

# What to know about **PHYTOSANITARY SERVICES** AND THEIR IMPORTANCE TO THE **AGRICULTURE SECTOR**



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## Dear Readers,

This Bulletin is a special edition that seeks to introduce the new department in the Ministry of Agriculture. Apart from describing the mandate of the department, it goes further to highlight various Units that exist under the department and their role in progressing the core mandate of the department and contribute to the development of the agriculture sector.

#### ABOUT PLANT QUARANTINE AND PHYTOSANITARY SERVICE

The Plant Quarantine and Phytosanitary Service (PQPS) is a new department in the Ministry of Agriculture with a core mandate of providing regulatory services that seek to prevent the introduction and spread of plant pests in the country while facilitating safe movement of plants and plant products both locally and internationally. Zambia is a signatory to the International Plant Protection Convention (IPPC) and accordingly, has an obligation to have a National Plant Protection Organisation (NPPO). PQPS is the designated NPPO of Zambia. The department derives its mandate from the Plant Pests and Diseases Act, Cap 233 of the Laws of Zambia as the principal law but further, makes reference to a number of legislations such as the Noxious Weeds Act, Cap 231, the Coffee Act, Cap 228 the Cotton Act, Cap 227 and the Border Management Act No. 12 of 2018 among others. Further attached to the principal Act, are several Statutory Instruments (S.Is) that provide a complementary and supplementally role to the principal Act.

PQPS is obliged under the World Trade Organization (WTO) Sanitary and Phytosanitary (SPS) trade agreements as well as agreements within the region to comply with internationally recognized standards. The WTO recognizes the International Plant Protection Convention (IPPC) as the standard setting body for plant health. The IPPC is an international agreement on plant health and currently has 184 member states. It aims to protect cultivated and wild plants by preventing the introduction and spread of pests. As a contracting party, Zambia is required to conform to guidelines set out in the International Standards for Phytosanitary Measures (ISPMs) developed by the IPPC in addition to enforcing the national legislations related to plant health and trade facilitation.

PQPS as a department has several units that constitute part of its structure and these are: the Pest Risk Analysis unit, the Standards and Regulation unit, the Pest Surveillance unit, the Inspections unit, the Communications, Awareness and Training unit and the Border Coordination unit.

Awareness creation and dissemination of information are key components of communication of what the department's role is. Therefore, PQPS's communication plan has been placed within a broader communication strategy of the department. PQPS through the Communication, Awareness and Training (CAT) Unit's coordination, will be producing bulletins biannually. The publication of bulletins is intended to create the much needed awareness and visibility on plant health and requirements for movement of plants and plant products locally and internationally. Knowledge on plant health and trade requirements is key for ensuring support in this endeavor as well as ensuring compliance to trade requirements by Zambia's trading partners. It has the potential to inspire confidence in Zambia's trading partners and potentially lead to enhanced market access and trade activities. This resonates well with the Second National Agriculture Policy (2016 - 2020) as well as the Seventh National Development Plan (2017 - 2021) including the Economic Recovery Program (2020 - 2023).

Thank you

From the Editor - in - Chief

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#### PLANT QUARANTINE AND PHYTOSANITARY SERVICE:

- Issuance of Phytosanitary Certificates (PC) for export of plants, plant products and other regulated articles;
- Issuance of Plant Import Permits (PIPs) for importation of plants, plant products and other regulated articles;
- Issuance of Transit Permits for risky consignments passing through Zambia;
- Laboratory diagnostics for identification of plant pests and diseases;
- Training in fumigation and wood packaging material treatment;
- Fumigation registration, wood treatment facility registration, plant nursery registration, Processing facilities and tobacco storage premises registration;
- Pest Risk Analysis on plants, plant products, plant pests and other regulated articles for generation of scientifically justified import requirements; and
- Advisory on plant health matters and trade requirements to farmers, traders, clearing agents, travellers and other stakeholders.

#### DESCRIPTION OF UNITS UNDER PQPS

#### BORDER COORDINATION UNIT

Border Coordination and Quarantine Unit is amongst the key units under the department of Plant Quarantine and Phytosanitary Service (PQPS) created to enhance efficiency and effectiveness in the service delivery aimed at meeting the departmental mandate in preventing the introduction and spread of plant pests into the country. The unit's overall responsibility is to coordinate phytosanitary activities being implemented at border points and at in-land stations across the country. PQPS has strategically positioned Plant Health Inspectors (PHIs) across the country both at border and at in-land phytosanitary stations to regulate the movement of plants and plant products for domestic and international trade.

Therefore, the main functions of Border Coordination Unit include the following:

- Coordination of in-land and border activities as well as backstopping;
- Supervised importation of plants, plant products and regulated articles to enhance compliance to phytosanitary measures;
- Destruction of non-compliant of plants and plant products to phytosanitary measures;
- In-land phytosanitary enforcement;
- Assessment of potential inactive borders for phytosanitary activities;
- Development of standard operational procedures (SOPs)/Protocols;
- Conduct research;
- Collaboration and participation in local, regional and international meetings, seminars and workshops; and
- Compilation of PQPS reports.

#### PQPSoffices across the country

The main office of the PQPS is at Mount Makulu, along Kafue Road in Chilanga. Other border offices are located in Sesheke (Katima Mulilo), Kazungula, Livingstone, Chirundu, Chipata, Nakonde, Chililabombwe while the inland border offices are: Kenneth Kaunda International Airport (KKIA), Kafue, Choma, Kabwe, Kasama, Kapiri Mposhi, Mpika and Ndola. These offices are manned by Plant Health Inspectors (PHIs). Figure 1 shows PQPS stations across the country.



Figure 1. PQPSoffices across the country

#### **PEST RISK ANALYSIS UNIT**

The Pest Risk Analysis (PRA) is a unit within the PQPS tasked with the responsibility of conducting Pest risk analysis. Pest risk analysis provides the rationale for phytosanitary measures for a specified PRA area. It evaluates scientific evidence to determine whether an organism is a pest. If so, the analysis evaluates the probability of introduction and spread of the pest and the magnitude of potential economic consequences in a defined area, using biological or other scientific and economic evidence. If the risk is deemed unacceptable, the analysis may continue by suggesting management options that can reduce the risk to an acceptable level. Subsequently, pest risk management options may be used to establish phytosanitary regulations. For some organisms, it is known beforehand that they are pests, but for others, the question of whether or not they are pests should initially be resolved. The pest risks posed by the introduction of organisms associated with a particular pathway, such as a commodity, should also be considered in a PRA. The commodity itself may not pose a pest risk but may harbour organisms that are pests (Figure 2). Lists of such organisms are compiled during the initiation stage. Specific organisms may then be analysed individually, or in groups where individual species share common biological characteristics. Less commonly, the commodity itself may pose a pest risk. When deliberately introduced and established in intended habitats in new areas, organisms imported as commodities (such as plants for planting, biological control agents and other beneficial organisms, and living modified organisms (LMOs)) may pose a risk of accidentally spreading to unintended habitats causing injury to plants or plant products. Such risks may also be analysed using the PRA process. The PRA process is applied to pests of cultivated plants and wild flora, in accordance with the scope of the IPPC. It does not cover the analysis of risks beyond the scope of the IPPC.



Figure 2. Apple fruit traded that has the potential to harbour pests

#### Pest Risk Analysis structure

The PRA process consists of three basic stages:

- Stage 1: Initiation
- Stage 2: Pest risk assessment
- Stage 3: Pest risk management.

It is important to note that Information gathering, documentation and risk communication are carried out throughout the PRA process.

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#### The PRA objectives

- 1. To Prevent the introduction of pests and diseases by conducting Pest risk analysis on all agriculture commodities not previously imported into the country, new plant part, seed or fruit including new plant species imported for selection and scientific research purposes;
- 2. Identifying and come up with appropriate phytosanitary measures for agricultural products imported into the country;
- 3. To facilitate market access for export commodities;
- 4. Revising and updating existing phytosanitary conditions; and
- 5. Management of Pest Phytosanitary Information Management System (PIMS).

#### The PRA success stories

- Plant import conditions developed for all import commodities;
- Market access gained for grapes export to South Africa;
- Market access has been obtained for blueberries export to China; and
- Market access field verification for avocados export to South Africa.



Figure 3: Phytosanitary Verification visit from Chinese counterparts prior to being granted market access for Stevia



Figure 4. Macademia seedlings from South Africa in readiness for phytosanitary inspection at Kazungula border

#### LABORATORY AND DIAGNOSTICS UNIT

The Plant Pest Diagnostic Laboratory is a unit among others within the Plant Quarantine and Phytosanitary Service which is responsible for diagnosing and identifying plant diseases, insects, and weeds and other problems that affect the health of plants, plant parts and plant products. Pest diagnosis is a cross-cutting issue that underpins most PQPS activities. In order to take action against a pest, it must be accurately identified to enable safe trade. Further, pest diagnosis is needed to support export certification, import inspections and remedial actions where a quarantine pest is found in pest surveillance and eradication programmes.

#### **Objectives of the Unit**

- 1. To generate pest data;
- 2. To carry out seed health testing;
- 3. To certify referred samples from exported and imported plant materials against quarantine pests; and
- 4. To test for phytosanitary purposes.

#### Generation of pest data

As a contracting party to the International Plant Protection Convention (IPPC) in line with the International standards for phytosanitary measures (ISPMs) on Guidelines on lists of regulated pests (# 19), Zambia is encouraged to establish and update lists of regulated pests. In order to assist the country in preventing the introduction and/or spread of pests and to facilitate safe trade as well as enhancing transparency pest lists must be generated and maintained. The lists may include those pests that occur as well as those that have been known to be quarantine pests or regulated non-quarantine pests. The establishment of such lists is important because trading partners may request importing countries to provide such information and may further be provided to the exporting contracting party as the means to make known to the exporting contracting party those pests for which inspection, testing or other specific procedures are required for particular imported commodities, including phytosanitary certification. Lists of regulated pests may also be useful as the basis for harmonization of phytosanitary measures where several contracting parties with similar and

shared phytosanitary concerns agree on pests that should be regulated by a group of countries or a region. The pathogens identified are recorded and posted on Phytosanitary Information Management System (PIMS) for reference by all Plant Health Inspectors positioned in the exit and entry border and inland inspection points. The identification of plant pests is done using various laboratory instruments. Among them, the compound and stereoscopy microscopes are used to examine diseased plants and plant parts in order to detect and observe pathogens and insects that are too small to be seen by the naked eye as shown in figure 5.



Figure 5. Compound and stereoscopy used in the PQPSLaboratory

#### Testing for phytosanitary purpose

The unit undertakes testing of plants and plant products collected during phytosanitary inspections. This is done in order to ascertain whether the commodity meets export requirements stipulated by Zambia's trading partners. Samples are collected from the field and brought to the Diagnostic Lab for testing. Additionally, plant samples collected during surveillance are also tested to determine the absence /presence of quarantine pests. Currently the pests of concern to Zambia include among others, maize lethal necrosis disease (MLND) and Fusarium wilt (Foc4) on bananas. Maize lethal necrosis disease (MLND) was first detected in Kenya in 2011 (Mahuku et al., 2015; Adams et al., 2013; Wangai et al., 2016). Since then, MLND has been confirmed in several countries in East and Central Africa, specifically in Tanzania, Uganda (Kagoda et al., 2016), Rwanda (Adams et al., 2014), DR Congo (Lukanda et al., 2014), Ethiopia and South Sudan (Mahuku et al., 2015). Maize is regarded as one of the three main staple food crops worldwide and in sub-Saharan Africa and South America, it provides nutrition for over 1.2 billion people (Shiferaw, et al., 2011). Maize is also one of the most important staple food and source of income for many household farmers in Zambia. Therefore, this disease is a severe food security threat (Schulze, 2018). MLND is caused by the co-infection of Maize chlorotic mottle virus (MCMV) and a cereal-infecting member of the Potyviridae family such as Sugarcane mosaic virus (SCMV), Johnsongrass mosaic virus (JGMV) or Maize dwarf mosaic virus (MDMV). Since 2016 PQPS has been conducting countrywide surveillance for MCMV. Figure 10 is showing areas where surveys have been conducted and currently MCMV has not been detected in Zambia. Therefore, Zambia is free from MLND. *Fusarium oxysporum* f.sp. cubense Tropical Race 4 (Foc TR4) is a strain of fungus that causes Fusarium wilt (Panama disease) of bananas which infects most varieties of banana cultivars. More than 80% of global banana and plantain production is thought to be based on TR4 susceptible germplasm. If unchecked, Foc TR4 can wipe out an entire plantation (CABI, 2018). Currently, the disease has been reported in Mozambique one of Zambia's neighboring countries. These pests can be introduced through the high traffic of people, goods and other plants and plant products moving across borders. The movement of plant pests and invasive alien species across borders threatens food security and creates a global public concern across all countries and all regions. Therefore, all plants and plant parts moving in international trade must be certified free of quarantine pests. Samples are collected during inspections (see figure 6) and tested in the Laboratory. In case of MLND, maize leaf samples are screened on spot during seed crop inspections using rapid detection kits called immunostrips.



Figure 6. Inspector collecting samples in the field



Figure 7. Plating samples collected in the field



Figure 8. Inspector analyzing samples



Figure 9. A training of Plant Health Inspectors on maize lethal necrosis seed testing in Zimbambwe



Figure 10. MLN surveyed areas in Zambia

#### Seed health testing

Seed health testing is a procedure that is used to check the presence or absence of seed borne pathogen(s) in a seed lot or consignment. Although seed may appear without signs of infection when observed visually, seeds may present a pest risk from seed borne pathogens that may be carried both inside and along with the seed. Therefore, seed is routinely tested to prevent or control plant pests and pathogens that may affect seed quality. Some of the seed types that are tested in the Lab are shown in figure 11 and 12. The seed samples are collected during import, export and seed crop inspections.

#### **Objectives of Seed health testing**

Seed health testing is necessary for the following reasons:

- Improvement of seed stock in certification scheme;
- To satisfy quarantine requirement of a country;
- To know the planting value of a given seed lot in order to forecast the field emergence and predict the health of the mature crop;

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- To know the storage quality or feeding value of a seed lot;
- For checking the advisability of seed treatment; and
- To know the efficacy of seed treating chemicals.

Seed health testing is one of the phytosanitary requirements imposed by national plant protection authorities before allowing seed to enter their territory from imports as well as exports. Seed health testing is achieved through the annual activity in which seed crop meant for export are inspected during active growth by plant health inspectors. All the samples collected are brought to the diagnostics Lab for analysis. In addition, samples that are collected from surveys are tested to establish the absence of quarantine pests.



Figure 11. Various seed samples



Figure 12. Some of the seeds tested in the lab

#### Certification of export and import plant materials

The unit has another responsibility to certify referred samples from exported and imported materials against pests. Samples collected during inspections from imports at border entry points and inlands inspection points are taken to Mt. Makulu Diagnostics Lab for analysis and certification.



Figure 13. Phytosanitary import inspection at Chirundu



Figure 14. Phytosanitary export inspection in Lusaka

#### STANDARDS AND REGULATIONS UNIT

The Standards and Regulations Unit is responsible for developing standard operating procedures that are aligned to regional and international trends as well as ensuring the department's adherence to their application. The Unit is further responsible for coordinating review of phytosanitary regulations to ensure that they are up to date with international evolutions and dynamics in phytosanitary matters and trade requirements for plants and plant products. Furthermore, the Unit undertakes periodic review of documents used by the department to ensure that they remain relevant to ever changing trends and environment with regard to plant health and trade requirements.

Ultimately, the Unit ensures that PQPS leads Zambia in compliance with regional and international agreements on plant health matters and is consistent with phytosanitary standard-setting bodies such as; World Trade Organization (WTO), Codex Alimentarius Commission (CAC) and the International Plant Protection Convention (IPPC). This culminates into ensuring Zambia's protection against plant pest introductions and their spread and consummately, Zambia's compliance to phytosanitary measures of her trading partners.

#### INSPECTION UNIT

Phytosanitary Inspections play an important role in moving export produce/commodities from growers/exporters to their overseas customers. Most countries that import fruit, vegetables and other agricultural commodities expect that the produce arrives clean and healthy, and free of pests and diseases. This is especially so with respect to the requirements of international trade.

The Inspections Unit of the department of Plant Quarantine and Phytosanitary Service is mandated to coordinate various forms of phytosanitary inspections across the country in order to ensure that phytosanitary inspections are conducted in a scientific standard manner. Inspections are an integral part of any national plant protection organization and must be done in an effective and efficient manner in order for the larger core mandate of PQPS (prevention of introduction and spread of plant pests) to be achieved. In its coordination and guidance of inspections, the Unit draws on guidelines provided in the International Standard Standards for Phytosanitary Measures (ISPM) 23, guidelines for inspection and ISPM 32, Categorization of commodities according to their pest risk of the IPPC of the FAO which describe procedures for the inspection of consignments of plants, plants, plant products and other regulated articles and provide criteria for National Plant Protection Organizations (NPPOs) of importing countries on how to categorize commodities according to their pest risk when considering import requirements respectively.

#### **General Requirements**

The responsibilities of a national plant protection organization include "the inspection of consignments of plants and plant products moving in international traffic and, where appropriate, the inspection of other regulated articles, particularly with the object of preventing the introduction and/or spread of pests". Consignments may consist of one or more commodities or lots. Where a consignment comprises more than one commodity or lot, the inspection to determine compliance may have to consist of several separate visual examinations. Throughout this standard, the term "consignment" is used, but it should be recognized that the guidance provided for consignments may apply equally to individual lots within a consignment.

#### Inspection objectives

The objective of inspection of consignments is to confirm compliance with import or export requirements relating to quarantine pests or regulated non-quarantine pests. It often serves to verify the effectiveness of other phytosanitary measures taken at a previous stage in time. An export inspection is used to ensure that the consignment meets the phytosanitary import requirements of the importing country at the time of

inspection. An export inspection of a consignment may result in the issuance of a phytosanitary certificate for the consignment in question. Inspection at import is used to verify compliance with phytosanitary import requirements. Inspection may also be carried out generally for the detection of organisms for which the phytosanitary risk has not yet been determined. The collection of samples for laboratory testing or the verification of pest identity may be combined with the inspection procedure. Inspection can be used as a risk management procedure.

#### **Types of Phytosanitary Inspections**

There are different types of inspections conducted by the inspectors of the NPPO of Zambia.

**Export inspection:** This involves the inspection of commodities earmarked for export. The inspection is usually done to ensure compliance with phytosanitary requirements of the importing country.

**Import inspection:** This is done based on the risk associated with the commodity coming into Zambia to ensure that the commodity complies with the phytosanitary conditions stipulated on the plant import permit of Zambia.

**Transit inspection:** This is done based on the risk associated with the commodity passing through Zambia to ensure that the commodity doesn't pose a risk as it passes through to the country of destination.

**Fumigation inspection:** Is done to ensure that Fumigators comply with the requirements of the phytosanitary measures regarding fumigation of agricultural commodities.

**Farm inspection:** Farm inspections are done to ensure compliance of Green houses, storage facilities, grading/pack house and nursery facilities with international standards.

**Seed Crop inspection:** This is one of the most important inspections conducted by the unit. The unit conducts inspection of seed on actively growing parent plants of the seed. The inspectors inspect all the seed registered for export to ensure that the seed is free from quarantine pests.

**Plant Nursery Inspection:** This inspection is done on plant nurseries for purposes facilitation of registration and pest and disease management in order to prevent spread to other parts of the country through movement of plants.



Figure 15. Seed crop inspection at Zampa Farm in Livingstone



Figure 16. Plant nursery inspection by PHIs at Munyati Farming in Choma



Figure 17. Pecan nut seedlings in readiness for inspection at Kazungula border



Figure 18. Inspecting for diseases and insects in a pineapple plantation in Mwinilunga



Figure 19. Inspection of a transit consignment at Kazungula border post



*Figure 20.* Conducting a joint phytosanitary inspection with customs and clearing agents at the port of entry

#### Assumptions involved in the application of inspections

As inspection of entire consignments is often not feasible, phytosanitary inspection is consequently often based on sampling. The use of inspection as a means to detect the presence of pests in, or to determine or verify the pest incidence in a consignment is based on the assumption that:

- 1. The pests of concern, or the signs or symptoms are visually detectable;
- 2. Inspection is practicable; and
- 3. Some probability of pests being undetected is recognized.

There is some probability of pests being undetected when inspection is used. This is because the inspection of a commodity is based on sampling, which may not involve visual examination of 100% of the lot or consignment, and also because inspection is not 100% effective for detecting a specified pest in a consignment or sample. When inspection is used as a risk management procedure, there is probability that a pest which is present in a consignment or lot may not be detected. The size of a sample for inspection purposes is normally determined on the basis of a specified regulated pest associated with a specific commodity. It may be more difficult to determine the sample size in cases where inspection of consignments is targeted at several or all regulated pests.

#### Responsibility for inspection

NPPOs have the responsibility for inspection. Inspections are carried out by NPPOs or under their authority. Requirements for inspectors

As authorized officers or agents by the NPPO, inspectors should have:

- Authority to discharge their duties and accountability for their actions;
- Technical qualifications and competencies, especially in pest detection;
- Knowledge of, or access to capability in, identification of pests, plants and plant products and other regulated articles;
- Access to appropriate inspection facilities, tools and equipment;
- Written guidelines (such as regulations, manuals, pest data sheets);
- Knowledge of the operation of other regulatory agencies where appropriate; and
- Objectivity and impartiality.

The inspector may be required to inspect consignments for:

- Compliance with specified import or export requirements;
- Specified regulated pests; and
- Organisms for which the phytosanitary risk has not yet been determined.

#### Other considerations for inspection

The decision to use inspection as a phytosanitary measure involves consideration of many factors, including in particular the phytosanitary import requirements of the importing country and the pests of concern. Other factors that require consideration may include:

- The mitigation measures taken by the exporting country;
- Whether inspection is the only measure or combined with other measures;
- Commodity and intended use;
- Place/area of production;
- Consignment size and configuration;
- Volume, frequency and timing of shipments;
- Experience with origin/shipper;

- Means of conveyance and packaging;
- Available financial and technical resources (including pest diagnostic capabilities);
- Previous handling and processing;
- Sampling design characteristics necessary to achieve the inspection objectives;
- Difficulty of pest detection on a specific commodity;
- Experience and the results of previous inspections;
- Perishability of the commodity; and
- Effectiveness of the inspection procedure.

#### Inspection in relation to pest risk analysis

Pest risk analysis (PRA) provides the basis for technical justification for phytosanitary import requirements. PRA also provides the means for developing lists of regulated pests requiring phytosanitary measures, and identifies those for which inspection is appropriate or identifies commodities that are subject to inspection. If new pests are reported during inspection, emergency actions may be undertaken, as appropriate. Where emergency actions are taken, a PRA should be used for evaluating these pests and developing recommendations for appropriate further actions when necessary.

When considering inspection as an option for risk management and the basis for phytosanitary decisionmaking, it is important to consider both technical and operational factors associated with a particular type and intensity of inspection. Such an inspection may be required to detect specified regulated pests at the desired level and confidence depending on the risk associated with them.

#### Specific Requirements

The technical requirements for inspection involve three distinct procedures that should be designed with a view to ensuring technical correctness while also considering operational practicality. These procedures are:

- Examination of documents associated with a consignment;
- Verification of consignment identity and integrity;
- Visual examination for pests and other phytosanitary requirements (such as freedom from soil); and
- Certain aspects of inspection may differ depending on the purpose, such as for import/export purposes, or verification/risk management purposes.

#### Examination of documents associated with a consignment

Import and export documents are examined to ensure that they are:

- complete;
- consistent;
- accurate; and
- valid and not fraudulent

Examples of documents that may be associated with import or export certification include:

- phytosanitary certificate or phytosanitary certificate for re-export;
- manifest (including bills of lading, invoice);
- import permit;
- treatment documents or certificates, marks or other indicators of treatment;
- certificate of origin;
- field inspection certificates or reports;
- producer or packing records;
- certification programme documents (e.g. seed potato certification programmes, pest free area documentation);

- inspection reports;
- commercial invoices; and
- laboratory reports.

Problems encountered with either import or export documents should, where appropriate, be investigated first with the parties providing the documents before further action is taken.

#### Verification of consignment identity and integrity

The inspection for identity and integrity involves checking to ensure that the consignment is accurately described by its documents. The identity check verifies whether the type of plant or plant product or species is in accordance with the phytosanitary certificate received or to be issued. The integrity check

#### Inspection methods

The inspection method should be designed either to detect the specified regulated pests on or in the commodity being examined, or to be used for a general inspection for organisms for which the phytosanitary risk has not yet been determined. The inspector visually examines units in the sample until the target or other pest has been detected or all sample units have been examined. At that point, the inspection may cease. However, additional sample units may be examined if the NPPO needs to gather additional information concerning the pest and the commodity, for example if the pest is not observed, but signs or symptoms are. The inspector may also have access to other non-visual tools that may be used in conjunction with the inspection process. It is important that:

- Examination of the sample be undertaken as soon as reasonably possible after the sample has Been drawn and that the sample is as representative of the consignment or lot as possible;
- Techniques are reviewed to take account of experience gained with the technique and of new technical developments; and
- Procedures are put in place to ensure the independence, integrity, traceability and security of samples for each consignment or lot results of the inspection are documented.

Inspection procedures should be in accordance with the PRA where appropriate, and should be consistently applied.

Plant health inspectors (PHIs) have the legal mandate provided by the Plant Pests and Disease Act CAP 233 of the Law of Zambia. Inspectors are allowed to:

- Inspect or test plants, plant products and other regulated articles;
- Enter premises, conveyances and other regulated articles where regulated pests may be present;
- Take and remove samples from regulated articles, (including samples for analysis);
- Detain regulated articles;
- Treat or require treatment of regulated articles, including premises and conveyances in which a regulated pest is found to be present;
- Refuse entry of consignments and order their reshipment or destruction; and
- Take emergency action.

Inspectors are able to use different inspection techniques for different commodities and consignments such as bulk shipment, containers, various forms of packaging, bags, sacks or boxes, individual items, passenger baggage using the following methods:

- visual examination including field inspections, monitoring, surveys;
- microscopic examination;
- electronic tests or analysis; and
- analytical methods.

#### COM M UNICATIONS, AW ARENESS AND TRAINING UNIT

The Communication, Awareness and Training Unit is one of the units under the department of Plant Quarantine and Phytosanitary Service. The Unit has the following as major duties and responsibilities:

- Organization and coordination of in-house meetings, trainings and workshops and ensuring that reports for such are timely written and submitted;
- Updating the NPPO's information on the International Phytosanitary Portal of the International Plant Protection Convention (IPPC);
- Spearheading development and coordination of various plant health awareness materials (brochures, posters, news articles, documentaries etc.);
- Organization of fumigation training;
- Coordination of all forms of registrations (fumigation, plant nursery, processing facilities and wood treatment facilities);
- Ensuring that new staff are oriented, gazetted and identity cards secured for them;
- Coordination of development and operations of the PQPS website and the use of other media platforms for information dissemination;
- Coordination of biannual bulletin production for the department; and
- Ensuring that uniforms and identity cards for PHIs are procured when funds are available.

#### Registrations

The CAT unit oversees and coordinates registration and licensing of fumigators; plant nursery owners; processing facilities; and storage facilities for certain plant products. This is all done in line with the provisions stipulated in the Plant Pests and Diseases Act, Cap 233 of the Laws of Zambia. Furthermore, wood treatment facilities are registered in line with the International Standards for Phytosanitary Measures (ISPM) number 15 of the International Plant Protection Convention of the Food and Agriculture Organization of the United Nations.

#### Training

Plant Quarantine and Phytosanitary Service through Communication, Awareness and Training (CAT) Unit coordinates different types of training which are aimed at enhancing phytosanitary work. Mostly, these trainings are conducted as need arises. Fumigation training is done in accordance with the provisions of the law under Statutory Instrument (S.I) number 83 of 2001 of the Plant Pests and Diseases Act, Cap 233 of the Laws of Zambia. This S.I requires that all fumigators in Zambia are trained, registered and monitored to ensure adherence to the fumigation code of practice. The registration by PQPS is followed by registration with the Zambia Environmental Management Agency (ZEMA) for a pesticides handling licence.



Figure 21. Stakeholders and Plant Health Inspectors training on pest risk analysis in Livingstone in 2020

The training of fumigators by PQPS is aimed at ensuring that they are competent enough to undertake fumigation activities in line with the Code of Practice. In this regard, training of prospecting fumigators is a must while for existing fumigators, refresher training is recommended and/or if the company wishes to recruit new personnel resulting from either lay-off of trained ones or for purposes of business expansion.



Figure 22. Practical session during fumigation training in 2020

Furthermore, the CAT provides in-house training for PQPS staff in order to enhance skills and phytosanitary knowledge. This is very important to enable plant health inspectors to ably carry out their mandate. These trainings are usually facilitated through engagement of cooperating partners and stakeholders. During such trainings, a wide range of topics are normally covered. The mostly covered topics are the World Trade Organization Sanitary and Phytosanitary measures and agreements; the International Plant Protection Convention provisions and the International Standards for Phytosanitary Measures; plant pest diagnostics; plant pest inspection and surveillance; phytosanitary procedures; and pest risk analysis.

PQPS views the Zambia Revenue Authority (ZRA) as a key partner in ensuring that consignments of phytosanitary concern are captured at ports of entry to ensure adherence to phytosanitary regulations. In this regard, ZRA always invites PQPS during training of their new staff so that phytosanitary trade requirements and procedures are made know to them as they get prepared for deployment to various borders. This has been very useful in ensuring effective collaboration when handling consignments of phytosanitary interest at border posts.



Figure 23. During training of ZRA new staff in Lusaka in 2019



Figure 24. Stakeholders awareness meeting on phytosantary matters in Lusaka

#### Exhibition at events and the importance

As Plant Quarantine and Phytosanitary Service, we have been using events such agricultural shows, trade fair, field days, agricultural expos, VIP visitations and launch ceremonies to showcase our mandate and its importance in plant protection and agricultural trade facilitation. Our exhibits depend on the type of event but mainly include; brochures, flyers, pop-ups, samples of documents used in trade, equipment and any other information materials.

Exhibiting has been a powerful tool for awareness creation to the general public with regard to various services that we offer as a department. Exhibition offers a good platform to show case services and communicate our key message to a more receptive audience and get real time feedback. Furthermore, the department gets the opportunity to meet the existing and potential clients, stakeholders and collaborating partners at such fora. Face to face relationships are very important hence the department is able to create institutional relevance to the public. It is an opportunity to also showcase some of our achievements and as well as sharing challenges.

Public events such as agricultural shows and expos has the presence of many other relevant institutions therefore, the department also takes the opportunity to learn, identify gaps and improve on service delivery. Moreover, the ultimate goal of exhibiting at events is to create awareness on what our department is all about to improve on compliance.



Figure 25. Various brochures developed and printed with support from USAID Southern Africa Investment Hub

Plant Quarantine and Phytosanitary Service Bullet



*Figure 26.* Exhibition of phytosanitary documents at the launch of the export of fresh blueberry fruits to China by His Excellency, the Republican President, Dr. Edgar C. Lungu in Chisamba in 2020

#### Pest reporting responsibility

The International Plant Protection Convention requires contracting parties to report on the occurrence, outbreak and spread of pests with the purpose of communicating immediate or potential danger. National plant protection organizations (NPPOs) have the responsibility to collect pest information by surveillance and to verify the pest records thus collected. Occurrence, outbreak or spread of pests that are known (on the basis of observation, previous experience, or pest risk analysis (PRA)) to be of immediate or potential danger should be reported to other countries, in particular to NPPOs of neighbouring countries and of countries that are traded with.

Pest reports should contain information on the identity of the pest, location, pest status, and nature of the immediate or potential danger. They should be provided without undue delay, preferably through electronic means, through direct communication, openly available publication or the International Phytosanitary Portal (IPP). Reports of successful eradication, the establishment of pest free areas and other information may also be provided utilizing the same reporting procedure.

#### Purpose of pest reporting

The main purpose of pest reporting is to communicate immediate or potential danger. Immediate or potential danger normally arises from the occurrence, outbreak or spread of a pest that is a quarantine pest in the country in which it is detected, or a quarantine pest for neighbouring countries and countries that are traded with. The provision of reliable and prompt pest reports confirms the operation of effective surveillance and reporting systems within countries. Pest reporting allows countries to adjust as necessary their phytosanitary import requirements and actions to take into account any changes in pest risk. It provides useful current and historical information for operation of phytosanitary systems. Accurate information on pest status facilitates technical justification of phytosanitary measures and helps to minimize unjustified interference with trade. Every country needs pest reports for these purposes, and can only obtain them by the cooperation of other countries. Phytosanitary actions taken by importing countries based on pest reports should be commensurate with the pest risk and technically justified.

#### Editing country page

The purpose of the International Plant Protection Convention (IPPC) is "international cooperation in controlling pests of plants and plant products and in preventing their international spread, and especially their introduction into endangered areas" (Preamble). It includes numerous provisions designed to help countries establish and implement effective phytosanitary systems that are also consistent with international obligations. The Convention is governed by the Commission on Phytosanitary Measures (CPM), and the IPPC Secretariat is responsible for the coordination of the work programme of the Convention, particularly the areas of information exchange, standard setting, and technical assistance. The IPPC Secretariat is provided by the FAO.

#### Information exchange and the International Phytosanitary Portal

Exchange of technical and official information is extremely important to the effective implementation of the Convention. The International Plant Protection Convention (1997) outlines that it is the responsibility of contracting parties to engage in the exchange of official phytosanitary information. The CPM has established the International Phytosanitary Portal (IPP) (https://www.ippc.int) as the primary forum for information exchange by Contracting Parties and the IPPC Secretariat. The IPP is an internet-based information system designed to hold phytosanitary information published in accordance with the Convention and Commission on Phytosanitary Measures decisions. The majority of the information in the IPP is available to all users of the site. However, only officially nominated individuals with password-protected user accounts have the ability to enter and edit information, ensuring its accuracy and validity. While the primary obligation for the exchange of official information belongs to the contracting parties, the IPPC Secretariat promotes and facilitates national phytosanitary information exchange by providing the IPP (www.ippc.int). The IPP is a single forum which contracting parties can use to comply with their reporting obligations.

The IPP enhances the accessibility of phytosanitary information by providing:

- rapid communication and dissemination of information between IPPC contracting parties, the IPPC Secretariat and the phytosanitary community at large;
- phytosanitary information in electronic format;
- a global repository of phytosanitary information;
- increased transparency among the phytosanitary community;
- the ability to display and retrieve information in the FAO languages;
- a searchable database;
- various means by which to receive notifications of changes or updates to information on the IPP; and
- a system for the online submission of comments on draft ISPMs.

As a contracting party, Zambia is expected to keep certain information updated as required and expected of the IPPC. The following is the information that Zambia as well as all contracting parties must avail and keep updated:

- Details of the IPPC official contact point;
- Official pest reporting;
- Description of the National Plant Protection Organization;

- Phytosanitary restrictions, requirements and prohibitions;
- Points of entry;
- List of regulated pests; and
- Emergency actions.

#### THE PLANT PEST SURVEILLANCE UNIT

The Plant Pest Surveillance Unit, as one of the Units under PQPS, is responsible for scheduling, guiding and coordinating surveillance activities undertaken by the department. The Unit is also responsible for liaising with research institutions and other researchers within the country on matters related to plant pest surveillance. In addition, the Unit further comes up with initiatives for plant pest surveillance resource mobilization and leads the department into stakeholder collaboration pertaining to pest surveillance.

#### Pest Surveillance

Pest Surveillance is "an official process which collects and records data on pest presence or absence by survey, monitoring or other procedures, it supports phytosanitary programmes and provides information for phytosanitary decision-making (ISPM 6, 2011). The International Plant Protection Organisation (IPPC) requires that the National Plant Protection Organisations (NPPOs) under Article IV paragraph 2(b) to under-take and be responsible for the surveillance of plants, particularly with the purpose of reporting the occurrence, outbreak and spread of pests. This is stated under the national reporting obligation of the IPPC.

#### The Importance of Pest Surveillance

Pest Surveillance data underpins several NPPO functions, including:

- Establishment of a regulated pest list;
- Pest risk analysis (PRA) for the establishment for phytosanitary import requirements of the country;
- Establishment of lists of pests present in the country (as often required by potential importing countries for their PRA;
- Establishment of pest free areas (PFAs), Area of low pest prevalence (ALPPs), pest free places of production (PFPPs) and pest free production sites (PFPSs);
- Determination of pest status in an area;
- Confirmation of pest eradication;
- Reporting the presence, outbreak or spread of pests, and the results of controlling those pests;
- Pest surveillance helps establish a country's pest and disease status (especially for important organisms such as fruit flies, Maize Lethal Necrosis, Fusarium wilt of banana); and
- Pest and disease information can be used in market access negotiations and fair-trade justifications and Early warning system detection and thereby roll out incursion investigation and response, preparedness and emergency response.

#### **PQPSinnovations**

PQPS like many other organizations world over, is trying to keep pace with technological advancements. In this regard the department has recorded the following developments which resonate well with objective number one in the Second National Agricultural Policy which among other things promotes the use of ICTs in agriculture as well as strengthening agricultural information management system and dissemination. Electronic innovations further respond well to the Seventh National Development Plan (7NDP)'s development outcome number one which calls for a diversified and export-oriented agriculture sector especially as it relates to crop production where pest information is one of the key aspects in market access.

#### 1. The Zambia Phytosanitary Information M anagement System (PIM S)

The Pest Information Management System (PIMS) is a repository for plant pest information, addendums and other phytosanitary information. It is an important tool that is meant to assist in mitigating phytosanitary threats as well as providing an early warning on emerging plant pests. It is equally important in facilitation of safe trade in plants and agro-products. This platform is particularly key for pest information sharing which is vital in meeting the country's trade obligations on transparency as stipulated in the trade agreements. This platform was developed under the auspices of USAID's Southern Africa Development Investment Hub.

#### 2. Zambia Electronic Single Window system

The Zambia Electronic Single Window (ZESW) system is a platform developed and managed by Zambia Revenue Authority. This innovation was developed to bring all the departments involved in trade facilitation under the Ministry of Agriculture under one platform referred to as the single window. The objective of this platform is to enhance efficiency, cut down on permits processing time as well as on the cost of doing business. The system has four departments that all have a role to play in trade facilitation. These departments are; the Plant Quarantine and Phytosanitary Service; the Seed Control and Certification Institute; Agribusiness and Marketing; and the department of Finance. This platform has led to full automation of permits issuance.

#### 3. PQPS Electronic Certification System (E-certification system)

The E-certification system of PQPS is a back-end office which will complement the Zambia Electronic Single Window (ZESW) system that was rolled out in November, 2020. The system will automate the inspections and laboratory activities. The system will be used by inspectors to conduct phytosanitary services. It will also generate reports for all inspections and laboratory services. Clients will be able to register and apply for services on the system. The system will help reduce person-to-person interactions.









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