide exposure despite this being one among the roles of the TPRI and the Ministry of Agriculture.

This was confirmed during the field visits that were made by the audit team to famers in all eight visited villages, where it was found out that, most of the interviewed farmers had experienced health problems associated with the use of pesticides such as skin irritation, dizziness, chest pain etc. but have never been tested to determine their level of exposure to pesticides despite some of them living near to the TPRI headquarters in Arusha.

Through the reviews made on the Nane Nane Exhibition Reports of 2016 and that of 2017 prepared by TPRI, the audit team noted that for the year 2016 there were no farmers tested during the exhibition and in 2017 only 2 farmers were tested. The reason for conducting few test was, the test being expensive to small scale farmers and lack of awareness of its existence and importance.

Since Tanzania is part to Rotterdam Convention, there is a requirement for monitoring the effects of pesticides and be able to identify highly hazardous pesticide formulations (HPF). Through the reviewed Report on Monitoring of Severe Hazardous Pesticides Formulation conducted at Kilolo and Meru Districts, it was noted that, monitoring was conducted only to meet the requirements of Article 6 of the Rotterdam Convention.

The Convention requires member countries to report the health incidences caused by Severely Hazardous Pesticides Formulation (SHPF) under the condition of use. It was noted that, there is no designed and functioning National Pesticide Poisoning Cases Reporting System in place to enable pesticides users, suppliers and officials responsible for providing advice and monitoring on pesticides uses to report pesticides poisoning cases or incidences. This implies that there was a failure of meeting the requirement of assessing health risk related to pesticides uses among the users.

Further interviews held with officials from TPRI revealed that, when cholinesterase exposure is below required level of 24.5u/g per Haemoglobin it means that farmers are at risks of contracting clinical effects associated with pesticides exposure.

(ii) Environmental Assessment/Evaluation Related with Pesticides Uses

According to the interviews held with officials from the Ministry of Agriculture, it was noted that, they were not able to list any conducted environmental impact assessment on the use of pesticides. They said that they are working in collaboration with the National Environmental Management Council (NEMC) in assessing environmental impact, but when asked what have been done so far they failed to provide to the audit team any information or report related with environmental assessment.

Despite of having Pesticides and Environmental Management Division, TPRI has rarely conducted environmental impact assessments on the use of different types of pesticides. Interviewed officials from TPRI reported that environment assessment related with pesticides uses are normally performed in collaboration with National Environmental Management Council and Vice President Office.

There were only two environmental impact assessments conducted in areas where pesticides were highly used or areas with high storage of pesticides. This was caused by insufficient fund released to TPRI before July 2016, even though the situation has currently improved, still this activity has not been included in TPRI current plan.

The two assessments were performed at Tengeru - Arusha in October, 2014 and Morogoro in August, 2016 in collaboration with NEMC and TPRI. The assessment that was conducted in Morogoro was investigating the level of Organochlorine Pesticides in soil and in selected Screen House Plants and the second assessment that was conducted in Tengeru, Arusha was on Site Investigation on Potential Persistent Organic Pollutants (POPs) Contaminated Sites.

The auditors reviewed these two assessment reports on the level of the Organochlorine Pesticides in Soil and in Selected Screen House Plants conducted at Morogoro. Results revealed the presence of DDT and its metabolites aldrin, dieldrin and endosulfan at reasonably higher concentration of 2273mg/kg. This concentration is reported to be higher than ones reported in similar studies conducted some years back in different sites of Ngarenanyuki, Vikuge - Kibaha and Tengeru.

The same site of Morogoro was assessed some years back (2009) by Mihale, and the finding revealed higher concentration of DDT. The concentration level of organochlorine in this site reported in both

studies of 2009 and 2016 are considered to be higher than the recommended environment permissible limits for soil standards. This calls for urgent remedy to be taken after conducting the evaluation to assess the level of contamination at deeper soil profile. It is unfortunate that no remedial measures have been taken to arrest the situation.

When auditors enquired on what had been done so far regarding this situation, they found out that nothing has been done and the land was still contaminated as it was before.

Fenthion which is used to control quelea quelea birds was detected at moderate concentration. The same report that was investigating the level of Organochlorine Pesticides in soil in Morogoro also revealed that, roots of calabash, carrots, sweet potatoes, Irish potatoes and pumpkins have high potentials of absorbing and bioaccumulation DDT. This is considered to be of advantage because the roots of these plants are considered to be suitable for phytoremediation measures in cleaning soil contaminated with DDT.

However, the report did not touch upon the effect that might be caused when people consume these types of crops that have been grown in contaminated sites. This is because there might be contaminated sites that are still growing these types of crops and people consume them as food.

Review of the study on Site Investigation on Potential Persistent Organic Pollutants Contaminated Sites at Tengeru revealed that the studied site has been relatively contaminated with Persistent Organic Pollutants and other pesticides. Fenthion which is used to control Quelea quelea bird was found to be the highest concentration among others.

All these indicated that there is soil contamination caused by use of pesticides, the contamination might be higher than what is known. But, because fewer assessments have been done, the impact is not well known and documented.

During the interviews held with officials from TPRI, the audit team noted that, high concentration of mentioned pesticides in the soil resulted into soil contamination and infertility; and ground and surface water contamination.

3.3.2 Establishment and Implementation of Policies and Procedures to Guide Registration of Pesticides in the country

Officials from the Ministry of Agriculture and TPRI revealed that there was no developed policy document, but they were guided by the Plant Protection Act No. 13 of 1997 when registering pesticides.

However, it was further noted that, despite of established procedures being used for ensuring only registered pesticides are sold in the market; it was noted that, there were areas that need to be improved. This is because the Plant Protection Act No 13 of 1997 that has been used to establish these procedures is outdated due to changes that have taken place during the last 20 years regarding management of pesticides since the enactment of this legislation.

According to the Act, for the pesticides to be registered it is supposed to be tested for three cropping seasons. Currently, this is a challenge due to changes of weather and science development that lead to pesticides replacement frequently. But the Plant Protection Act does not provide provision that allow first registration of pesticides without following the three cropping season.

Furthermore, based on the interview conducted with officials from the office of Pesticides Registrar, it was noted that, another area that needed to be improved was when registering the same pesticides that was registered before with different company/trade name.

It was noted that, established procedures which was in use required the registration process to be the same by following all procedures without considering similarities in molecule/generic content. Same interviewed officials established that, it was not necessary to repeat the entire procedure especially for generic pesticides, but it was fine when there were new molecules introduced. But the established procedures do not provide such option.

It was noted that the established pesticides registration procedures did not set pesticides tolerant levels to allow proper follow - up on the health and environment assessment related with pesticides uses since the Plant Protection Act No 13 is silent in this area.

It was further found out that amendments of the Plant Protection Act of 1997 which is still in use for almost 20 years started almost ten (10) years back but until December, 2017 it is still unapproved. It was further noted that, the proposal was to come up with two separate

legislations, one for Pesticides Management and another for Plant Protection to allow proper management since both pesticides and plant protection management are broader in content and need to be managed separately.

The same interviewed officials reported that, amendments took long to be finalized because, one of the aspect among the amendments, required establishment of a new Institute that will be responsible for regulating all pesticides in the country. This was found to be of major concern to the government since it would lead to increased cost to run newly established institute.

Delay on the amendments of this Act provided loopholes of non-compliance to some activities as per updated international Code of Conduct on Pesticides Management which requires periodic update of list of registered pesticides.

3.3.3 Mechanisms in Place to Ensure Only Registered Pesticides are sold by Pesticides Sellers

Interviews conducted with officials from the Ministry of Agriculture and TPRI, it was revealed that, there were several mechanisms that were used to ensure pesticides sold in the country are registered as per Plant Protection Act No. 13 of 1997 requirements, the mechanism in place are:

- (i) Disseminate or distribute list of registered pesticide to pesticides sellers in the country, this is done to ensure pesticides sellers are only selling pesticides that have been included in the published pesticides list;
- (ii) Inspecting pesticides sellers for checking their level of compliance with pesticides business requirements as well as reminding them on those requirements;
- (iii) Involvement of inspectors from the Ministry of Agriculture during the inspection of pesticides sellers and at Ports of entry to ensure that there is sufficient monitoring of pesticides. This is done because TPRI inspectors are based in Arusha and required to inspect pesticides sellers in all regions of Tanzania Mainland. Also, TPRI inspectors are only operating in three Ports of Entry of Mwanza, Dar es Salaam and Tunduma; and
- (iv) Awareness creation campaigns to the community through seminars, trainings and TV/radio programs to create awareness on pesticide uses to the community.

However, interviews conducted with the same officials mentioned above, noted that, established mechanisms to ensure that only registered pesticides are sold and used in the market were not adequately implemented as elaborated below:

(a) Distribution of List of Registered Pesticides

Interviewed officials from TPRI revealed that, lists of registered pesticides were not provided to pesticides sellers. This was also confirmed during the visits that were made by the audit team to the pesticides sellers and LGAs.

The audit team visited 13 pesticides sellers²¹ and noted that, there were no lists of registered pesticides in their shops. It was also noted that, for them to identify a particular registered pesticide they heavily relied on information obtained from large distributors of pesticides in the country.

Furthermore, interviewed agricultural extension officers from 5 out of 6 visited LGAs²² who are working closely with farmers and provide advice on pesticides uses did not have a list of registered pesticides. Also, at Itilima DC, agricultural extension officer had an old list of registered pesticides which was published in November, 2011 and is using it to provide the much needed advice on the right pesticides to be used despite the list being old and out dated.

(b) Inspection Conducted to Pesticides Seller and Entry Point

According to the Plant Protection Act No. 13 of 1997, pesticides sellers are required to be inspected after being trained to identify if they meet pesticides pre condition for establishing pesticides business. They are also required to be re- inspected to found out if they are still complying with business requirement before renewal of their business permit.

Based on the interviews held with officials from the Ministry of Agriculture, TPRI and inspectors from Namanga Entry Point as well as pesticides sellers from six visited LGAs²³, it was noted that, inspections conducted by TPRI do not cover all pesticides sellers and Ports of entry as required by the Plant Protection Act No. 13 of 1997.

²¹ In six visited LGAs of Meru, Itilima, Urambo, Morogoro, Njombe and Masasi

²² Meru, Urambo, Morogoro, Njombe and Masasi

²³ Meru, Itilima, Urambo ,Morogoro, Njome and Masasi DC

The audit team reviewed 20 files of pesticides sellers that include inspection reports from 8 regions of Tabora, Arusha, Simiyu, Dar es Salaam, Morogoro, Njombe, Dodoma and Mtwara. It was revealed that not all pesticides sellers were inspected and for those who were inspected were not frequently re- inspected to find out if they have improved and now are complying with pesticides business requirements.

For example, one of the pesticides sellers did not undergo any kind of re -inspection for a period of fifteen (15) years since he was inspected for the first time, but still for that period he was issued with pesticides business permit every year and he is continuing with the business as shown in appendix 6. Based on same reviewed reports, the audit team noted that, TPRI was mostly considering payments for renewing business license as a major factor for re-registering than meeting technical and business requirements on the management the quality of pesticides.

Also, in the visited LGAs, it was found out that some pesticides sellers were operating without being re - inspected as shown in Table 3.6.

Table 3.6: Status of Inspection to Pesticides Sellers in Visited LGAs

Name of Pesticides Shop	Year Business Started	Number of Pesticides Inspection	
		First time Inspection	Re- Inspection
Pesticides shop 1	2010	0	0
Pesticides shop 2	2015	1	0
Pesticides shop 3	2013	1	1
Pesticides shop 4	2016	0	0
Pesticides shop 5	2008	1	8
Pesticides shop 6	2015	0	0
Pesticides shop 7	2016	0	0
Pesticides shop 8	2008	1	2
Pesticides shop 9	1994	1	7
Pesticides shop 10	2015	0	0
Pesticides shop 11	2010	1	2
Pesticides shop 12	2005	1	2
Pesticides shop 13	1999	1	2

Source: Auditors' Analysis from the Interview Notes, January 2018

Table 3.6 shows that, 5 out of 13 pesticides sellers were not inspected at all, 8 of them were inspected at the time of registering their pesticides businesses, and only two were regularly re-inspected.

The reviewed report on the Status of Pesticides Sellers operating at Itilima DC of 2017 that was prepared by the Department of Agriculture, Irrigation and Cooperatives, noted that there were 12 out of 17 pesticides shops that were operating without being registered by TPRI due to inadequate inspections. Similarly, at Njombe TC there were 13 out of 19 pesticide shops that were not registered by TPRI.

The established reasons for not regularly inspecting all pesticides sellers include: first, inadequate number of approved inspectors in the country as there was only 99 inspectors compared to the available number of 1935 pesticides sellers/shops. Second, was inadequate planning of pesticides inspections that would have facilitated and prioritized inspections to focus more on risky areas such as remote areas or areas with incidents of frequent use of fake pesticides.

All this affected inspection activities that have to be conducted to pesticides sellers and at Ports of entry and resulted into importing and selling unregistered pesticides. This was also the case at Itilima DC where three pesticides shops were found selling unregistered pesticides such as Dudu Acelamectin, Ninja Plus and Victory Booster. The above three shops were not frequently inspected as last inspection was conducted two years ago.

3.3.4 Periodical Update of the List of Registered Pesticides

It was established that, list of registered pesticides was not regularly updated and sometimes it took one to two years to update the list. Taking the prevailing best practices as recognized by FAO, the list of registered pesticides is required to be updated at least twice a year i.e. at a span of six months.

The given reason for failure to timely update pesticides list was due to failure to conduct Pesticides Approval and Registration Technical Sub-Committee (PARTS) and National Plant Protection Advisory Committee (NPPAC) meetings for approval of pesticides. This is due to inadequate and timely releases of funds because in the past revenue were collected by the Ministry of Agriculture.

The current list of registered pesticides was released in June, 2015 meaning that the lists has not been updated for the two (2) years and six months contrary to the requirement that the list should be updated at least twice a year.

Furthermore, it was revealed that, the list of registered pesticides was not frequently updated since PARTS and NPPAC meetings were not frequently conducted because funds were not adequate and released on time.

The list of pesticides needs to be updated after every new approval of pesticides by PARTS and NPPAC. The delays in registering pesticides prompted distributors and pesticides sellers to illegally proceed and sale their pesticides without being registered. This loophole has contributed to the presence and increase in unregistered pesticides in the market. This was evidenced by the inspections conducted by TPRI in Mwanza, Geita and Shinyanga regions in 2016.

This was also noted when the lists of registered pesticides for the period from 2010/2011 to 2017/2018 were reviewed and found out that there is a gap of more than one year on updating the list. **Table 3.7** shows the status of updating the lists of registered pesticides for the last seven (7) years.

Table 3.7: Lists of Registered Pesticides from 2010/11 to 2017/18

Financial Year	Status of Updating	Date Updated
2011	Updated	November, 2011
2012	Not updated	-
2013	Updated	April, 2013
2014	Updated	January, 2014
2015	Updated	June, 2015
2016	Not updated	-
2017	Not Updated	-

Source: List of Registered Pesticides from 2010/2011 to 2017/2018

Table 3.7 indicates that there is a failure to periodically update the list of registered pesticides. It was also noted that it took from 9 months up to 2 years to update the list of registered pesticides.

3.3.5 Re- registration Procedures for Periodic Review of Previously Approved Pesticides

Best practices from the Code of Conduct on Pesticides Management of 2014 and Rotterdam Convention require the member countries to perform periodic re-registration of previously approved pesticides.

The interviewed officials from TPRI reported that, there were no documented re-registration procedures in place, only first time registration procedures were in place and these were not for those who seek re-registration.

It was further noted that, the same registration procedures were used to re- register pesticides either for another registration category or period (shelf life) since there were no re- registration procedures.

Re - registration for a pesticides registered under full registration is effected after five (5) years. But the Plant Protection Act No. 13 of 1997 does not provide guidance for re- registration as it is silent on what happens after the pesticides have been renewed two times.

However, according to the Code of Conduct on Pesticides Management and Rotterdam Convention there is always a need to test and verify efficacy of previously approved pesticides. This is because sometimes pests develop resistance and the pesticide might not be effective to control the pests.

Since there is no follow - up conducted to test and verify the efficacy of previously approved pesticides, it was noted that, pesticides were re - registered using the registration procedures that focus on the quality of pesticides with less emphasize on its impact to the health of key users and environment.

Based on the interviews held with the same officials from TPRI, the established reason for not developing re- registration procedures was because the current Plant Protection Act No. 13 of 1997 and its Regulations of 1999 did not cover this aspect of procedures for re-registration.

CHAPTER FOUR

PESTICIDES KNOWLEDGE TO KEY PLAYERS

4.1 Introduction

This chapter presents findings on the performance of the Ministry of Agriculture through Crop Development Division and Tropical Pesticides Research Institute on pesticides knowledge to key players in the country.

The findings are addressing a specific audit objective regarding knowledge of pesticides to farmers, pesticides sellers and agricultural extension officers on proper pesticides distribution and use as described in **Section 1.3.1** of this report:

4.2 Presence of Training Plan to Facilitate Dissemination of Knowledge on Pesticides Management

The Tropical Pesticides Research Institute (TPRI), the Ministry of Agriculture, and the President's Office Regional Administration and Local Government (PO-RALG) are required to develop a training plan to facilitate pesticides trainings to be conducted to pesticides sellers, farmers and agricultural extension officers.

It was noted that there was no documented training plan to guide the provision of pesticides trainings to be provided to pesticides sellers, farmers as well as agricultural extension officers.

The same officials reported that training on pesticides management was included in the Strategic Plans and Medium Term Expenditure Frameworks of the Ministry of Agriculture, TPRI, and the President's Office Regional Administration and Local Government (PO-RALG). But, upon review of those two planning documents, it was found out that, to some extent the contents of the trainings sometimes covered pesticides issues since the focus was to establish Good Agricultural Practices.

The reviewed Strategic and Annual Plans and Outreach training program from TPRI indicated that, it includes training for pesticides sellers only. On the other hand, interviewed officials from the Ministry of Agriculture and PO-RALG revealed that, there was no training need assessments conducted to identify training needs for farmers and agricultural extension officers.

Officials from TPRI reported to have conducted training need assessment, but when asked to provide the report to auditors they failed to do so because it was not documented. They only reported to have Outreach training programme as a result of assessments conducted.

The main reason for not having training plan was lack of prioritisation in developing this plan despite of understanding its advantages.

The absence of training plan led to failure to establish the number of required participants to be trained, methodology for the training to be offered as well as frequency for conducting trainings.

4.3 Mechanism to Facilitate Dissemination of Pesticides Knowledge to Pesticides Sellers, Farmers and Agriculture Extension Officers

The Ministry of Agriculture being responsible for all agriculture technical issues that include pesticides management is responsible for establishing mechanism that facilitates dissemination of pesticides knowledge to pesticides sellers, farmer's as well agricultural extension officers.

Through the interviews conducted with the officials from the Ministry of Agriculture, it was noted that, several mechanisms were used by the Ministry to facilitate dissemination of pesticides knowledge. Those mechanisms include:

- a) Assigning TPRI to provide periodical training to pesticides sellers in the country;
- b) Conducting training of trainers to selected farmers and agricultural extension officers; and
- c) Conducting follow - ups on trainings conducted to farmers, agricultural extension officers and pesticides sellers.

(i) Delegation of Pesticides Training to TPRI

It was noted that, the Ministry of Agriculture has delegated all activities regarding training of pesticides sellers to TPRI. Pesticides sellers were trained by TPRI before opening of the pesticides business as a requirement set by the Plant Protection Act No.13 of 1997 and its Regulations of 1998. It was further noted that trainings were conducted in April and October each year.

(ii) Conducting of Training of Trainers to Farmers and Agricultural Extension Officers

It was established that, the Ministry of Agriculture is planning and budgeting for training of trainers conducted to farmers and agricultural extension officers around the country.

Auditors reviewed Training reports for the financial year 2015/16 to 2017/18 and noted that, the Ministry of Agriculture has conducted five trainings of trainers on post harvesting management; techniques for increasing crop productivity and integrated pest management. Other areas covered were control of the pest and diseases outbreaks. Trainings were conducted to 355 trainees and pesticide management was among the topics that were covered during the trainings.

Further review of the Ministry's Strategic Plan for the period of 2011 - 2016 and MTEF for the financial year 2015/16 to 2016/17 showed that, the planned and budgeted trainings were not adequately implemented due to release of funds

It was further noted that, five (5) of the trainings conducted by the Ministry of Agriculture were facilitated by Development Partners such as Helvetas under Swiss Inter cooperation. Also, despite of inadequate release of funds, there were no training need assessments to facilitate proper planning for the training. As a result only a few training were conducted in 4 out of 26 regions of Manyara, Dodoma, Morogoro and Shinyanga while leaving behind 22 regions

The audit team found out that although trainings were conducted to some farmers and agricultural extension officers, the Ministry of Agriculture does not have a database of those who have been and those who ought to be trained in the near future. This implies that trainings conducted to famers are done on ad-hoc basis since there was no assessments done to establish gaps and those who needed to undergo training.

(iii) Follow - ups on Training Conducted to Farmers, Agricultural Extension Officers and Pesticides Sellers

It was also noted that, there was no established mechanism by the Ministry of Agriculture to conduct follow-ups on trainings provided to farmers and agricultural extension officers for the purpose of establishing whether or not the trained officials are applying the knowledge gained from the training. That include: application of knowledge gained during the training, disseminating the gained knowledge to others and also providing feedback to the Ministry on

challenges encountered with a mission of improving the training delivery.

Also, the audit team reviewed MTEF, progress reports for the period of financial year 2015/16 to 2017/18 from the Ministry of Agriculture and noted that there was no such activity regarding follow-ups of trainings conducted to farmers and agricultural extension officers.

Interviewed officials from the Ministry of Agriculture pointed out that, follow - up was not done since there was no budget set aside to facilitate officials from the Ministry of Agriculture to visit farmers, agricultural extension officers as well as pesticides sellers scattered all over the country.

4.4 Inadequate Awareness Creation among Pesticides Users, Dealers and Farmers

Through the interviews held with four officials from the Ministry of Agriculture and TPRI, it was reported that most of the pesticides stakeholders such as farmers, agricultural extension officers, custom officials and users of agriculture products have little knowledge and sufficient skills on identifying registered pesticides as well as understanding the importance of using registered pesticides. This was caused by lack of awareness creation campaigns on pesticides management to farmers, agricultural extension officers and pesticides sellers.

4.4.1 Provision of Training to Pesticides Sellers on Pesticides Business Requirements

Pesticides sellers have a role of disseminating pesticides education to farmers when buying pesticides in their shops as well as ensuring proper management of the pesticides stocked in their shops. They need to be trained in order to efficiently manage the pesticides in their shops as well as educate farmers on proper use of pesticides.

It was noted that from September 2015, to September, 2017, TPRI trained 998 pesticides sellers, and the contents of the trainings focused on the requirements of the Plant Protection Act No. 13 of 1997 for doing pesticides business in the country. For example, the review of the 8 Pesticides Training Reports for the pesticide sellers in Mtwara and Mwanza regions showed that, pesticide sellers from those two regions and its outskirts were trained on complying with pesticides business requirements.

However, it was revealed that there was no well-established database showing a number of pesticides sellers in the country versus a number of trained pesticides sellers as a requirement for them to qualify for pesticides business as well as a number of re - trained pesticides sellers. Moreover, there were no documented plan and mechanism for re-training pesticides sellers which is very important due to frequent changes on pesticides formulations and names.

On the other hand, when the audit team visited the open market (Gulio) at Itilima DC, it found-out that pesticides were sold at the open market by people who were not trained on pesticides contrary to the requirements of the Plant Protection Act No.13 of 1997 as shown in Photo 4.1.



Photo 4.1: *Pesticides sold in an open market at Itilima DC by unregistered seller without knowledge on pesticides usage. Picture taken on January 17, 2018*

Also, from the six visited LGAs it was noted that, there were owners of pesticides shops who were not trained even once on pesticides business requirements as shown in Table 4.1.

Table 4.1 Status of trainings to Pesticides sellers

Name of Pesticides Shop	Year Business Started	Number of Trainings	
		Training for registration	Re-trainings
Pesticides shop 1	2010	0	0
Pesticides shop 2	2015	1	0
Pesticides shop 3	2013	1	2
Pesticides shop 4	2016	0	0

Pesticides shop 5	2008	1	3
Pesticides shop 6	2015	0	0
Pesticides shop 7	2016	0	0
Pesticides shop 8	2008	0	0
Pesticides shop 9	1994	1	2
Pesticides shop 10	2015	0	0
Pesticides shop 11	2010	1	1
Pesticides shop 12	2005	0	0
Pesticides shop 13	1999	0	0

Source: Auditors' analysis (2018) from the Interview for visited LGAs (2018)

As shown in Table 4.1, only 5 out of 13 pesticides sellers were trained when registering their pesticides business, out of these 5, 4 were re-trained by CNFA/TAGMARK that was funded by Agro Dealers Training Project under the Ministry of Agriculture.

According to the interviews held with TPRI and visited pesticides sellers, it was noted that, despite some pesticides sellers being trained on the management of pesticides in their shops, not all shops had full-time trained staff in their shops to ensure that farmers were well educated when buying pesticides. For example, in 10 out of 13 visited pesticides sellers in all six visited LGAs²⁴, it was found out that employed staffs were not trained in managing pesticides but were found to provide technical support to farmers who visited their shops.

The reasons established for not having trained employed were: first, pesticides shop owners are more concerned with their own training without considering those who support them in their business. Secondly, employed staffs are not aware on the requirements of the Plant Protection Act No.13 of 1997 which requires them to be trained on pesticides management.

²⁴ Meru, Itilima, Urambo, Morogoro, Njombe and Masasi DC

4.4.2 Provision of Training to Farmers on the Safe Use and Handling of Pesticides

Farmers are not adequately trained on safe handling of pesticides; this was revealed during the interviews held with officials from TPRI, PO-RALG and 6 visited LGAs.

Based on the same interviews, it was found out that PO-RALG trained farmers on Good Agricultural Practices through LGAs, but the trainings rarely included pesticides issues. It was noted that at all 6 visited LGAs²⁵, there were no trainings regarding pesticides management not even included in other agriculture trainings.

Farmers from 8 visited villages pointed out that they have less pesticides skills and knowledge; this is because they were not trained in pesticides handling.

This was also verified by farmers whom the audit team met and paid visits to their farms. All interviewed farmers reported that, it was difficult for them to identify un - registered pesticides since they were not familiar with all key features that were required to be shown in the pesticides containers. Similarly, farmers were not able to provide good explanations on the importance of using registered pesticides.

They were more concerned with price factors as they preferred to buy pesticides sold at a lower price. This means that, they were less informed about the impact on their health, environment and crop yield of using un - registered pesticides.

Auditors were able to observe how they handle pesticides. For example, one farmer in Ndatu village stored the purchased pesticides by hanging on the tree which was very close to the kitchen of his house. Also, another farmer was observed attending the farm that was sprayed with pesticides a day earlier without putting on any protective gear such as gloves, musk and gumboots, despite of the pesticides strong smell. It was also found out that, there were children playing nearby the farm and some were having breakfast.

At Lagangabilili village, a farmer was observed spraying pesticides in cotton farm, without putting on all required protective gears. He only put on gumboot and motor cycle's helmet which is not right and the helmet did not cover his face as shown in **Photo 4.2**.

²⁵ Meru, Itilima, Urambo ,Morogoro, Njombe and Masasi DC



Photo 4.2: A Farmer without protective gears at Lagangabilili village in Itilima DC. Picture taken on January 17, 2018

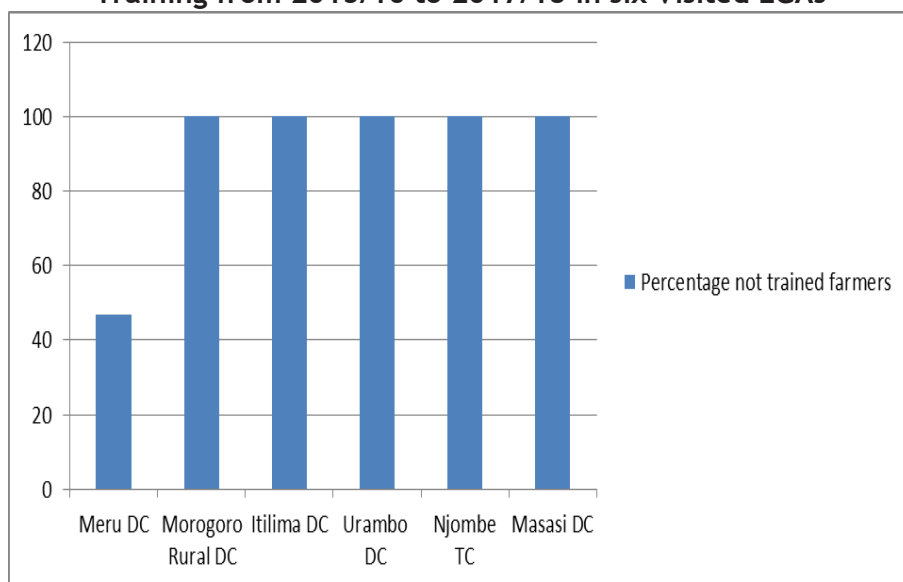
When interviewed, the farmer pointed out that, he did not use appropriate measurements to mix the pesticides with water and had sprayed same farm 3 times in one week.

The same situation was observed at Utalinguru and Napata villages in Njombe and Masasi DC respectively.

Moreover, auditors tried to test knowledge of farmers in all six visited LGAs on various matters such as storage of pesticides, application and action to be taken when contaminated with pesticides and it was found that, only few had knowledge on safe pesticides handling. Few farmers reported to have received pesticides training which were not offered by the officials from the Ministry of Agriculture or PO-RALG.

Trainings were facilitated by non- governmental organizations such as OICOSOIKOS East Africa from Italy and VECO - T from Holland, FERT from France and KATC. Most of these NGOs were using famers groups to produce food crops for them; hence they trained farmers to handle pesticides as they want to control pesticides. Figure 4.1 shows the status of farmers who were not trained in six visited LGAs of Meru, Itilima, Urambo, Morogoro, Njombe and Masasi DC.

Figure 4.1: Status of Farmers who have Not Received Pesticides Training from 2015/16 to 2017/18 in six Visited LGAs



Source: Auditors' Computations Using Data from the Interviews held with experts and stakeholders from six Visited LGAs (2018)

As shown in Figure 4.1, farmers were not sufficiently equipped with pesticides knowledge as more than 90% of the visited farmers were not trained on safe use and handling of pesticides.

Reason given by agricultural extension officers was the inadequate resources released to the Department of Agriculture, Irrigation and Cooperatives in the District Council. It was noted that, despite of LGAs being issued with financial circulars requiring them to retain 20% of revenue collected from agricultural activities to facilitate these activities in the department, its implementation status was still low. This was because the amount retained to this Department in almost all visited LGAs was less than 20 percent.

The low implementation resulted into partial implementation of key agricultural activities that include pesticides trainings despite of a large amount of revenues collected by LGAs is from agriculture activities.

On the other hand, interviews conducted with officials from TPRI revealed that, TPRI is rarely conducting pesticides training to farmers as they are out of their mandated scope. Training conducted depends on the request made by farmers through their groups. Normally, TPRI is conducting training of trainers to selected farmers (TOT), also to Village Based Agro dealers, these are farmers trained to sell pesticides in their villages.

The reviewed Training Reports on Compliance with Pesticides Business conducted in Mtwara and Mwanza regions by TPRI during 2015/16 to 2017/18 financial year noted that, farmers that were trained organized themselves in groups and some requested to attend the training as they wanted to open pesticides business as Village Agro Dealers.

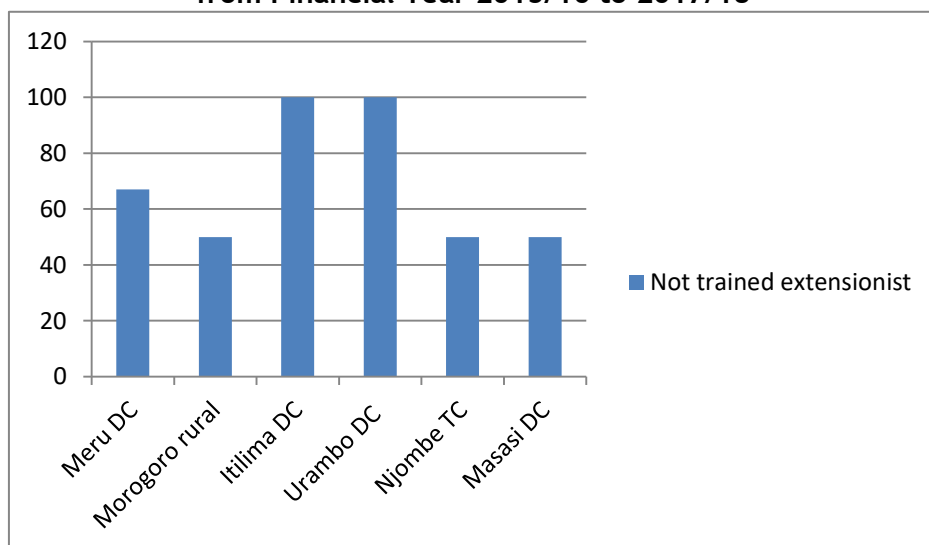
Failure to effectively train farmers in handling pesticides resulted into improper use of pesticides that in turn affected the quality and quantity of agricultural produce as well as human health and environment as shown in Section 3.3 of this chapter.

4.4.3 Provision of Trainings to Agricultural Extension Officers on Good Agricultural Practices

Most of the Agricultural Extension Officers were not sufficiently trained on proper handling of pesticides. They mostly depended on the basic knowledge obtained during their certificate/diploma and graduate studies.

During the field visits to all 6 LGAs, it was noted that there were agricultural extension officers who were not trained in managing pesticides as shown in Figure 4.2.

Figure 4.2: Status of Not Trained Agricultural Extension Officers from Financial Year 2015/16 to 2017/18



Source: Auditors' Computation Using Data from the Interviews held with experts and stakeholders from six Visited LGAs (2018)

According to Figure 4.2, half of the agricultural extension officers that were interviewed in Morogoro DC, Njombe TC and Masasi DC were not trained on pesticides management issues. However, for those who were trained, all trainings were conducted more than ten years ago. In Itilima and Urambo DC all of the interviewed agricultural extension officers were not trained at all in pesticides management.

Further, it was found out that improper training of agricultural extension officers was due to inadequate release of funds as well as poor planning leading to failure to prioritise pesticides issues. This affects implementation of their key responsibilities of advising and training farmers in proper usage and handling of pesticides.

Review of the Training Reports from TPRI showed that, agricultural extension officers were sometimes included in the trainings organized by pesticides sellers. For example from February, 2016 to February, 2017 the trainings conducted in Mwanza, Lindi, Ruvuma, Morogoro, Singida, Kagera and Mtwara regions by TPRI, included 272 agricultural extension officers.

4.5 Monitoring and Evaluation of Pesticides Trainings Provided to Pesticides Dealers, Farmers and Agricultural Extension Officers

There were no monitoring and evaluations conducted by either the Ministry of Agriculture or TPRI to measure the impact of training that have been conducted to farmers, agricultural extension officers and pesticides sellers.

It was further noted that, normally TPRI conducts monitoring and evaluation on the impact of trainings when inspecting pesticides sellers. But, there were no documented information showing impacts of conducted trainings to the pesticides sellers in the country.

Re-inspection reports from TPRI were reviewed and it was noted that they included assessments of the shop attendant's knowledge. But, there was no monitoring of impact of training.

Lack of monitoring and evaluation of the impacts of training, led to the failure of knowing training needs that would have facilitated planning for training and re-training on pesticides issues as well as on improving teaching techniques and methodologies.

CHAPTER FIVE

INSPECTION, COORDINATION AND MONITORING OF PESTICIDES ACTIVITIES

5.1 Introduction

This chapter presents findings on the performance of the Ministry of Agriculture through Crop Development Division and Tropical Pesticides Research Institute on Inspection, Coordination and Monitoring of pesticides activities in the country.

The findings are addressing three specific audit objectives described in **Section 1.3.1** of this report:

- a) Availability of registered and good quality pesticides in the market and adequacy of pesticides inspections;
- b) Functioning of the coordination of pesticides registration, training and inspection activities; and
- c) Monitoring of the implementation of pesticides registration, training and inspection activities.

5.2 Inspection of Pesticides sellers and at Ports of entry

5.2.1 Development of Pesticides Inspection Policies and Procedures

There was no documented inspection policy and procedures in place to elaborate what, how and when to inspect as well as processes of taking actions when someone defaults. This was revealed through the interviews held with officials from TPRI and the Ministry of Agriculture.

Inspectors were using developed inspections and re- inspection forms during their inspections which include checklists on items to be inspected.

Through the reviewed inspection forms, it was found out that, inspection forms included address of the shop, status of the premise/shop, required equipment, list of chemicals found in the shop, staff particulars, disposal mechanism and general remarks.

Re- inspection forms included address; status of pesticides sold in the shop (that include expired, unregistered and unlabeled); assessment of the shop attendants knowledge; any observations and remarks from inspector, head of inspector and registrar.

However, through the same review of inspection and re-inspection forms, it was revealed that there were some key issues that needed to be checked frequently/regularly but were not included in the re-

inspection forms. For example, the re-inspection form was missing key details on items such as protective gears and fire extinguishers; disposal mechanisms; assessment of the premise and list of chemicals found. These items might be checked by experienced inspectors but not by the newly employed inspectors.

Also, auditors observed inconsistencies in the contents of the inspection forms. All these were the results of not having documented inspection procedures in place that could have facilitated proper conduct of inspections.

Consequently, absence of developed pesticides inspection policy and procedures has resulted into:

- a) Reduced quality of inspections to be performed since the planning and conducting of inspections were lacking guiding documents. This was noted when auditors reviewed re-inspection reports from TPRI and found out that not all items that were required to be inspected were checked;
- b) Lack of consistency in pesticides inspections conducted by TPRI. Inspection Reports prepared by inspectors from TPRI and those prepared by inspectors from the Ministry of Agriculture at Namanga Border did not match. It was also noted that, Inspectors from TPRI usually reported on status of the requirements needed to be fulfilled by pesticides sellers or importers. On the other hand, inspectors from the Ministry of Agriculture normally reported on the revenue collected and number of confiscated plants and plant related materials. In addition, within TPRI there were two types of inspection reports one was too detailed and the other one was too brief as inspectors were only filling the forms that have pre-determined information to be included;
- c) Some of the inspectors were too judgemental since they were using different inspection forms. For example, the reviewed Inspection reports from TPRI noted that, one report was detailed and showing that inspectors did much of questioning resulted into observing many issues such as unregistered pesticides and its sources as well as quantities of un-registered pesticides. Other inspection reports required inspectors to fill prepared information and it was very brief and did not give room to the inspectors to probe more on the cause of various incidences detected during the inspection; and
- d) Difficulties in training new inspectors since there were no readily available procedures that would have facilitated the

preparation of training program as well as deliverance of that particular training.

5.2.2 Establishment of Risk- Based Plan for Proper Inspections of Pesticides Distributed in the Country

During the interviews held with officials from the Ministry of Agriculture and TPRI, auditors noted that, there were neither documented inspection plan in place nor identified risks areas to facilitate planning of the inspections to pesticides sellers and ports of entry. It was also noted that, inspection activities were included in the strategic and annual plans of TPRI, and it was conducted on quarterly basis.

Taking into consideration factors such as remoteness of some districts and villages as well as pesticides formulation and quantity, there were no risk data base prepared showing location, types sold and stock of pesticides sold in the shops. This was observed through the interviews that were conducted with officials from TPRI.

When auditors asked the inspectors from TPRI what guided them in selecting regions and pesticides sellers to be inspected, they replied that, there is a list showing location of registered pesticides. Sometimes they used the complaints received from pesticides users, as well as regions with high use of pesticides and geographical location to try to cover the whole country.

The auditors reviewed Strategic and Annual Operational Plans for the period from 2015/16 to 2017/18 of TPRI and found out that, inspection activities were included in the plans. But, the activities were not detailed specifically on what areas would be inspected and how many pesticides sellers would be covered in each quarter.

Lack of risk based plan led into inadequate number of inspection activities to the pesticides sellers as well as at Ports of entry and provided a loophole for unregistered pesticides and illegal importation of pesticides. This was because pesticides sellers were rarely re - inspected, especially for those sellers located in remote areas due to the difficulty of accessing those areas as well as availability of few inspectors.

Furthermore, during the visits conducted to 13 visited pesticides sellers in 6 LGAs, auditors noted some pesticides sellers located in remote villages were not complying with the pesticides business requirements as per Plant Protection Act No. 13 of 1997 and its Regulations of 1998 only because they were never inspected. For example, they were selling pesticides without being registered, and

some were selling unregistered pesticides and some were repacking pesticides.

The 2 visited pesticides shops at Itilima DC and 1 shop at Njombe TC have never been inspected since they opened due to their geographical location being far from where inspectors from TPRI are based. The shops were opened between 2010 and 2015

5.2.3 Presence and Allocation of Qualified and Registered Pesticides Inspectors

The Plant Protection Act No. 13 of 1997 requires all inspectors to be trained in a particular field and then approved before they qualify for inspection activities.

According to TPRI, there are two groups of inspectors responsible for inspecting pesticides sellers and Ports of entry in the country. One group included inspectors working under the Ministry of Agriculture and the other group included inspectors working under TPRI and were allocated at TPRI head offices Arusha and at other 3 Ports of entry of Tunduma, Mwanza and Dar es Salaam.

It was noted that, despite both groups having mandate to inspect pesticides, they differ in terms of their knowledge and skills. This was because inspectors working under TPRI were more skilled and experienced in pesticides management as compared to the other group because they were more involved in regulating pesticides in the country as required by the Plant Protection Act No. 13 of 1997 and its Regulations of 1998 as well as being trained regularly.

This was confirmed through the interviews conducted with Inspectors from the Ministry of Agriculture. It was noted that, they lack current or up-to-date pesticides knowledge because they were not specifically trained on area of pesticides, they mostly depended upon the knowledge and skills they got during their college/university studies.

Further, interviews held with inspectors at Namanga Ports of Entry and the Ministry of Agriculture's zonal offices revealed that, most of the allocated inspectors were not qualified to inspect pesticides because they do not have Inspector's identification and were therefore not approved.

They reported that, the reason for not being approved was due to insufficient training conducted to them that did not meet the requirements leading to approval by the Minister so as to perform as pesticides inspectors. It was however, noted that, last group of

inspectors were trained and approved in 2001. Table 5.1 is showing status of gazetted inspectors.

Table 5.1: Status of Approved Inspectors Vs not approved

Visited Entities	Total number of available inspectors	Status	
		No. of gazetted Inspectors	No. of Inspectors not gazetted
TPRI	9	9	0
Ministry of Agriculture	165	90	75
Total	174	99	75

Source: Auditors' Analysis from the Interview Notes with the Ministry of Agriculture and TPRI Officials

From **Table 5.1**, it is shown that, 75 out of 174 inspectors (around 43%) were not approved by the Ministry. Almost all interviewed inspectors working at the Ministry of Agriculture, Namanga Port of entry and Tengeru Zonal office were not approved.

The fact that, some inspectors are not approved it makes difficult to introduce themselves to their clients and they consequently receive little cooperation from clients. Also, it was reported that, inspectors found it difficult to take actions to defaulters. This affects their extent of implementing inspection responsibilities as required by the Plant Protection Act No. 13 of 1997 and its Regulations of 1998.

5.2.4 Conducting of Inspections to Pesticides Sellers and Ports of Entry

Inspectors are required to inspect pesticides sellers and inspect at Ports of Entry as per Plant Protection Act No.13 of 1997, and they should also put in place risk based plans, policies and procedures.

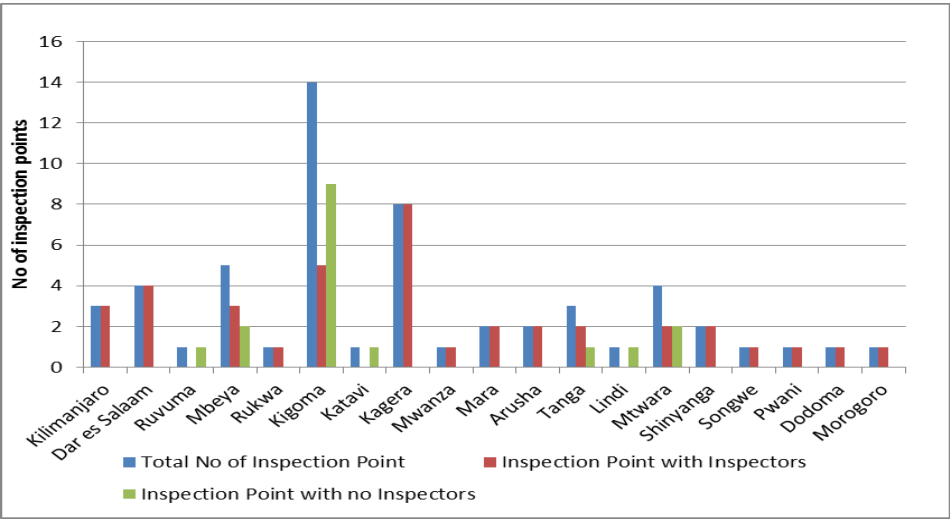
Through the interviews conducted with inspectors from TPRI, Tengeru zonal office and Namanga Port of entry it was revealed that inspections were conducted at both Ports of entry and pesticides sellers.

It was further established that conducted inspections were not adequately executed to ensure that only registered pesticides were sold in the market. This was due to the fact that not all Ports of entry and pesticides sellers were inspected. It was also noted that re-inspections were not frequently conducted.

In addition, review of Reports on Status of Inspections Points from the Ministry of Agriculture showed that, there were inspections points that were not performing inspections because there were no inspectors to

facilitate pesticides inspection activities. Figure 5.1 shows the status of operating inspection points in various regions.

Figure 5.1: Status of Functioning Inspection Points



Source: Auditors’ Computation Using Data from the Interviews held with experts and stakeholders from six Visited LGAs (2018)

Figure 5.1 indicates that, Kigoma region had highest number of inspection points with no inspectors, while all inspection points at Ruvuma, Katavi and Lindi had no inspectors at all.

Furthermore, interviews conducted with officials from TPRI showed that, pesticides sellers were not frequently inspected. This was confirmed through the reviews of 20 files of pesticides sellers that contain reports of inspections conducted to them by TPRI. Based on those reviewed files, it was noted that, some of the pesticides sellers were not re- inspected for the last fifteen years as shown in **appendix 4**.

On visiting the pesticides shops, it was noted that 5 out of 13 shops were not inspected by TPRI since they started pesticides business leading to selling of pesticides against the requirements of the Plant Protection Act No. 13 of 1997 and its Regulations of 1999. **Photo 5.1** shows pesticides that were repacked in one of the pesticides shop in Morogoro DC, the shop was never inspected since it was opened.



Photo 5.1: Repacked pesticide named Glyphocel 480 SL at one of visited pesticides shop at Morogoro DC. Picture taken on January,25,2018.

Furthermore, it was noted that inadequate implementation of inspection of pesticides sellers and Ports of entry were caused by lack of experienced and skilled pesticides inspectors working under the Ministry of Agriculture and allocation of few inspectors to required Ports of entry.

Inspection tools were also reported to be among the reasons for inadequate inspections. During the visits made to the Ports of entry at Namanga, it was noted that, inspectors working at this border post lack sufficient and required modern tools to carry-out inspections of pesticides. It was also noted that, there were no protective gears such as gumboots, coats, masks as well as gloves.

5.2.5 Authority of Inspectors to Enforce Pesticides Business Requirements and its implementation

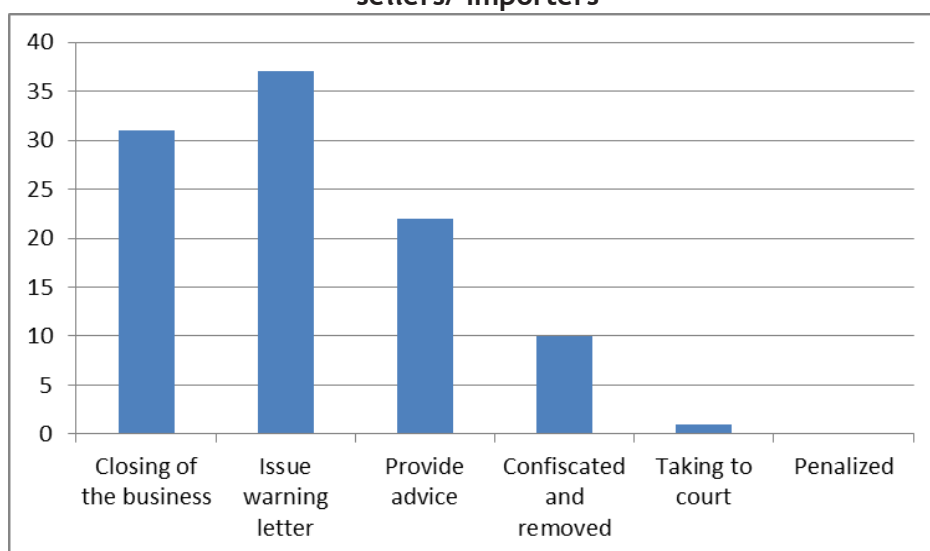
The audit team noted that when inspectors found out pesticides sellers/importers have defaulted, they took the following sanctions:

- a) Issuing warning letter to the pesticides seller;
- b) Closing the shop of the pesticides sellers;
- c) Impounding the pesticides;
- d) Imposing penalty;
- e) Providing advice;
- f) Confiscating and removing pesticides from shop; and

- g) Taking the pesticides importer/seller to the court of law for further legal proceedings that led to either fines payments or jail sentences or both of them.

This was also confirmed in the Inspection Reports of 2017, which were reviewed by auditors. However, it was noted that, not all sanctions were frequently implemented by inspectors as shown in Figure 5.2.

Figure 5.2: Status of Applied Sanctions to Defaulting Pesticides sellers/ importers



Source: Auditors' Computation Using Data from Inspection Reports

Figure 5.2 indicates that action such as imposing penalties, impounding and taking defaulters to court are rarely implemented by pesticides inspectors. They mostly ended up in issuing warning letters and/or closing shops.

It was also found out that, taking defaulters to court took a long time because of the lengthy legal proceedings at the court of law. Moreover, inspectors cannot proceed with the case at the court without involving the Police Force and a Legal Officer from the Ministry of Agriculture as TPRI is yet to establish a legal office. In these legal proceedings inspectors remained as key witnesses.

Another reason that was given by the Ministry of Agriculture and TPRI officials was that most of the inspectors were not approved; hence they were hesitant to take further legal actions such as closing of the pesticides shop, impounding of pesticides, imposing of fines and taking pesticides sellers to court of law as they don't have legal documents to validate their power.

It was further noted that illegal and expired pesticides were not impounded by inspectors as required by the Plant Protection Act No. 13 of 1997, Section 34 (f). This was due to lack of authorized warehouses for storage before destruction. Currently, there is only one warehouse at TPRI offices in Arusha region.

Despite actions being taken by pesticides inspectors to defaulted pesticides sellers as shown in Figure 5.2, auditors noted that, not all pesticides sellers were annually inspected as only 476 out of 1935 pesticides sellers were inspected in the financial year 2015/16. This affected implementation of sanctions to ensure that only registered pesticides were sold in the market. The lack of sufficient field inspectors has led to an increase of unregistered pesticides entering the market as shown in **Section 3.2**.

5.2.6 Implementation of Corrective Actions Issued to Pesticides Sellers by Pesticides Inspectors

Based on the visits conducted to 13 pesticides sellers, it was noted that 6 out of 7 re-inspected pesticides sellers, were found to be non-compliant to the operation of pesticides business as they did not meet the requirements. The identified non-compliance was lack of storage facilities for expired pesticides, shop arrangement, not using protective gears, untrained employees, selling of unregistered pesticides etc.

It was further noted that only one pesticide sellers implemented some of the identified non-compliance. It was also noted that there were no follow-ups or re-inspections that were conducted by pesticides inspectors to assess the level of implementing the identified non-compliance.

Failure to properly follow-up on the issued sanctions to pesticides sellers resulted into increase circulation of unregistered, substandard and expired pesticides in the market. This affect crops productivity, human health as well as environment as elaborated in Section 3.3.2.

5.3 Coordination of Activities on Registration, Training and Inspection of Pesticides

Establishment of Coordination Framework and Plan

There were no coordination framework and plan to facilitate coordination of activities regarding registration of pesticides; training of farmers, pesticides sellers and agricultural extension officers; and inspections conducted to pesticides sellers.

It was also noted that, the Ministry of Agriculture, Tropical Pesticides Research Institute and President's Office Regional Administration and Local Government were all planning but separately and their activities were included in their Strategic Plans and Medium Term Expenditure Framework.

There was no platform to coordinate their plans despite of available limited resources to facilitate implementation of some activities as shown on Sections 3.3.1 and 3.4.2.

Coordination of Registration, Training and Inspection Activities

The Ministry of Agriculture, TPRI and PO-RALG reported that there was poor coordination in the area of pesticides registration, training and inspection as shown below:

It was noted that PARTS and NPPAC did not meet as planned to discuss pesticides issues. When they met they discussed pesticides registration issues only and not other issues such as pesticides trainings and inspections as they were mandated. As shown in Section 3.3.4, NPPAC failed to conduct meetings for approving the new list of registered pesticides for more than two years.

Also, it was noted that, trainings regarding pesticides management provided to farmers and agricultural extension officers were not adequately coordinated. Interviews conducted with officials from the Ministry of Agriculture, TPRI and PO-RALG revealed that, each entity separately conducted trainings to farmers and agricultural extension officers and this has led into duplication of efforts.

For example, the review of Reports on Training of Trainers conducted to agricultural extension officers and farmers by the Ministry of Agriculture showed that, most of the trainings were conducted in Dodoma, Shinyanga, Mwanza, Morogoro and Manyara regions. Similarly, review of the implementation reports from TPRI, showed that, Shinyanga, Mwanza and Morogoro regions were also frequently covered by TPRI when training various farmers groups.

However, there were no existing mechanism in place between the Ministry of Agriculture and PO-RALG to ensure that farmers and agricultural extension officers are trained as trainers in order to further spread the pesticides knowledge they got.

Furthermore, apart from conducting inspections at the Ports of Entry and pesticides shops involving both inspectors from the Ministry of Agriculture and TPRI, there are no well written guidelines showing

their demarcations something that would have facilitated a wider coverage and better coordination among them.

Both the Ministry of Agriculture and TPRI inspectors were involved in inspecting pesticides sellers and ports of entry but there was no sharing of information such as inspection plans despite having done planning and budgeting for such activities.

Failure to coordinate activities regarding pesticides training and inspection management resulted into offering inadequate trainings to farmers and agricultural extension officers as well as inadequate inspection to pesticides sellers and Ports of entry. It has also been observed that duplicating the efforts of providing trainings and inspections to the same beneficiaries made their interventions expensive and less effective in term of coverage and the expected impact.

Establishment of National Steering Committee on Pesticides Issues

There were no established committees that were responsible for overseeing the entire pesticides handling processes such as manufacturing, importation, quality and standards, selling, inspection and disposal.

It was further noted that, these processes involved different actors such as manufacturing industries, TPRI, NEMC, as well as sector ministries. But, all were operating separately under different established committees.

Consequently, issues such as quality, disposal, uses and control were not fully addressed by these committees.

5.4 Monitoring of Pesticides Registration, Training and Inspection Activities

Establishment of Monitoring Plan and Framework for Monitoring Pesticides Activities

There were no documented framework and plan in place for monitoring pesticides registration activities, inspection and training.

Review of Strategic Plan of the Ministry of Agriculture showed that, monitoring of pesticides activities was included but was not directly related with monitoring of pesticides registration, training and inspection activities.

Both officials from the Ministry of Agriculture and TPRI considered inspections conducted to pesticides sellers and Ports of entry as monitoring. It was also noted that, the Ministry of Agriculture did not prioritize monitoring of pesticides activities despite of their role to oversee the implementation of developed policies, laws as well as various set guidelines in the area of pesticides.

Monitoring of Registration, Training and Inspection Activities

It was noted that Pesticides registration activities are monitored by NPPAC as required by the Plant Protection Act No. 13 of 1997. But there was no monitoring that was conducted on pesticides training and inspection activities. This was further confirmed by officials from the Ministry of Agriculture, TPRI and PO-RALG as both of them were reported to be operating separately.

Furthermore, there was no implementation report sent to the Ministry of Agriculture either from TPRI or PO-RALG on the status of implemented activities in pesticide training and inspection. This happened despite of TPRI being a research institute under the Ministry of Agriculture, also, despite of the fact that Chief Inspector was also the in-charge of Plant Health Services Section in the Ministry of Agriculture.

This was mainly caused by the fact that, there was a weak reporting mechanism between Ministry of Agriculture, TPRI and PO-RALG. For example, Agricultural Extension Officers were reporting to PO-RALG and there was no steering committee overseeing agricultural extension issues as well as pesticides training and inspection activities in the country.

CHAPTER SIX

CONCLUSION

6.1 Introduction

This chapter provides conclusions of the findings presented in chapter three, four and five. The basis for drawing the conclusion is the overall and specific objectives of the audit as presented in chapter one of this report.

6.2 Overall Conclusion

Safety of Pesticides to users and environment have not been given due priority by both the Ministry of Agriculture and Tropical Pesticides Research Institute. This might affect marketing of agricultural commodities in international markets due to levels of pesticides residues. This may have a negative impact on the national economy because the Ministry of Agriculture through Crop Development Division and Tropical Pesticides Research Institute is not adequately managing the quality of imported and locally produced pesticides. The Ministry has failed to control distribution and usage of pesticides in the country.

Farmers are directly involved in the use of pesticides which are mostly considered to be of low quality due to availability of unregistered pesticides in the market as evidenced in all shop visited by auditors. There is improper handling of pesticides among farmers and pesticides sellers which affects their health, environment as well as limits expansion of agricultural sector which benefits more than 81 percent of Tanzanians.

Regardless of the fact that agriculture is the backbone of Tanzania's economy, the Ministry of Agriculture through its Crop Development Division and Tropical Research Institute (TPRI) is not doing enough to manage pesticides in order to ensure that they are of good quality, properly distributed as well as safely applied in the field. This is due to the following noted deficiencies:

6.3 Specific Conclusions

6.3.1 Inadequate Implementation of pesticides registration activities

Implementation of pesticides registration activities are not appropriately conducted by the Ministry of Agriculture therefore there is no guarantee that pesticides sold in the country are safe to use. Assessments of health and environmental impact are not well conducted, hence Identification and Reporting of Health and Environmental Risks associated with use of Pesticides is a problem.

There is insufficient implementation of established mechanisms to ensure that only registered pesticides are sold in the country and no periodic updates of lists of registered pesticides is undertaken.

Despite of pesticides posing potential risks to the health of human beings as well as environment when not well managed, the Ministry of Agriculture and TPRI have not conducted assessments of health risks to small and medium scale farmers who account for 81% of Tanzanians population.

Despite of TPRI having Pesticides and Environment Management Division, it has failed to frequently conduct environmental impact assessments that are related to pesticides usage despite having budgeted for them each year. Only two environmental assessments inspection were conducted in Tengeru and Morogoro which showed that the soil was highly contaminated due to pesticides usage.

The Ministry of Agriculture failed to develop registration policy to guide pesticides registration activities in the country. Also, the established mechanisms to control unregistered pesticides in the country were not adequately functioning due to failure of undertaking re-inspection.

The Ministry of Agriculture and TPRI did not update the list of registered pesticides for two and half years. Also, the list was not adequately communicated to all users such as pesticides sellers and Agriculture Extension officers.

6.3.2 Inadequate pesticides knowledge to Key Players

Pesticides handling knowledge was not properly disseminated to key players, such as pesticides sellers, farmers and agricultural extension

officers. In the visited LGAs, it was noted that there were 60% of untrained pesticides sellers, all agricultural extension officers were not trained and almost all farmers were not trained.

Improper dissemination of pesticides knowledge was contributed by lack of training plans, budgeting and lack of Trainings of Trainers schemes in the area of pesticides.

Consequently, pesticides sellers and agricultural extension officers were not disseminating pesticides knowledge to farmers as required.

Improper handling of pesticides due to absence of knowledge may results into exposing human beings and the environment to potential risks of health hazards.

6.3.3 Insufficient Inspection to pesticides sellers and at Ports of entry

The Ministry of Agriculture and TPRI have not adequately conducted Inspections to pesticide sellers and at Ports of Entry.

There are no risk based plans to prioritize inspections to pesticides sellers falling under risk category which led to failure to inspect/re-inspect risk areas. With the exception of pesticides sellers in Urambo DC, all other visited pesticides sellers in the remaining five (5) Local Government Authorities, inspections or re- inspections were not conducted. This is despite of involving these LGAs in the usage of pesticide.

There are weaknesses in the inspections conducted to pesticides sellers and at Ports of entry. There were no established inspection procedures to guide inspections; instead inspectors use inspections/re-inspection forms which were not consistent and that affects quality of inspections conducted as well as failure to identify all major weaknesses during the inspections.

Despite of having 1935 pesticides sellers, there was shortage of qualified inspectors to inspect pesticides sellers and Ports of entry. Most of available inspectors were lacking current updated pesticides knowledge and inspection tools and were not approved by the Minister of Agriculture as required by the Plant Protection Act No.13 of 1997.

Consequently not all Ports of entry and pesticides sellers were inspected; some pesticides sellers were not inspected at all and some

were not re-inspected for 15 years. Therefore, substandard, counterfeits and unregistered pesticides had entered into the Tanzania market and being sold to farmers.

Meanwhile, shortage of qualified inspectors led to insufficient execution of sanctions imposed to pesticides sellers and importers who have defaulted; hence the volume of unregistered and counterfeit pesticides circulating in the country is alarming.

6.3.4 Insufficient Coordination of Activities Regarding Pesticides Registration, Training and Inspection

Coordination for activities such as registration, training and inspection is not sufficiently done. There is no coordination framework and plans to facilitate coordination of activities regarding pesticides registration; training; and inspection conducted to pesticides sellers and at Ports of Entry.

Pesticides Approval and Registration Technical Committee (PARTS) and National Plant Protection Advisory Committee (NPPAC) who are responsible to ensure registration activities are sufficiently conducted did not meet regularly.

There were duplications of efforts on trainings conducted to farmers that were mainly caused by lack of coordination mechanism among PO-RALG, the Ministry of Agriculture and TPRI. Also, there were no well-defined inspection guidelines to show demarcation of areas to be inspected by either inspectors working at the Ministry of Agriculture or TPRI, this ultimately led to duplication of efforts and waste of resources as same inspections are carried out to the same areas by two entities.

6.3.5 Monitoring the Implementation of Pesticides Registration Activities, Training and Inspection

The Ministry of Agriculture does not monitor implementation of activities regarding pesticides registration, training and inspection. There is no monitoring framework established, set key performance indicators as well as no compiled reports at ministerial level.

Since, TPRI is mandated to regulate pesticides in the country; the Ministry of Agriculture did not establish monitoring mechanism to oversee activities performed by TPRI. There were no report sent to the Ministry of Agriculture by TPRI regarding implementation of

registration, training and inspections despite of Chief Inspector being the Assistant Director of Plant Health Services Section of the Ministry of Agriculture.

CHAPTER SEVEN

AUDIT RECOMMENDATION

7.1 Introduction

The audit findings and conclusion point-out several weaknesses in the management of pesticides. The weaknesses were noted on all five audited parameters, namely: implementation of registration activities; training of farmers, pesticides sellers as well as agricultural extension officers; inspections to pesticides sellers and entry point; coordination as well as monitoring of activities related to registration, training and inspection.

The National Audit Office believes that in order to improve management of pesticides, the recommendations produced in this report need to be fully implemented. The recommendations will also ensure the presence of the 3Es of Economy, Efficiency and Effectiveness in the use of the public resources. The recommendations are specifically addressed to the Ministry of Agriculture through Crop Development Division and Tropical Pesticides Research Institute.

7.2 Specific Recommendations

7.2.1 Implementation of Registration Activities

The Ministry of Agriculture should:

1. Establish policies of pesticides in the country and ensure that the registered pesticides are adequately regulated during the implementation

The Tropical Pesticides Research Institute should:

1. Set up mechanism to facilitate periodical update and record of all registered pesticides and ensure that the updated list of registered pesticides and accompanied recorded information are accessible to all users;
2. Update and improve the existing registration procedures and establish re-registration procedures of pesticides in the country

and ensure that the registered pesticides are adequately regulated during the implementation; and

3. Ensure that health and environmental risks associated with pesticides used in the country are periodically identified, evaluated and reported to the Ministry of Agriculture.

7.2.3 Training to Farmers, Pesticides Sellers and Agricultural Extension Officers

The Ministry of Agriculture should:

1. Monitor and evaluate the effectiveness of pesticides trainings provided to pesticides sellers, farmers and agricultural extension officers

The Tropical Pesticides Research Institute should:

1. Strengthen mechanism put in place to ensure that pesticides sellers, farmers and agricultural extension officers are periodically trained on the proper use and handling of pesticides

7.2.4 Inspections to Pesticides Sellers and Ports of Entry

The Ministry of Agriculture should:

1. Ensure that risk-based inspection plans for proper implementation of inspection to pesticides sellers and Ports of Entry are developed and guide the focus of inspections; and
2. Ensure availability and proper allocation of qualified pesticides inspectors to ensure maximum and effective coverage of pesticides sellers and Ports of Entry during the inspections.

The Tropical Pesticides Research Institute should:

1. Strengthen mechanism in place to ensure pesticides sellers are inspected before commencement of pesticides business;
2. Ensure re-inspection is timely conducted before renewal of pesticides business permit to determine compliance with pesticides business requirement and implementation of corrective actions issued to pesticides sellers; and

3. Update and improve the existing procedures guiding inspection and re-inspection of pesticides in the country and ensure that corrective actions against defaulters are taken in accordance to the law.

7.2.5 Coordination of Activities Related with Registration, Training and Inspection

The Ministry of Agriculture should:

1. Develop a coordination mechanism that will take into account and guarantee that all government entities responsible for implementation of registration, training and inspection of pesticides are working together and avoid duplication of efforts

7.2.6 Monitoring of Activities Related with Registration, Training and Inspection

The Ministry of Agriculture should:

1. Establish monitoring and evaluation framework that will ensure that there are set key performance indicators, M&E implementation plans, timely performance reporting of registration, training and inspection of pesticides activities.

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APPENDICES

Appendix 1: Responses from the Audited Entities

This part covers the responses from the two audited entities namely, the Ministry of Agriculture and Tropical Pesticides Research Institute. The responses are divided into two i.e. general comments and specific comments in each of the issued audit recommendations. This is detailed in appendices 1(a) and 1(b) below:

Appendix 1(a): Responses from the Ministry of Agriculture

General Comment

The Ministry has observed the findings of the report and shall prepare mitigation measures to ensure that pesticides are used to boost agricultural production and risks due to pesticide use are reduced. The Ministry in collaboration with TPRI, PO-RALG and NEMC will work very closely to ensure that most of the observed findings are resolved

Specific Comments

S/No	Recommendation	Comments of the Ministry	Planned actions	Implementation Timelines
1.	Establish policies of pesticides in the country and ensure that the registered pesticides are adequately regulated during the implementation	The Ministry to incorporate Pesticides management in Agricultural Policy	To incorporate During Agriculture Policy review	
2.	Strengthen mechanism in place to ensure that pesticides sellers, farmers and agricultural extension officers are periodically trained on the proper use and handling of pesticides	-The Ministry to ensure pesticides sellers, farmers and agricultural extension officers are trained on the proper use and handling of pesticide	MoA, TPRI and PO RALG to identify training needs and conduct training accordingly	-Trainings to be conducted annually
3.	Monitor and evaluate the effectiveness of	The Ministry to put in place	The Ministry in collaboration	By June, 2019

S/No	Recommendation	Comments of the Ministry	Planned actions	Implementation Timelines
	pesticides trainings provided to pesticides sellers, farmers and agricultural extension officers	Monitoring mechanism on effectiveness of pesticides trainings	with TPRI and PO RALG to develop monitoring mechanism and carryout monitoring accordingly	
4.	Ensure that risk-based inspection plans for proper implementation of inspection to pesticides sellers and Ports of Entry are developed and guide the focus of inspections	The Ministry to develop risk based inspection plan	PHS in collaboration with TPRI to develop the plan	By end of December, 2018
5.	Ensure availability and proper allocation of qualified pesticides inspectors to ensure maximum and effective coverage of pesticides sellers and Ports of Entry during the inspections	The Ministry to train and gazette inspectors	Conduct specialized training on safe use and handling of pesticides based on training needs	annually
6.	Develop a coordination mechanism that will take into account and guarantee that all government entities responsible for implementation of registration, training and inspection of pesticides are working together and avoid duplication of	MoA as a Regulatory Authority to ensure proper coordination to all government entities responsible for pesticides management.	Conduct meetings with all government entities responsible for implementation of pesticide management issues	Semi annually

S/No	Recommendation	Comments of the Ministry	Planned actions	Implementation Timelines
	efforts			
7.	Establish monitoring and evaluation framework that will ensure that there are set key performance indicators, M&E implementation plans, timely performance reporting of registration, training and inspection of pesticides activities	The Ministry to establish M&E framework on registration, training and inspection of pesticides activities.	The Ministry in collaboration TPRI, PO RALG to develop M&E frame work.	By June, 2019

Appendix 1(b): Responses from Tropical Pesticides Research Institute (TPRI)

General Comment

Performance auditing on pesticides management was aimed at identifying areas of challenges/weakness/gaps particularly on regard to enforcement and compliance. TPRI at the Inception Meeting presented a Life - Cycle Management of Pesticides aimed at creating an enabling environment for performance auditing.

The identified challenges/weakness/gaps are typical to most of the developing countries and countries whose economy is in transition.

The revealed challenges/weakness/gaps were partly due to inadequate financial resources to support effective enforcement and compliance. Further factors include inadequately trained Inspectors in pesticides issues particularly those of Plant Health Services (PHS) and uncoordinated enforcement.

The apparently financial resources coupled with the Performance Auditing Report is an impetus to TPRI for further identifying the causes for the occurrence of the challenges/weakness/gaps and compelling putting in place measurable action plans for improving pesticides management system in the country.

Specific Comments

S/No	Recommendation	Comments by TPRI	Planned actions	Implementation Timelines
1.	Set up mechanism to facilitate periodical update and record of all registered pesticides and ensure that the updated list of registered pesticides and accompanied recorded information are accessible to all users	Inadequate funding caused delay of the legal meetings. The respective meetings are the National Plant Protection Advisory Committee (NPPAC) and the Sub - Committees (Pesticides Approval and	Two annual meetings of PARTS, OPS, Plant Quarantine Phytosanitary Services, BCAS and NPPAC to facilitate two publications per year of a list of Registered Pesticides (Gazetting)	Twice per year guaranteed by availability of adequate financial resources

S/No	Recommendation	Comments by TPRI	Planned actions	Implementation Timelines
		Registration Technical Sub Committee - PARTS; Biological Control Agents Sub-committee (BCAS); Outbreak Pests Control Sub Committee (OPCS) and Plant Quarantine and Phytosanitary Services Sub-committee (PQPS).		
2.	Update and improve the existing registration procedures and establish re-registration procedures of pesticides in the country and ensure that the registered pesticides are adequately regulated during the implementation.	Process and procedures of registration and re - registration are set out in the Plant Protection Act No. 13 of 1997 and the Plant Protection Regulations of 1999. Enhance number of legal approval meeting as stipulated in the Plant Protection Regulations (1999) will timely avail list of registered pesticides to stakeholders	Two annual meetings of PARTS, OPS, PQPS, BCAS and NPPAC to facilitate two publications per year of a list of Registered Pesticides (Gazetting)	Annually guaranteed by availability of adequate financial resources
3.	Ensure that health and environmental	Mostly large scale farmers afford the cost	Enhance awareness creation on	To be carried out on quarterly bases

S/No	Recommendation	Comments by TPRI	Planned actions	Implementation Timelines
	risks associated with pesticides used in the country are periodically identified, evaluated and reported to the Ministry of Agriculture	of monitoring health effects of pesticide of their workers and are also compelled to comply to market requirement. The cost of health monitoring is not easily affordable by small scale farmers which may therefore need government intervention. Environmental issues are under NEMC therefore issues of carrying out environment assessment inevitably is an inter-sectoral joint venture undertaking	the health effects caused by pesticides Monitoring of human health caused by pesticides exposures and environmental risk assessment	and reported to the Ministry of Agriculture
4.	Strengthen mechanism in place to ensure pesticides sellers are inspected before commencement of pesticides business	Plans and budget are in place for TPRI to train PHS inspectors on pesticides issues. The trained PHS inspectors will inspect in their respective regions and entry points. The training of	Inspection at regions by the trained PHS Inspectors at respective regions coordinated by TPRI	Regular pre-business inspection to be reported promptly to the Registrar of Pesticides for issuance of permits. (b) Monitoring (post) inspection to pesticides business to be

S/No	Recommendation	Comments by TPRI	Planned actions	Implementation Timelines
		PHS inspectors will enhance inspection operations		reported on quarterly basis to the Registrar of Pesticides
5.	Ensure re-inspection is timely conducted before renewal of pesticides business permit to determine compliance with pesticides business requirement and implementation of corrective actions issued to pesticides sellers	Plans and budget are in place for TPRI to train PHS inspectors on pesticides issues. The trained PHS inspectors will inspect in their respective regions and entry points. The training of PHS inspectors will enhance inspection operations	Inspection at regions by the trained PHS Inspector at respective regions coordinated by TPRI	Regular pre-business inspection to be reported promptly to the Registrar of Pesticides for issuance of permits. (b) Monitoring (post) inspection to pesticides business to be reported on quarterly basis to the Registrar of Pesticides
6.	Update and improve the existing procedures guiding inspection and re-inspection of pesticides in the country and ensure that corrective actions against defaulters are taken in accordance to the law	International guidelines particularly from FAO will be sought for developing national inspection guide. Legal officers at the Ministry of Agriculture will be used to train Inspectors on legal procedures and enable them take legal actions to contraveners of the requirement of Plant Protection Act	Develop inspection guidelines for use to ensure uniformity in enforcement Inspection at regions by the trained PHS Inspector at respective regions coordinated by TPRI Legal actions for non compliances	Regular pre-business inspection to be reported promptly to the Registrar of Pesticides for issuance of permits. Monitoring inspection to pesticides business to be reported on quarterly basis to the Registrar of Pesticides

S/No	Recommendation	Comments by TPRI	Planned actions	Implementation Timelines
		No. 13 and the Plant Protection Regulations of 1999		

Appendix 2: Detailed Main audit questions with sub-questions

This part provides the list of five main audit questions and their respective sub-questions detailed:

Audit Question 1	Are pesticides available in the market fit for farmers' consumption?
Sub-Audit Question 1.1	Are pesticides available in the market registered and certified by TPRI?
Sub-Audit Question 1.2	Are pesticides available in the market legally imported in the country?
Audit Question 2	Are activities for pesticides registration adequately implemented and guarantee existence of registered and safe to use pesticides in the country?
Sub-Audit Question 2.1	Do MALF and TPRI frequently identify, evaluate and report health and environment risks associated with regulated pesticides used in the country?
Sub-Audit Question 2.2	Are policies and procedures to guide registration of pesticides in the country established and adequately implemented?
Sub-Audit Question 2.3	Does MALF have mechanisms in place to verify that regulated pesticides sold in the country are registered in accordance with established policies and procedures?
Sub-Audit Question 2.4	Do MALF and TPRI prepare and periodically update record of all registered pesticides and make the recorded information accessible to users?
Sub-Audit Question 2.5	Are procedures for re- registration established to allow periodic reviews of previously approved pesticides?
Audit Question 3	Are farmers, Pesticides sellers and agricultural extension officers timely and properly trained on good practices for pesticides distribution and use?
Sub-Audit Question 3.1	Does MALF have pesticides training plan in place to guide dissemination of education on pesticides management and proper performance target setting and monitoring?
Sub-Audit Question 3.2	Is the training on pesticides business requirements, proper pesticides handling and uses timely and adequately provided to pesticides dealers?
Sub-Audit Question 3.3	Do MALF, TPRI, PO - RALG conduct periodical trainings to farmers on the proper use and handling of pesticides?
Sub-Audit Question 3.4	Do MALF, PO- RALG and TPRI conduct periodical trainings to Agricultural Extension Officers on Good Agricultural Practices (GAP) including pesticides management?

Sub-Audit Question 3.5	Do MALF, TPRI and PO - RALG periodically monitor and evaluate effectiveness of pesticides training provided to pesticides dealers, farmers and Agricultural Extension Officers?
Audit Question 4	Are inspections of Pesticides sellers adequately conducted and ensure availability of registered and good quality pesticides in the market?
Sub-Audit Question 4.1	Are pesticides inspection policies and procedures adequately developed and clearly communicate roles and responsibilities of pesticides inspectors in controlling pesticide business and usage?
Sub-Audit Question 4.2	Do MALF and TPRI have a risk- based plan for guiding proper inspections on pesticides distribution in the country?
Sub-Audit Question 4.3	Do MALF and TPRI have sufficient number of qualified and registered pesticides inspectors and adequately allocated to allow timely and effective inspections to pesticides dealers?
Sub-Audit Question 4.4	Are pesticides inspections conducted in accordance with the risk based inspection plan, and with applicable legislation, regulations, policies and procedures?
Sub-Audit Question 4.5	Do MALF and TPRI provide pesticides inspectors authority to enforce regulations /business requirements and issue sanctions to defaulting pesticides dealers?
Sub-Audit Question 4.6	Does the Ministry take action to correct areas with existing deficiencies on pesticides inspections and areas where pesticides inspectors do not have sufficient authority to carry out their assigned roles and responsibilities?
Sub-Audit Question 4.7	Do MALF and TPRI periodically confirm whether Pesticides sellers have adequately implemented corrective actions as per recommendations of pesticides inspectors?
Audit Question 5	Does the system for coordinating and monitoring registration, training and inspection of pesticides is in place and functioning well?
Sub-Audit Question 5.1	Do MALF, TPRI, PO-RALG, TBS, NEMC, LGAs and Pesticides sellers have a designed and well-functioning coordination framework among them?
Sub-Audit Question 5.2	Is the existing plan to coordinate registration, training and inspection of pesticides adequately followed and working well?
Sub-Audit Question 5.3	Do MALF and TPRI plan for monitoring pesticides activities?
Sub-Audit Question	Do MALF and TPRI have a functioning monitoring

5.4	framework?
Sub-Audit Question 5.5	Do MALF and TPRI set monitoring indicators, target, goals and modalities on achieving them?
Sub-Audit Question 5.6	Do MALF and TPRI execute their monitoring roles as expected?
Sub-Audit Question 5.7	Are the monitoring reports timely issued and covered relevant performance issues?

Appendix 3: Different Documents reviewed and Reasons for Review

This part provides the list of documents reviewed by the audit team in order to obtain appropriate and sufficient information to enable the audit team to come up with clear findings which are supported by collaborative evidences.

Description of g/Stakeholders	Type of document reviewed	Reasons for review
Ministry of Agriculture	1. National guidelines	To get the information on the commitment of the ministry with regard to issues of managing pesticides
	2. Strategic Plans, 2011-2016	To examine on how the Ministry has set strategies that includes pesticides management issues.
	3. Activity Plans from 2015 to December 2018	To examine planned activities by the ministry on pesticides application.
	4. Approved Medium Term Expenditure Framework from 2015 to December 2018	To find out how the Ministry and LGAs allocate resources to pesticides issues.
	5. Implementation and Performance Reports from 2015 to December 2018	To assess the performance and implementation status of planned pesticides activities.
	6. Monitoring and Evaluation Reports, 2011/2012 - 2015/2016	To find out if the responsible authorities adequately monitor and evaluate the projects and activities that concerns pesticides management
	7. Training Reports	
President's Office - Regional Administration and Local Government	1. Strategic Plan and Budget	To examine the extent of implementing the activities associated with pesticides management
	2. Implementation and Monitoring Report 2015 to December 2018	
	3. ASDP reports, 2015 to December 2018	
Tropical Pesticides	1. Annual reports and	

Research Institute	<p>Strategic Plan from 2015 to December 2018</p> <p>2. Pesticides inspection Reports from 2015 to December 2018</p> <p>3. Implementation Report from 2015 to December 2018</p> <p>4. Training Report from 2015 to December 2018</p> <p>5. List of Registered pesticides from July 2015 to July 2018</p> <p>6. List of pesticides Importers and sellers</p> <p>7. Health and Environment Risk Assessment Report</p> <p>8. Pesticides Registration procedures</p> <p>9. Inspection reports</p> <p>10. NPPAC and PARTS meeting minutes</p>	To examine the efficiency and effectiveness of TPRI on implementing their role on management of pesticides
Pesticides Approval and Registration Technical Sub - Committee (PARTC)	Reports and Files on status of pesticides and registration certification	To examine the overall status on the registration of the pesticides and how they implement their role
Pesticides Dealers	Necessary document on registration and certification of the pesticides	To examine the extent of their compliance to the requirement of the pesticides business
Food and Agriculture Organization (FAO)	<p>1. International Code of Conduct on Pesticides Management (2014)</p> <p>2. International Code of Conduct on Distribution and Use of Pesticides(2010)</p> <p>3. Rotterdam Convention (1998)</p>	To establish the information on how the ministry comply with International best practices guidelines for managing pesticides

Appendix 4: Officials interviewed and Reasons for Interviews

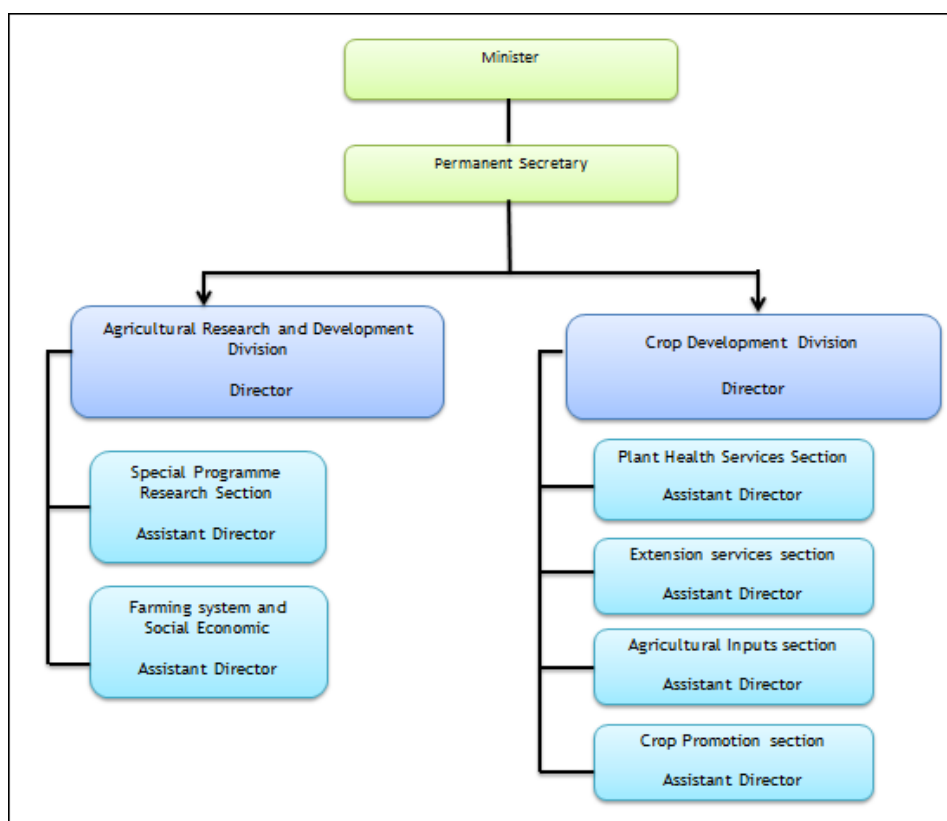
This part provides the list of Officials Interviewed by the audit team to get a broader understanding of the audit area and identify existing challenges, root causes and eventually the consequences to those problems and challenges

S/N	Entity	Official Interviewed	Reasons
1	Ministry of Agriculture	Director Plant Protection Division Assistant director - Plant Health Section Pesticides Coordinator Director of Legal Services	<ul style="list-style-type: none"> • To examine more information on extent of the problem • To examine to what extent the ministry is fulfilling its role on managing pesticides activities in the country. • To determine challenges/gaps faced by the ministry during the implementation of pesticides activities, • To get confirmation of information obtained from reviewed documents on pesticides management.
2	President's Office - Regional Administration and Local Government	Director of Sector Coordination Agricultural officials from Department of Sector Coordination	<ul style="list-style-type: none"> • To examine the extent PO - RALG coordinated agricultural issues specifically the pesticides at Local government level. • To determine to what extent PO - RALG implements agricultural policies and how pesticide aspect has been covered.
3	Tropical Pesticides Research Institute	Head of Pesticides and Environmental Management Centre Pesticides Registrar Pesticides Inspectors	<ul style="list-style-type: none"> • To determine to what extent TPRI is implementing the pesticides activities. • To examine how TPRI coordinate with other stakeholders in implementing pesticides activities in the country.
4	Pesticides Approval and	Chairperson	To get the comprehensive information on how the

	Registration Technical Sub - Committee	Other committee members	committee implement their role on provision of recommendation and approval on registered pesticides
5.	National Plant Protection Advisory Committee	Chairperson Other committee members	To assess how they coordinate plant protection activities of the NPPAC sub- committee and collaborate with national or international body dealing with plant protection
6	Pesticides Dealers	Pesticides sellers and workers	To determine how pesticides dealer comply with the requirement of pesticides business in the country
7	Farmers	Farmers in the visited villages	To examine their level of knowledge on pesticides and get their view on the efficiency and effectiveness of the pesticides they use in agriculture activities.

Appendix 5: Organization Structure for Division Responsible with Pesticides Management

This part provides part of the organization structure of the Ministry of Agriculture with the main focus of two Divisions which are responsible for pesticides management in the country.



Appendix 6: Status of Re - Inspection Conducted by TPRI to Pesticides Sellers

This part provides the list of pesticides sellers who have been registered and undergone re-inspection in one instance or else. It also indicates when the re-inspection was conducted to a particular pesticides seller.

No	Name	Region	Year Pesticides Business Started	First Inspection (Date)	No. of Issued pesticides Business Permit	No. of Re-Inspection	Date of Re-Inspection
1	MS Philemon N. Mtwewe	Njombe	1996	8/8/1997	15	1	14/9/2002
2	Emmanuel Provision Shop	Dar Es Salaam	2005	03/12/2004	8	0	
3	SakimAgrovet Services	Dar Es Salaam	2006	14/11/2013	8	1	10/8/2006
4	SURA INTERNATIONAL AGROCHEMICAL LTD	Dar Es Salaam	2013	16/07/2013	4	0	
5	USA River Agro input Services	Arusha	1999	18/06/1998	0	1	23/3/2006
6	Shamba Agroveta	Arusha	2013	15/12/2012	2	0	
7	JAZARI AGRO DEALERS SUPPLIER	Mtwara	2013	09/03/2013	2	0	
8	MACHUMA AGROVET SUPPLIES	Mtwara	2013	08/03/2013	3	1	3/12/2014
9	B.K Agroveta General Supp	Tabora	2011	05/03/2011	1	0	
10	J.J VET AGRO	Tabora	2009	28/10/2008	2	0	
11	BAJUTA INTERNATIONAL	Morogoro	2005	10/04/2000	13	1	28/11/2012

	ONAL T. LTD						
12	M. SEED &PESTICID ES SUPPLY	Morogoro	2006	30/09/2006	7	1	20/11/2014
13	NGAO AGRIC.INP UTS & G.SUPP	Dodoma	1999	26/11/1997	11	1	12/10/2007
14	Vumilia Agrochemi cal	Simiyu	2015	23/02/2015	1	0	
15	M.S AGROTEC H (ANNEX)	Dodoma	2001	02/05/2000	14	0	