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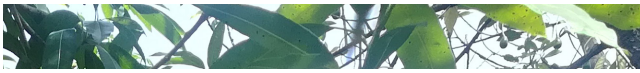
PHYTOSANITARY GUIDE



Practical Guide to Assessing and Strengthening National Plant Pest Surveillance Systems

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ACRONYMS

ACP	Africa-Caribbean-Pacific
PRA	Pest Risk Analysis
CEMP	Expert Committee on Phytosanitary Measures
CMP	Commission on Phytosanitary Measures
IPPC	International Convention for the Protection of Plants
COLEAD	Committee Linking Entrepreneurship - Agriculture - Development
FAO	Food and Agriculture Organization of the United Nations
FFM SPS	Fit For Market SPS, COLEAD program
ISPM	International Standards for Phytosanitary Measures
WTO	World Trade Organization
WHO	World Health Organization
NPPO	National Plant Protection Organization
RPPO	Regional Plant Protection Organization
SOP	Standard Operating Procedure
R-SAT	COLEAD SPS Rapid Assessment Tool
SPS	Sanitary and Phytosanitary

FOREWORD

According to the International Plant Protection Convention (IPPC), surveillance is one of the core activities of national plant protection organizations (NPPOs). NPPOs are responsible for, among other things "the surveillance of growing plants, including both areas under cultivation (inter alia fields, plantations, nurseries, gardens, greenhouses and laboratories) and wild flora, and of plants and plant products in storage or in transportation, particularly with the object of reporting the occurrence, outbreak and spread of pests, and of controlling those pests, including the reporting referred to under Article VIII paragraph 1(a)". of the IPPC

Plant pest surveillance data are fundamental to the development of sound quarantine policies, the management of endemic pests, and the negotiation of international trade in agricultural commodities. It provides NPPOs with a technical basis for many phytosanitary measures, for example, phytosanitary import requirements, pest free areas, pest reporting and eradication, or pest status in an area.

This Guide has been developed by COLEAD, as part of the FFM SPS program, to assist African, Caribbean and Pacific countries in assessing their national surveillance systems with a view to strengthening them in accordance with IPPC standards and guidelines. The objective is to provide a practical guide to facilitate the development and implementation of a priority action plan to strengthen national surveillance systems, in line with national objectives and priorities.

The Guide was designed in the context of COLEAD's sanitary and phytosanitary (SPS) technical assistance projects to ensure their relevance through better planning, monitoring and evaluation of activities. It is a complementary guide to the COLEAD SPS Rapid Assessment Tool (COLEAD[1] R-SAT). Indeed, COLEAD's experience in supporting the improvement of SPS systems in ACP countries has highlighted the need to provide NPPOs and other stakeholders with additional guidance to strengthen their capacity to implement effective pest surveillance systems.

The COLEAD Guide for Assessing National Pest Surveillance Systems should not be considered a prescriptive document. It is based on the guidelines and requirements for surveillance programs as described in the IPPC and the International Standards for Phytosanitary Measures on surveillance (ISPM 6)

The Guide provides options and suggestions on how to systematically assess a national surveillance system, identify gaps, and develop a national plan of priority actions with the necessary flexibility for each country. It describes the steps to be followed to carry out an assessment of the situation, the criteria and control points to be considered, and the information and data to be collected to support the analysis, consistent with the objectives of the country's phytosanitary system.

1 R-SAT COLEAD 2023. COLEAD SPS Rapid Assessment Tool for strengthening national sanitary and phytosanitary systems in ACP countries

The effective application of the guide requires a good knowledge of the International Standards for Phytosanitary Measures (ISPMs) and those related to pest surveillance. It is strongly recommended that, in order to apply the guide, it is necessary to be aware of the FAO publications related to surveillance and its related activities, which are available on the International Phytosanitary[2] Portal.

Consistent with COLEAD R-SAT, the Guide considers the need to go beyond scientific, technical, and financial considerations and include all human and organizational factors that are often the cause of delays, bottlenecks, or even failures of an SPS system when not adequately addressed.

This Guide was developed as an integrated management model to serve as a framework for analysis and evaluation of national surveillance systems. At the heart of this model is the facilitation of dialogue between the NPPO and the different stakeholders (research institutes, diagnostic laboratories, agriculture extension staff, non-governmental organizations, producers' organizations, exporters, etc.), with a view to fostering the process of developing priority action plans to help strengthen national surveillance systems in ACP countries.

2 https://www.ippc.int/fr/core-activities/standards-setting/ispms/

ABOUT THE GUIDE

This Guide has been developed to assist ACP countries benefiting from COLEAD programs to assess and establish an action plan to strengthen their national pest surveillance systems, considering the challenges and requirements of pest surveillance programs for the establishment of effective pest risk analysis and control systems.

The Guide is not prescriptive. Its contents should not be considered as a new or additional standard, but rather as a practical tool developed by COLEAD, based on the guidelines and requirements of the International Standards for Phytosanitary Measures (ISPMs) for surveillance. The Guide aims to provide National Plant Protection Organizations (NPPOs) in ACP countries with a practical, step-by-step tool for assessing their surveillance system to identify needs for improvement and to develop an action plan for strengthening it.

The Guide is divided into 5 chapters.

The first chapter, "**Introduction**", presents the context, issues, and requirements for surveillance.

The second chapter, "**What is a national pest surveillance system?"** presents the main elements to be considered when a National Plant Protection Organization (NPPO) establishes a national surveillance system, with reference to the guidelines on surveillance described in ISPM 6.

The third chapter, "**Framework for Analysis and Evaluation of a National Pest Surveillance System,**" presents the integrated management model for sanitary and phytosanitary systems developed by COLEAD, which serves as the basis for developing the framework for analysis and evaluation of national pest surveillance systems.

The fourth chapter, "**Grid for Assessing the Performance of a National Surveillance System**," presents the control points, compliance criteria, and rating scale established to assess the performance of a national surveillance system.

The fifth chapter, **"Preliminary Steps and Process for Analysing and Evaluating a National Pest Surveillance System**," provides practical guidance and recommendations for the preliminary steps and process for analysing and evaluating the performance of a national pest surveillance system.

Finally, in the appendix, there is the **Performance Evaluation Grid for a National Pest Surveillance System** and **a list of useful resources and bibliographical references** to consult in order to become familiar with international standards for phytosanitary measures related to pest surveillance and thus to promote the effective application of this Guide.

INTRODUCTION

The NPPOs as provided for under the IPPC are responsible for the application of phytosanitary regulations during the exchange of plants and plant products both for import and export. To achieve this, the NPPOs must implement a phytosanitary surveillance system based on the implementation of surveillance and control plans to detect the presence of pests at an early stage and to trigger management measures to eradicate, or keep below an acceptable level, the populations of the concerned pest. Thus, pest surveillance is one of the pillars of a phytosanitary system.

Surveillance is an official process which collects and records data on pest presence or absence by survey, monitoring or other procedures[3]. A national pest surveillance program should be conducted in such a way that its results are accurate, credible and contribute to national objectives and priorities. To achieve this, the program must be supported by effective legislation, coordination, management, established procedures, communication, and training. In many COLEAD program countries, capacity building of stakeholders is necessary to ensure that these requirements are met.

Given the number of plant species and pests surveillance activities can be highly costly. However, as surveillance activities are critical part of the national phytosanitary policy, it is important to emphasize that the benefits of establishing a national surveillance system invariably outweigh the costs.

COLEAD's experience through its interventions in the framework of its various programs to support the strengthening of SPS systems in ACP countries shows that the organization, operationalization, and maintenance of surveillance systems are among the main challenges for the establishment of effective national phytosanitary systems in developing countries.

3 CEPM, 1996: revised CPM, 2015

1. WHAT IS A NATIONAL PEST SURVEILLANCE SYSTEM?

1.1. Rationale for establishing a national pest surveillance system

The rationale for establishing a national pest surveillance system should be directly related to national priorities for trade and plant resources and environmental protection. Pest surveillance is an essential component of a national plant health system that, for example, allows a NPPO to:

- detect and monitor pest threats to prevent their introduction and manage them if they become present in the country.
- maintain and improve market access and international trade by collecting and providing up-to-date surveillance data on the status of pests associated with products that are or will be traded.
- gain the confidence of trading partners by ensuring the availability of current and reliable data on the phytosanitary situation in the country.
- support the preparation and maintenance of lists of regulated pests and technically justifiable import requirements.
- implement phytosanitary improvement measures under national programs, including those related to the establishment and maintenance of pest-free areas, pest-free production sites and pest-free place of production where specific conditions must be met to support exports.
- improve food security and protect the environment by effectively monitoring threats to the nation's plant resources.
- determine the status of a pest in an area.
- gather information in order to transmit pest reports to other countries.
- avoid economic and reputational losses due to the action or transmission of pests in marketed products.

It is therefore an essential prerequisite for a functioning phytosanitary system.

The International Standard for Phytosanitary Measures (ISPM6) on guidelines for surveillance recognizes two types of surveillance in a national surveillance system **(i) general surveillance** and **(ii) specific surveillance**.

1.2. General surveillance

General surveillance is defined in the ISPM 6 as a process whereby information on pests of concern in an area is gathered from various sources. Sources may include national or local government bodies, research institutions, universities, museums, scientific societies (including those of independent specialists), producers, consultants, the general public, scientific and trade journals, unpublished data, and the websites of other NPPOs or international organizations (e.g., the IPPC, regional plant protection organizations, the Convention on Biological Diversity).

Box 1 — Issues and importance of general surveillance

General surveillance should:

- support the NPPO in reporting on the status of a pest.
- provide information on the early detection of pests.
- report to other organizations such as NPPOs, RPPOs and IPPC (FAO).
- Compile host and pest lists from distribution records.

The results of general surveillance may include the imposition or lifting of quarantines based on the knowledge gained and the design of a specific survey if more information on a pest is needed from a given geographic area.

A major challenge in many ACP countries is the establishment of an organizational structure adapted to national constraints and specificities, and which can allow the implementation of an operational system of general surveillance.

1.3. Specific surveillance

Specific surveillance is a process whereby information on pests of concern in an area is obtained by the NPPO over a defined period. NPPOs actively gather specific pest-related data. Specific surveillance includes surveys that are conducted to determine the characteristics of a pest population or to determine which species are present or absent in an area.

Example 1 — Example of the specific surveillance program of fruit fly (Tephritidae) population dynamics in West Africa

The surveillance program on fruit fly population dynamics in mango production basins in West Africa is an example that illustrates the importance and application of specific surveillance. Fruit flies are nowadays among the main constraints to mango production and marketing in Sub-Saharan Africa. Indeed, different species and genera of non-European *Tephritidae* are a family of quarantine pests for the European Union (EU). Thus, in the regional fruit fly management program, knowledge of the specific diversity of these pests as well as their population dynamics was an important component of the interventions. At the national level, the establishment of a surveillance system for fruit fly populations at the different stages of the mango phenological cycle is an essential part of the integrated management system approach to be implemented to ensure the absence of fruit flies in mango consignments intended for export to the EU.

1.4. Components of a national pest surveillance system

A national surveillance system includes (i) **surveillance programs** (general and specific surveillance) and (ii) **supporting infrastructure**.

The elements to be considered when the NPPO develops the national surveillance system with respect to surveillance programs and supporting infrastructure as provided by FAO are presented in the figure below1.

Figure 1 — A model national surveillance system, comprising surveillance programmes (general and specific) and supporting infrastructure

Source: ISPM 6. 2018. Surveillance. Rome, IPPC, FAO

1.5. Design and implementation of surveillance programs

Surveillance programs should be conducted on a long-term and regular basis with a well-developed methodology, so that results can be compared and analysed. They may include elements of both general and specific surveillance.

1.5.1. Approaches to general surveillance

- NPPOs may use a range of approaches to general surveillance with varying degrees of involvement by the NPPO – from reports received by the NPPO to increasingly structured and targeted programmes run entirely by the NPPO. Examples of general surveillance approaches are listed below:
- receipt of reports from the general public (initiated by the public).
- scanning of sources of pest information; general encouragement of public reporting through official channels (e.g., via a free call phone number in response to publicity about plant health or educating on the advantages of reporting pests)
- encouragement of public reporting on specific pests – this is useful where the target species is known, and public awareness is already high (e.g., using public awareness materials) and during known periods of high pest incidence (e.g., breeding seasons)
- encouragement of reporting by groups involved with specific crops (e.g., producers, community groups)
- involvement of specific groups in plant health activities organized by the NPPO to obtain surveillance data (e.g., scientific societies, plant health clinics, agricultural extension services)
- cooperation with other governmental services (e.g., forestry or environmental services)
- cooperation with institutions that carry out research
- general surveillance carried out by NPPO staff. When conducting general surveillance, NPPOs should assess the reliability of the information received depending on its source (e.g., information from the general public or entomologists). Guidance on assessing the reliability of a pest report can be found in ISPM 8 (Determination of pest status in an area).

Box 2 — Essential considerations when implementing a general surveillance system

NPPOs should consider the following when developing their approaches to general surveillance:

- costs and resource requirements are usually lower with less involvement of the NPPO
- good results are more readily achieved for easily noticed and recognizable pests (e.g., beetles and caterpillars) or symptoms
- detection of hidden pests (e.g., wood-boring beetles, or pathogens that are symptomless in some hosts) is usually less effective
- surveillance may not need to be restricted to a defined period
- the proportion of useful reports received is usually lower for less-structured or less-targeted programmes
- the usefulness of the information (e.g., pest diagnosis, monitoring methodologies) may depend on how current it is

1.5.2. Elements for General Surveillance

NPPOs should recognize that general surveillance can be an effective supplement to specific surveillance. For example, general surveillance can provide the context for undertaking specific surveillance to accurately determine the pest status in an area or site. The NPPO may also decide that the result of general surveillance is sufficient to determine the pest status. According to ISPM 6, a general surveillance approach may include the following:

- **mechanisms to facilitate reporting:**
  - legislative obligations (for the general public, growers or specific agencies)
  - cooperative agreements (between NPPOs and, for example, stakeholders or scientific societies)
  - the use of contact personnel to enhance communication channels to and from NPPOs
- public education and awareness raising initiatives **tools for collecting reports from the public:**
  - publicly accessible free call phone numbers
  - systems for free delivery of samples
  - smartphone and mobile device applications (apps)

- social media channels and email **systems or processes to improve the quality of reports:**
    - a filtering process at the point of initial contact
    - the ability to send and receive images for initial identification
    - publicity material to allow submitters to self-filter (e.g., leaflets and websites with pest information and photos)
    - training for submitters **means to consolidate, analyse and communicate the information gathered:** integrated national, regional or global databases and alert systems for emerging pests
    - spatial modelling tools embedded in web-based systems (e.g., geographical information systems)

mathematical and simulation models of data collected (e.g., Bayesian networks) NPPOs may encourage reporting by ensuring timely feedback (e.g., identification of specimens submitted) to those providing reports.

1.5.3. Specific monitoring

NPPOs may use three types of surveys depending on the objectives of the specific monitoring program:

- detection: conducted in an area to determine if pests are present (or absent);
- Delimiting survey: conducted to determine the boundaries of an area considered infested by a pest or free of a pest.
- monitoring survey: ongoing survey conducted to verify the characteristics of a pest population.

These surveys may be developed for pests in relation to one or more areas, sites, hosts, pathways or commodities and should include the collection of pest presence and absence records.

The result of every observation or sample taken should be recorded, including when the pest was not found. Data on pest absence collected during surveys can be used by NPPOs to support a country's pest status and pest free areas, as well as its trade and market access.

- The most important factor for the validity of pest absence data is the design of the specific surveillance programme According to ISPM 6, elements that should be considered in the design of specific surveillance programmes are: identification of the target pest and scope (e.g., geographic area, production system, season).
- identification of the schedule (dates, frequency, duration).
- identification of the target product and indication of the statistical basis (e.g., confidence level, number of samples, selection and number of sites, sampling frequency, assumptions).

- description of the survey methodology and quality management based on an understanding of the biology of the pest, the purpose of the survey, and an explanation of the sampling procedures (e.g., attractant trapping, sampling, visual inspection, sample collection, and laboratory analysis).
- diagnostic and reporting procedures.

Elements of such a program may also include incentives for reporting, such as:

- Legislative requirements (for the general public or specific organizations).
- cooperation agreements (between the NPPO and specific organizations).
- the use of personal contacts to improve communication channels to and from NPPOs and public education and awareness programs.

The surveillance methodology should be described in surveillance protocols. The surveillance protocols developed by the NPPO should aim at achieving the objective of the surveillance program.

Surveillance protocols describe the surveillance methodology, whether general or specific. Surveillance protocols should contain clear instructions for conducting the surveillance activity in a consistent manner, at all locations, and throughout the territory covered by the program.

Surveillance protocols and methods provide consistent guidance on how to conduct a surveillance activity. Managers and monitors should be aware of current methods associated with the pests of interest and should ensure that these methods meet the objectives of the survey.

Box 3 — Essential reasons for assessing a Surveillance Program

A surveillance program should be regularly reviewed against its targets, goals and objectives. A formal review process can be established to ensure that:

- The program is reliable and credible to stakeholders.
- The quality is assured and maintained throughout the program.
- All aspects of the program are supported by current technology and procedures and are appropriate to achieve the stated objectives.
- The efficiency is assessed against performance standards (audit, if applicable).

1.6. Setting up the support infrastructure

The supporting infrastructure includes:

1.6.1. Phytosanitary legislation and policies

The national surveillance system should be supported by legislation and policies

that ensure that authority, responsibility, and financial resources are assigned to the appropriate administrative levels. Consequently, under the IPPC contracting parties should include the following provisions in their phytosanitary legislation or official procedures:

- the legal power, process and protection for NPPO officers or other authorized personnel to undertake surveillance activities, including entering premises or land to inspect plants, plant products or other articles that may be capable of harbouring pests, or to collect samples for testing.
- the establishment and maintenance of facilities for diagnostics or appropriate access to up-to-date diagnostic services to ensure that pests are properly identified.
- mandatory domestic reporting (e.g., by research institutions, diagnostic laboratories, nongovernmental organizations, industry, growers, local government or scientific groups) to the NPPO on detection or suspected presence of the targeted pests or of pests new to an area, host or pathway.

1.6.2. Prioritization

NPPOs require resources to undertake pest surveillance especially for the pests considered important to avoid delays in accessing new markets, unnecessary or unjustifiable import requirements, or significant and devastating agricultural crop losses.

Requirements for Pest Risk Analysis (PRA) can be an important part of the decision-making process for pest or commodity targeted surveillance programs.

The NPPO may give high priority to:

- conducting surveillance to develop a list of pests that potential trading partners need to conduct a PRA. A certain degree of urgency may be required since denial of market access for a product scheduled for export may result from failure to produce such information.
- the urgent need to determine which pests are currently present in a country, in order to facilitate the establishment of justifiable import regulations.
- a request for updated phytosanitary information from an importing country to an exporting country. The importing country may have credible information on the status of a new or existing pest that could result in trade restrictions.
- Trade may be stopped if information is not provided.

1.6.3. Planning

Once priorities for monitoring have been identified, NPPOs should develop plans for the implementation of surveillance programs, considering phytosanitary legislation and policies.

Box 4 — Importance of planning and prioritization in the process of implementing a national surveillance program

Planning and implementation of a surveillance program must include prioritization. The cost of surveillance will be prohibitive if no planning has been done.

A cost-benefit analysis should be carefully conducted before spending significant resources. A little extra time and resources spent on surveillance at the beginning will save a lot of time and money later if a pest does appear.

Prioritization and planning in the process of implementing a national monitoring system should consider the expectations of different stakeholders to address the concerns of each group and help them understand why a surveillance program is important and how it will benefit them. A participatory and inclusive strategy can encourage different stakeholders, including the private sector, to ensure that the surveillance program receives the sustained financial, political, and public support necessary to operate effectively and achieve its objectives.

As an example, a roadmap for setting up a national surveillance plan for surveillance of the population dynamics of fruit flies (***Tephritidae)*** is attached (**see Annex 2**).

1.6.4. Resources

Adequate and sufficient human, financial, and physical resources should be allocated for surveillance purposes. Surveillance starts with a good understanding of the biology of the pest hence resources for diagnostic services are an essential component of the national surveillance system.

Human resources include staff assigned to administrative, operational, technical, managerial, and logistical tasks associated with surveillance. It is important for NPPOs to ensure that staff have the necessary skills and competencies for surveillance as any lapses may have dire consequences.

Financial resources are required for surveillance logistics and staff travel (e.g., transportation, lodging, and food), equipment purchase and maintenance, staff training, specimen processing and diagnosis, operation of an information management system, facility maintenance, and emergency response to unscheduled surveillance activities.

1.6.5. Documentation

NPPOs should develop and implement standard operating procedures to ensure uniformity of practice in the implementation of surveillance tasks (including technical instructions in the form of monitoring protocols) at all levels, with respect to, for example, sampling and collection methods, trapping densities, trap maintenance, sample transport, sample preparation for identification, specimen collection management and access, etc. Operational procedures are essential to promote consistency, improve the interpretation and reliability of results, and facilitate the audit and verification tasks of the national surveillance system.

1.6.6. Training

Training, evaluation, and regular review of personnel involved in surveillance activities are integral components of the national surveillance system. NPPOs should define and implement procedures to ensure that the competencies of personnel involved in surveillance activities are sustained.

1.6.7. Audits

NPPOs should conduct regular audits of their general and specific surveillance programmes, including activities conducted by authorized entities, to ensure that they are conducted in accordance with relevant surveillance protocols.

1.6.8. Phytosanitary diagnostics

Diagnostic services are fundamental to the success of a national surveillance system. NPPOs should ensure that appropriate diagnostic services are accessible.
Some diagnostic protocols are available as annexes to ISPM 27 (Diagnostic protocols for regulated pests).

1.6.9. Information management systems

Information management systems should be used as a repository or centralized database for all results obtained.
Information management systems should be designed for the collection, consolidation, management, validation and reporting of surveillance data and information for analysis, including records of presence and absence of pests.

1.6.10. Communication with stakeholders

NPPOs are encouraged to engage through effective and timely communication with stakeholders and relevant experts on the design, planning, implementation and review of national surveillance systems, as well as on priorities for surveillance and on expected outcomes.

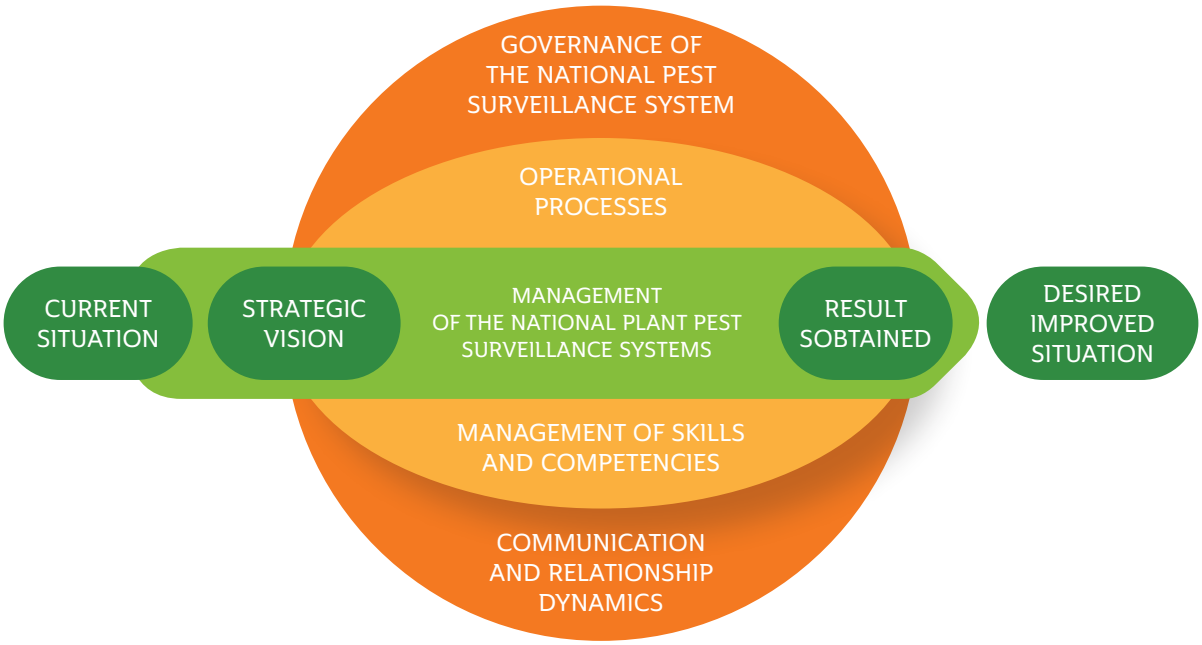
2. FRAMEWORK FOR ANALYSIS AND EVALUATION OF A NATIONAL PEST SURVEILLANCE SYSTEM

The analytical framework for assessing a national pest surveillance system is based on that applied in the COLEAD Rapid Assessment Tool for Sanitary and Phytosanitary Systems (COLEAD R-SAT).

The framework for analysing the national phytosanitary system has four interactive components or pillars:

- Governance of the national pest surveillance system
- Operational processes
- Management of Skills and Competence
- Communication and relationship Dynamics

Figure 2 — Graphic representation of the four pillars of a pest surveillance system



The analysis and evaluation of the national pest surveillance system must consider the strategic vision that underlies the national phytosanitary system. The strategic vision of the national phytosanitary system is a representation of the future desired by all national stakeholders. It reflects the transition from an unsatisfactory current situation to a desired future situation, linked to national policy and objectives that should be consistent with the IPPC vision of "protecting the world's plant resources from pests".

2.1. Governance of the national pest surveillance system

Governance of the national pest surveillance system refers to the policy and institutional framework including the phytosanitary legislation and regulatory framework governing surveillance; the measurement and monitoring of the effectiveness of the implementation of the surveillance system; and the allocation of human, material, and financial resources for the effective implementation of the national surveillance system.

With reference to the guidelines described in ISPM 6, the governance of the national pest surveillance system must be supported by legislation and plant health policies that ensure that authority, responsibility, and financial resources are vested in the most appropriate jurisdiction.

In addition, contracting parties should include the following provisions in their phytosanitary legislation or official procedures:

- the legal power, process and protection for NPPO officers or other authorized personnel to undertake surveillance activities, including entering premises or land to inspect plants, plant products or other articles that may be capable of harbouring pests, or to collect samples for testing
- the establishment and maintenance of facilities for diagnostics or appropriate access to up-to-date diagnostic services to ensure that pests are properly identified
- mandatory domestic reporting (e.g., by research institutions, diagnostic laboratories, nongovernmental organizations, industry, growers, local government or scientific groups) to the NPPO on detection or suspected presence of the targeted pests or of pests new to an area, host or pathway.

2.2. Operational processes

Operational processes are the structured and formalized activities (including the assignment of specific tasks and responsibilities) to be implemented by the NPPO and the different stakeholders, with reference to the operations defined in the components of a surveillance system described in ISPM 6 and other International Standards for Phytosanitary Measures (ISPMs) relevant to surveillance (see Bibliography and useful resources in Annex 4).

The operational processes cover the main operations described in the International Standard for Phytosanitary Measures (ISPM 6) guidelines and 'Plant Pest Surveillance: A guide to understand the principal requirements of surveillance programmes for national plant protection organizations[4]

4 FAO. 2021. A guide to understanding the key requirements of surveillance programs for national plant protection organizations.

For the implementation of surveillance programs, these operations include:

2.2.1. Priority setting and planning

Planning and implementing a surveillance program must involve setting priorities. Priorities for surveillance may vary from country to country, depending on information needs. Indeed, there are several factors to consider when setting priorities for surveillance programs, including:

- impact of pests on crops and biodiversity
- existing national, bilateral, regional or international phytosanitary obligations and arrangements
- implementation of pest management programmes
- emerging pests at the local, national, regional or international level and potential benefits of their early detection
- whether surveillance is cost-effective
- the availability of the resources and methods required to implement a surveillance programme
- the quality and reliability of the expected surveillance results, given the required resource expenditure
- national lists of priority pests prepared using pest risk ranking methods or similar analytical techniques
- trade and market access
- food security
- notification of a pest in a consignment originating from an area where the pest was not known to be present (e.g., notification from trading partner or detection during export certification).

Failure to allocate the NPPO adequate resources to undertake surveillance for high risk pests can result in delays in accessing new markets, unnecessary or unjustifiable import requirements, and significant and devastating agricultural crop losses.

Once priorities for surveillance have been identified, NPPOs should develop plans for the implementation of surveillance programs, considering phytosanitary legislation and policies.

Pest diagnostic services

Surveillance is supported by a functional diagnostic service with adequate infrastructure and human resources including a planned programme for capacity enhancement. The right diagnostic system leads to appropriate phytosanitary measures, planning and facilitates information sharing and communication between the exporting and importing NPPOs.

Box 5 — Essential elements for a Cost-Benefit Analysis of a Surveillance Program

The cost-benefit analysis of a surveillance program should include consideration of the following:

- the level of stakeholder interest in a surveillance program
- the importance of the endangered area and/or agricultural product to the local economy
- the potential economic importance of an agricultural product for export
- the economic importance of an agricultural product for an importing country
- the risk of introducing pests
- the potential economic damage and impact of a pest on an agricultural product
- the human resources available in the field, diagnostic and administrative resources to implement a surveillance program
- the availability of traps and other tools for the detection of specific pests
- the feasibility of the surveillance program with available surveillance tools.

If the estimated economic cost of implementing a surveillance program does not exceed the value of the benefits to a country's agricultural and natural areas, an adequate return on investment can be expected.

2.2.2. Resource mobilization

Surveillance should be adequately resourced with appropriate human, financial and physical resources.

Diagnostic services resources are an essential part of a national surveillance system. Human resources may include personnel in administration, operations, technical functions, management and logistics. NPPOs should ensure that personnel are appropriately trained and qualified. Financial resources may be required for surveillance logistics and staff travel (e.g., transport costs, accommodation and meals), equipment purchase and maintenance, staff training, specimen processing ISPM 6 Surveillance ISPM 6-12 International Plant Protection Convention and diagnosis, maintenance of an information management system, facility maintenance and emergency response expenses for unplanned surveillance activities. Physical resources may include field equipment (including personal protective equipment), vehicles, appropriate storage facilities and consumables used for carrying out surveys and monitoring, reference materials and other documentation, computers, georeferencing devices and other equipment for data input and storage, software for information management systems, staff uniforms (or valid identification) and materials for raising public awareness.

2.2.3. The documentation

NPPOs should develop administrative procedures for maintaining official documentation, undertaking surveillance (including technical instructions in the form of surveillance protocols), and managing or having access to specimen collections. Documentation is essential for promoting consistency, improving interpretation and reliability of results, and facilitating audit and verification of activities under a national surveillance system.

The NPPO will need to put in place standard operating procedures to ensure a rigorous organization of the records and media management system, regarding the nature and quality of the data and information to be collected, the types of media to be used, and the roles and responsibilities of the different stakeholders in the collection and archiving process.

Documentation must be kept securely while ensuring its accessibility, particularly for audit, monitoring and evaluation purposes to ensure that surveillance programs are implemented in an ongoing and transparent manner.

2.2.4. Information management system

Information management systems are key requirements for any national surveillance system. An efficient system for collecting and managing information should be put in place to ensure that information is collected and collated, shared and disseminated with the various stakeholders (e.g., sharing of surveillance data with operators in the relevant sectors, between surveillance programs, or with other countries, as appropriate).

The NPPO is responsible/custodian for the surveillance information management system. It must ensure that information and data are collected, stored, backed up and updated on standardized and appropriate media and in safe and secure locations.

The appropriate Information management systems should allow easy retrieval of data and information to meet national and international surveillance-related reporting requirements. Information management systems should ensure traceability of samples taken during surveillance activities. The NPPO should select hardware and software based on short- and long-term program objectives, considering the national context and identified constraints on available resources (financial, IT accessibility, etc.). Consultation with database administrators and/or hardware and software solution providers may be useful in guiding the decision-making process.

2.2.5. Procedures for reporting and managing alerts

The NPPO is responsible for reporting the results of surveillance activities, particularly the occurrence, epidemic and spread of pests and efforts to control them. The information collected through general surveillance is most often used to report to relevant trading partners, Regional Plant Protection Organizations (RPPOs) and the IPPC.

The IPPC stipulates that contracting parties report the presence, outbreak, and spread of pests for the purpose of informing of immediate or potential danger. National Plant Protection Organizations (NPPOs) are responsible for collecting information on pests through surveillance and for verifying the pest reports so collected. The presence, outbreak and spread of pests that are known, based on observations, experience or a pest risk analysis (PRA), to constitute an immediate or potential hazard, should be reported to other countries, to the NPPOs of neighbouring countries and countries with which there is trade.

Therefore, the results of the implementation of pest surveillance programs should be communicated in a timely manner to the relevant trading partners in a spirit of international cooperation to prevent the spread of pests. Therefore, private producers and operators concerned by the results of the surveillance should also be informed by appropriate means.

To this end, the NPPOs will have to put in place systems to ensure the collection, verification, and analysis of pest alerts in their territory, in conjunction with their national surveillance programs. The procedures for reporting and managing alerts are essential and must be the subject of clear standard operating procedures (SOPs) in order to ensure the relevance of the system and the taking of appropriate measures.

2.2.6. The implementation of an internal audit program

Pest surveillance and the use of surveillance data in international trade and plant health improvement are essential. The consequences of ineffective (or lack of) surveillance and control systems to ensure accurate results can be devastating to a country. The plant pest surveillance program should be technically sound and include effective supervision of personnel and methods to ensure that all activities are undertaken correctly.

NPPOs should conduct regular audits of their general and specific surveillance activities, including activities conducted by authorized entities, to ensure that they are conducted in accordance with relevant surveillance protocols.

The internal audit program, conducted by a team of competent individuals, periodically reviews all aspects of the surveillance program to assure that quality is maintained throughout the program and that all aspects of the program are supported by appropriate technology and procedures to achieve the stated objectives.

The data and results of the internal audit program should be regularly reviewed against its targets, goals, and objectives. This formal review process would help ensure that the program is reliable and credible to its various stakeholders.

2.3. Management of skills and competencies

Management of skills and competencies refers to the organization of training and capacity building for NPPO managers and agents and for the various actors who have roles and responsibilities in the implementation of the national surveillance system. It thus includes a system of training, evaluation and regular review of personnel involved in surveillance activities to ensure that their skills are maintained.

Training, assessment, and regular review of personnel involved in surveillance activities are integral components of the national surveillance system. Personnel involved in surveillance activities should be adequately trained in plant health and related fields (including relevant pests, their biology, hosts and symptoms of infestation) and data management. Personnel should also be trained in biosecurity, sampling methods, handling of samples, preservation and transportation of samples for identification, and record keeping associated with samples.

Training materials should be developed and updated regularly to ensure that the competencies of personnel are developed and maintained. Training and reference materials should be readily available to all personnel involved in surveillance activities.

Resources for the preparation of training materials can be accessed from some of the internationally recognized entities on plant health matters such as IPPC, CABI, and COLEAD, (see annex 4).

Training of NPPO staff and other relevant stakeholders on the target pest is essential. This may require time, resources, and a certain level of commitment. To do this, appropriate arrangements must be made to ensure that skills are organized, developed, and maintained.

Staff training is an expensive but necessary investment. Therefore, efforts should be made to retain trained staff to ensure the effectiveness and sustainability of the surveillance program.

Different stakeholders can have important inputs into the competence development strategy. For example, universities, research institutions and specialists in the field can provide training to producers or company staff in targeted commodity chains on methods of specific pests or groups of pest surveillance.

2.4. Communication and relationship dynamics

Communication and relationship dynamics refer to the way in which relationships are structured between the NPPO and the different stakeholders in the national surveillance system. They relate to the mechanisms for consulting the various stakeholders and the formalized systems put in place to ensure awareness, information, and communication towards the various categories of stakeholders in the national surveillance system, including other services and stakeholders involved in the control, transport, import or export of plants and plant products and the general public.

2.4.1. The dynamics of communication with stakeholders

Communication helps ensure that stakeholders and staff understand and support pest surveillance activities, requirements, and systems, and have sufficient information to manage their own related activities. It is therefore critical for the NPPO to develop a communication strategy for pest surveillance to manage communications as effectively as possible.

A communication strategy should consider:

- information needs of staff, stakeholders and affected parties.
- the urgency with which decisions must be made.
- the extent to which engagement and communication improve pest surveillance and the use of surveillance information.
- communication and mobilization costs for both the NPPO and the people involved.
- coordination of surveillance programs, which requires rapid and effective communication.
- communication methods adapted to the local infrastructure and the target audience.

The NPPO should ensure that communication arrangements cover all relevant parties. Communication can address common issues that may arise from the implementing a surveillance programme, as well as the procedures and implications of the findings.

Public awareness activities are very important. They aim to remind the general public and target groups of potential pest threats and where to report sightings of pests.

Effective communication is essential to ensure that alerts are disseminated, and that informed and appropriate decisions are made by all stakeholders.

2.4.2. Stakeholder relationships

NPPOs are encouraged to engage through effective and timely communication with stakeholders and relevant experts on the design, planning, implementation and review of national surveillance systems, as well as on priorities for surveillance and on expected outcomes.

The communication arrangements may include:

- internal communication within the NPPO (e.g., meetings, briefings, newsletters)
- external communication by the NPPO (e.g., official reporting, industry notices)
- formal stakeholder engagement (e.g., forums, newsletters, awareness raising and training initiatives)
- formal and informal national surveillance networks that develop and implement surveillance programmes, and their channels to communicate information to and from the NPPO.

3. GRID FOR EVALUATING THE PERFORMANCE OF A NATIONAL PEST SURVEILLANCE SYSTEM

The assessment of a national surveillance system is based on a grid developed from the COLEAD Analytical Framework, with reference to the surveillance requirements described in the International Standard for Phytosanitary Measures (ISPM 6) and the Guide to Understanding the Main Requirements of Surveillance Programs for National Plant Protection Organizations published by FAO and COLEAD.

The evaluation grid is based on:

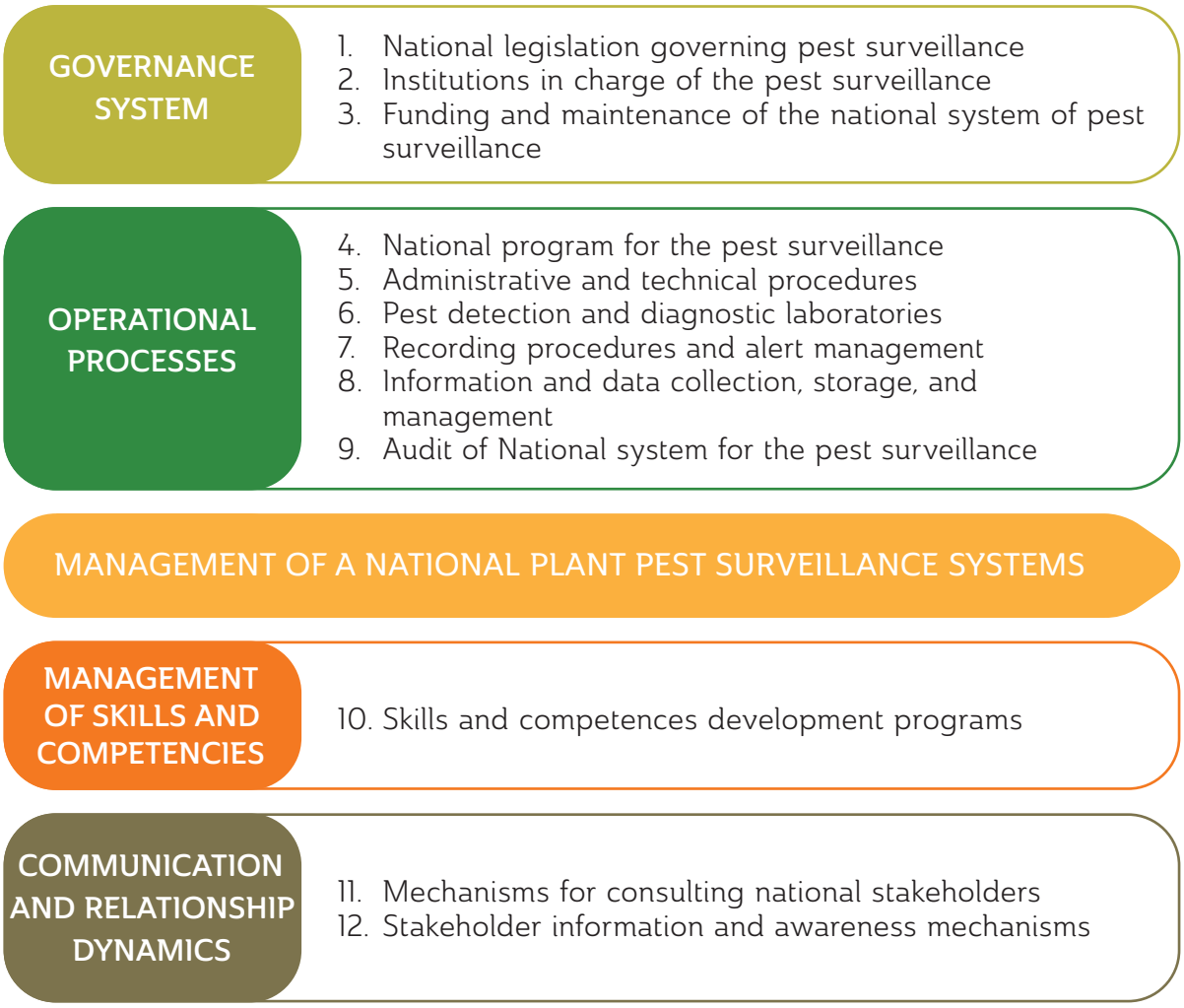
i. control points associated to the four pillars
ii. compliance criteria associated to each control point
iii. a rating scale to assess the performance of the national surveillance system.

3.1. Control points of a national pest surveillance system

The evaluation grid focuses on the four pillars of a national surveillance system identified in the framework (Chapter III).

Based on the requirements for surveillance programs defined in the International Standards for Phytosanitary Measures, COLEAD has defined 12 control points (or checkpoints) against the four pillars for evaluating the performance of a national surveillance system.

Figure 3 — 12 Control points in a National Surveillance System



3.2. Criteria for compliance of a national surveillance system

Compliance criteria have been defined to assess the performance of a national surveillance system, for each of the 12 control points related to the 4 pillars of the COLEAD analysis framework.

Example 2 — Example of compliance criteria applied to the control point on governance of a national surveillance system

1. **National legislation governing phytosanitary surveillance**

- Is there national legislation governing pest surveillance activities, including reporting requirements?
- Are the roles and responsibilities of the NPPO and the various stakeholders in national surveillance activities clearly defined?
- Is the legislative and regulatory framework governing pest surveillance activities established in accordance with ISPM requirements?

3.3. Rating scale for the performance of a national surveillance system

The assessment of the performance of a national surveillance system for each of the compliance criteria is based on a rating scale of 1 to 4.

Box 6 — Rating scale for assessing the performance of a national surveillance system

The scale from 1 to 4 allows to proceed to the classification of the performance levels of the different control points, regarding compliance criteria based on the requirements of the International Standards for Phytosanitary Measures.

The scale of 1 to 4 means that:

1. No activity is implemented
2. Activities are partially implemented or have been initiated
3. The activities are routinely undertaken but are not fully implemented
4. Activities are appropriately implemented on a sustainable basis (Comply with the requirements of the International Standards for Phytosanitary Measures)

With this grid, the NPPOs and stakeholders can assess the level of performance of the national surveillance system for the different control points and associated compliance criteria, with regards to the requirements of the International Standards for Phytosanitary Measures.

The results of this assessment allow the NPPO and stakeholders to define the current situation and agree on the desired levels of improvement for each control point and the compliance criteria. On this basis, an action plan for the improvement of a national surveillance system can be established.

Example 3 — The completed evaluation grid for control points related to the governance of the national surveillance system

GOVERNANCE OF THE NATIONAL SURVEILLANCE SYSTEM					
CONTROL POINTS		NOTATION			
		1[5]	2[6]	3[7]	4[8]
1. National legislation governing phytosanitary surveillance					
1.1.	Does the national plant protection legislation include provisions requiring the national plant protection organization to implement pest surveillance activities throughout the country?		x		
1.2.	Does the national legislative and regulatory framework include sufficient provisions that provide NPPO staff and/or agents authorized by the NPPO with the necessary clearance and mandates to conduct surveillance activities according to the procedures in place?			x	
1.3.	Does the legislative and regulatory framework governing surveillance activities include provisions for mandatory notification at the national level to the NPPO in case of detection or suspicion of the presence of targeted pests and/or pests new to an area, host or commodity chain?		x		
2. Institutions in charge of phytosanitary surveillance activities					
2.1.	Are the roles and responsibilities of the NPPO and the various stakeholders in the phytosanitary system clearly defined to avoid any obstacle to the implementation of surveillance activities?		x		
2.2.	Are procedures for engagement and coordination between the NPPO and third-party personnel acting on behalf of the NPPO, including the private sector, defined and followed?			x	
2.3.	Are indicators defined to allow for the evaluation of the performance of the activities carried out by the different stakeholders in the surveillance system?		x		

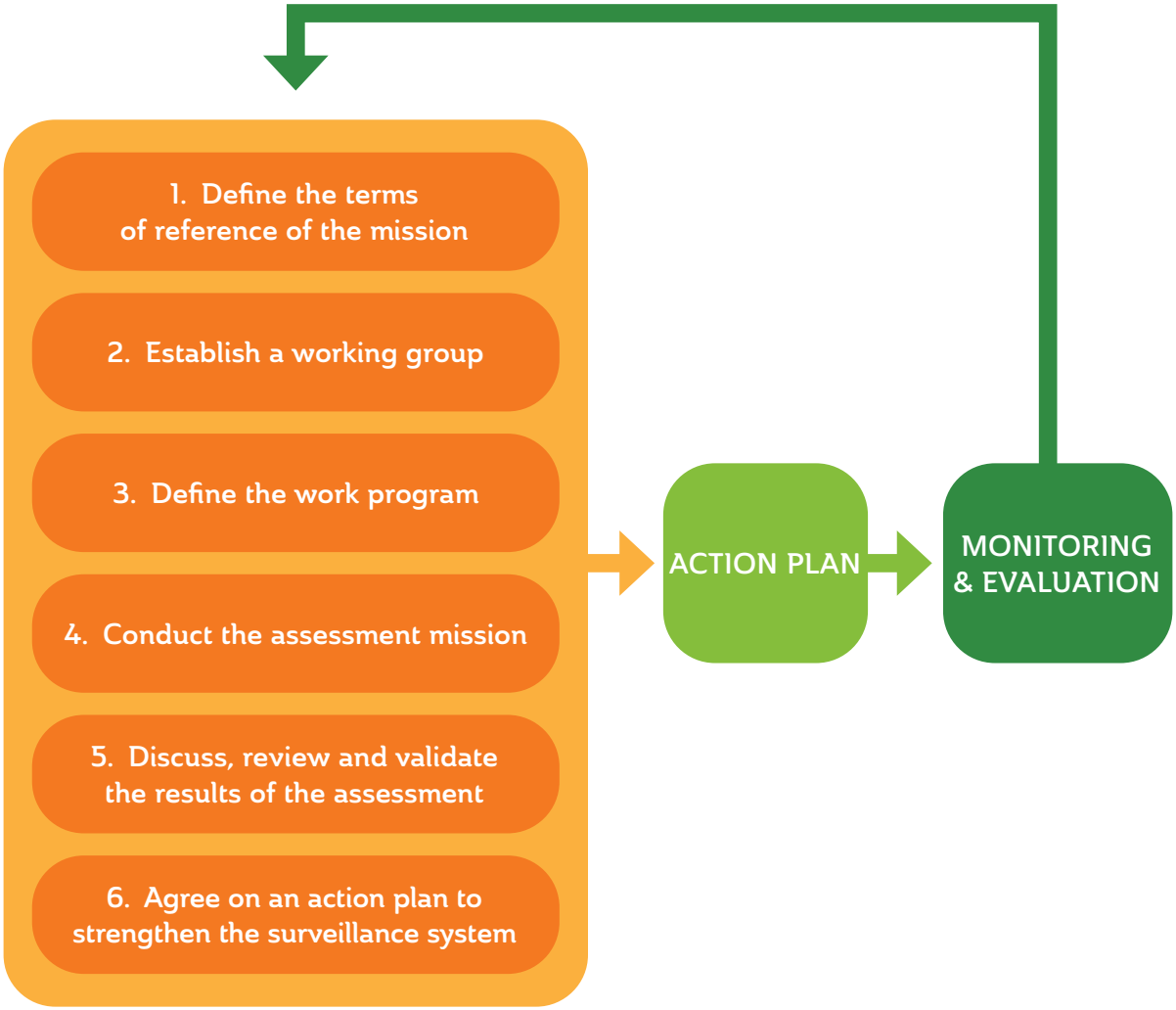
5 No activity is implemented
6 Activities are partially implemented
7 Some activities are routinely implemented but not fully. (To be improved)
8 Appropriate and sustainable activities are in place

GOVERNANCE OF THE NATIONAL SURVEILLANCE SYSTEM					
CONTROL POINTS		NOTATION			
		1[5]	2[6]	3[7]	4[8]
2. Financing of the national plant health surveillance system					
2.1.	Is the budget required to fund surveillance activities consistent with the pest surveillance program?		x		
2.2.	Are the financial and material resources mobilized sufficient to cover all expenses related to the execution of surveillance activities (materials, equipment, logistics, etc.)?			x	
2.3.	Is an appropriate and sustainable system for mobilizing financial and material resources for the implementation of the surveillance program in place, including allocation from the government budget and contributions from the private sector?		x		

4. PRELIMINARY STEPS AND CONDUCT OF THE PERFORMANCE EVALUATION PROCESS OF A NATIONAL SURVEILLANCE SYSTEM

The COLEAD National Surveillance System Assessment Matrix is applied in a logical sequence of steps, which are outlined in Figure 4 below.

Figure 4 — The 6 steps for assessing a national surveillance system



Step 1 — Draft the terms of reference of the mission

Drafting the terms of reference is one of the first steps in the assessment implementation process. The terms of reference must be defined and owned by NPPO management. These terms of reference should clearly and precisely define the context, objectives, methods, and expected results of the assessment.

These terms of reference identify and define the references that make up the assessment including:

i. **The extent and scope of the surveillance system to be evaluated**

The assessment may focus on one or more components of the national surveillance system (general surveillance or a specific surveillance program, limited territory coverage, etc.).

ii. **Official and administrative provisions to be made**

Evaluators should have official mission orders or notes that give them the mandate and authority to interview targeted actors, access production areas, control stations, laboratories (public and private, etc.), consult information and data, documentation and records related to surveillance activities, etc.

The terms of reference identify the profiles for the team that will be responsible for conducting the evaluation (key considerations include interpersonal skills, knowledge of the country and geographic areas covered, qualifications and expertise in pest surveillance, etc.). The composition of the evaluation team depends on the context and specificities of each country, regarding the stakeholders and the nature and scope of the surveillance programs implemented.

Step 2 — Establish a working group

This is about constituting a working group to lead the process of application of the Evaluation Grid of the national surveillance system. It is to be set up by the National Plant Protection Organization.

The working group is responsible for preparing a written report that clearly describes the process followed and the stakeholders involved, the results and conclusions of the assessment, and the resulting action plan.

Although the composition of this group may vary from country to country depending on institutional structures, stakeholders, and the distribution of responsibilities in the implementation of surveillance activities.

In all cases, NPPO management should ensure that the team is coordinated by an official who has the necessary authority and leadership and who has a good knowledge of the NPPO at both the central and decentralized levels.

The working group should include knowledgeable individuals with a good understanding of ISPM requirements for pest surveillance in general and of pest risk management issues in relation to national objectives and priorities for plant health and safety and market access.

Working group members should have links to key stakeholders (research, universities, laboratories, management structures, private sector in the main commodity chains targeted in the surveillance programs).

It is a suggested that a group of four or five individuals with a mix of expertise in surveillance should provide the necessary qualities and skills, while still being of a manageable size.

Box 7 — COLEAD's Support for a National Surveillance System Evaluation Mission

When a request for support is made and accepted, COLEAD will typically provide a national or international expert with knowledge and experience of the International Standards for Phytosanitary Measures for surveillance. The COLEAD expert will facilitate the assessment process and provide relevant advice to stakeholders throughout the process.

The expert's contribution will include:

- Oversee the collection of data and information needed to conduct the evaluation, with reference to the COLEAD Evaluation Grid.
- Facilitate the analysis and validation of the evaluation results and the drafting of the situation analysis report.
- Oversee the preparation of a final report, including prioritization of needs and development of a national priority action plan for improving the national surveillance system.

Step 3 — Define the work program

The Working Group should, on the basis of the terms of reference, develop its work program so as to plan the necessary travel to the field and meet with the main stakeholders who have roles and responsibilities in the implementation of surveillance activities (central administration, deconcentrated services, private operators of the targeted sectors, laboratories, management services, researchers, academics, etc.), learn about practices and data and information related to the implementation of the surveillance programs.

The work program makes it possible to evaluate the resource requirements for the appropriate conduct of the mission. NPPO management should ensure that the members of the working group have access to resources, which apart from the technical requirements may include means of transportation (vehicles, motorcycles, etc.), accommodation or living expenses during field trips, etc.

The duration of the evaluation may depend on the size of the surveillance system, in relation to the size of the national territory and production areas to be considered and the specificities of the surveillance programs implemented. In all cases, it is important to clearly identify and consider the context and priority issues in terms of the phytosanitary policy and safety.

Step 4 — Conducting the Evaluation Mission

In line with the plan, the Working Group will assess the various control points associated with the four pillars (Governance, Operational Processes, Management of Skills and Competence, and Communication and Relationship Dynamics) of the national surveillance system, using the grid developed by COLEAD (**see Appendix 2**).

The members of the working group can organize themselves at their convenience to carry out the evaluation while observing the required timelines. In all cases, care should be taken to review all the criteria and control points of the evaluation grid, in relation to the pillars of the phytosanitary surveillance system.

All information, data and documents supporting the assessment responses for each control point should be referenced and noted in the report to ensure transparency and to allow stakeholders to review, assess and verify the results as necessary. During the process, reference should be made to all reports and results of previous diagnostics or evaluations of the phytosanitary system.

It is important to note that data analysis is critical to the evaluation process, as it identifies weaknesses, constraints, and challenges so that actionable recommendations can be made.

Finally, after data analysis the results and conclusions of the evaluation can be used to identify challenges and develop a draft report.

Step 5 — Discuss, review and validate the evaluation results

Step 5 is for the Working Group to share the draft report in a stakeholder workshop to discuss, review and validate the results of the evaluation.

It is strongly recommended to invite representatives of the relevant stakeholders involved, including public and private actors in agricultural value chains, researchers, academicians and others, to be linked to the priorities of the surveillance plans. In addition, it would be

very wise to invite representatives of projects and programs and development partners that have an interest in SPS capacity building in general and the surveillance system.

The workshop should be organized by the NPPO management with the aim of reporting, discussing, reviewing, and validating the draft report on the results of the evaluation of the national surveillance system. The draft report should be distributed to participants well in advance of the workshop.

A half-day or one-day workshop is usually sufficient. The purpose of the workshop is for the working group to present the methodology used and the main steps of the assessment, and for stakeholders to learn/interrogate the results and conclusions of the national surveillance system assessment.

This step is important to ensure commitment and ownership by NPPO management and stakeholders of the evaluation results, to obtain specific input, if any, for inclusion in the report, and to reach consensus on the report as to the accuracy and validity of the findings, conclusions, and recommendations for corrective action.

Step 6 — Agree on an action plan to strengthen the national surveillance system

The results of the evaluation exchanges with the different stakeholders will allow the NPPO management and the stakeholders to agree on the gaps, identify the main challenges and needs for improvement and establish a priority action plan to strengthen the pest surveillance system, in coherence with the national phytosanitary issues and priorities.

An action plan template from the evaluation of a national surveillance system is attached (**see Appendix 3**).

The development of the Action Plan should be based on the strategic vision underlying the national plant health security policy to better appreciate the current status of the surveillance system and the desired improved status.

It will also be necessary to set up a monitoring and evaluation system that will make it possible to periodically assess the implementation of the action plan. This by necessity will entail review of the progress and changes in trade and phytosanitary priorities and issues, in relation to international regulations and phytosanitary obligations and mechanisms at the national, bilateral, regional, and international levels. In this regard, the results of the internal audit program can provide important data and information.

Box 8 — Support needs for the implementation of action plans for strengthening national surveillance systems

The NPPO may need support in terms of financial resources or equipment and/or technical assistance to implement the national action plan for strengthening its national surveillance system.

The action plan provides the NPPO with a documented basis for soliciting resources from its supervisory authority or from technical and/or financial partners involved in the sanitary and phytosanitary field.

Some actions, particularly those that require physical investments, may go beyond the support provided by COLEAD. It will therefore be wise to identify other potential sources of funding.

Based on the national action plan, actions that can be implemented with COLEAD support will be the subject of a **Development Project**.

The monitoring and evaluation of the national action plan in order to assess the improvements recorded and the needs for updating must be ensured by the NPPO, particularly in relation to the evolution of the context and the phytosanitary situation at regional and international levels.

The monitoring and evaluation of the national action plan in order to assess the improvements recorded and the needs for updating must be ensured by the NPPO, particularly in relation to the evolution of the context and the phytosanitary situation at regional and international levels.

5. APPENDICES

5.1. Appendix 1 – Example of a roadmap for national surveillance of fruit flies (*Tephritidae*)

N°	ACTIVITIES	NUMBER/ AMOUNT	PERSON IN CHARGE	INDICATOR/ DELIVERABLE	IMPLEMEN-TATION PERIOD	DEADLINE
A	NATIONAL SURVEILLANCE					
1	Identify xx new orchards		NPPO	▪ Georefer-enced data-base ▪ Positioning map ▪ Mission report		
2	Acquire surveillance equipment 1 year (320 traps, 3840 insecticides and 3840 para-pheromones)		NPPO	▪ Delivery note ▪ Implementa-tion report		
	Acquire small equipment (alcohol, bottle, grease, gloves, soft wire, etc.)		NPPO	Delivery note		
3	Identify surveillance stakeholders		NPPO	List of data collectors and coaches		
4	Collect data (2 times/ month)		NPPO	Collection sheet		
5	Enter and process data (2 people)		NPPO	Data base		
6	Issue alerts		NPPO	Report of alerts issued		

N°	ACTIVITIES	NUMBER/ AMOUNT	PERSON IN CHARGE	INDICATOR/ DELIVERABLE	IMPLEMEN-TATION PERIOD	DEADLINE
B	SURVEILLANCE: ESTIMATION FOR EXPORT ORCHARDS					
1	Identify orchards		Exporters	List of registered orchards		
2	Acquire monitoring equipment for 4 months (traps 16, insecticides 64 and para-pheromones 64)		Exporters	Delivery note		
3	Acquire small equipment (alcohol, bottle, grease, gloves, soft wire etc.)		Exporters	Delivery note		
4	Install the surveillance device		Exporters	Delivery note		
5	Collect and transmit data		Exporters	Survey sheets		
C	SURVEILLANCE: ESTIMATION FOR ONE STATION					
1	Acquire surveillance equipment 4 months (traps 4, insecticides 16 and para-pheromones 16)		Exporters	Delivery note	January 2020	30/01/20
2	Acquire small equipment (alcohol, bottle, grease, gloves, soft wire etc.)		Exporters	Delivery note	January 2020	30/01/20
3	Install the monitoring device		Exporters	Delivery note	January 2020	30/01/20
4	Collect and store data		Exporters	Survey sheets	February 01, 2020	15/02/20

N°	ACTIVITIES	NUMBER/ AMOUNT	PERSON IN CHARGE	INDICATOR/ DELIVERABLE	IMPLEMEN-TATION PERIOD	DEADLINE
D	CAPACITY BUILDING					
1	Train the trainers on the surveillance system (National 20 participants + 10 station agents)) Session 1		NPPO	Training report		
2	Train the trainers on the surveillance system (National 20 participants) Session 2		NPPO	Training report		
3	Train producers to collect (20 participants)		NPPO	Coaching sheet		
4	Train producers for monitoring		Exporters	Training report		

5.2. Appendix 2 – Evaluation grid for a national surveillance system

GOVERNANCE OF THE NATIONAL SURVEILLANCE SYSTEM					
CONTROL POINTS/CRITERIA		NOTATION			
		1[9]	2[10]	3[11]	4[12]
1. National legislation governing phytosanitary surveillance					
1.1.	Does the national plant protection legislation include provisions requiring the national plant protection organization to implement pest surveillance activities throughout the country?				
1.2.	Does the national legislative and regulatory framework include sufficient provisions that provide NPPO staff and/or agents authorized by the NPPO with the necessary clearance and mandates to conduct surveillance activities according to the procedures in place?				
1.3.	Does the legislative and regulatory framework governing surveillance activities include provisions for mandatory notification at the national level to the NPPO in case of detection or suspicion of the presence of targeted pests and/or pests new to an area, host or commodity chain?				
2. Institutions in charge of phytosanitary surveillance activities					
2.1.	Are the roles and responsibilities of the NPPO and the various stakeholders in the phytosanitary system clearly defined in order to optimize the implementation of surveillance activities?				
2.2.	Are procedures for engagement and coordination between the NPPO and third-party personnel acting on behalf of the NPPO, including the private sector, defined and followed?				
2.3.	Are indicators defined to enable the performance of activities carried out by the NPPO and the various stakeholders in the national surveillance system to be evaluated?				

9 No activities are implemented
10 Activities have been initiated
11 Activities not fully implemented (To be improved)
12 Adequate and appropriate measures are in place

GOVERNANCE OF THE NATIONAL SURVEILLANCE SYSTEM					
CONTROL POINTS/CRITERIA		NOTATION			
		1[9]	2[10]	3[11]	4[12]
3. Financing of the national plant health surveillance system					
3.1.	Is the budget required to fund surveillance activities consistent with the pest surveillance program?				
3.2.	Are the financial and material resources mobilized sufficient to cover all expenses related to the execution of surveillance activities (materials, equipment, logistics, travel expenses, etc.)?				
3.3.	Is an appropriate and sustainable system for mobilizing financial and material resources for the implementation of the surveillance program in place, including allocation from the government budget and contributions from the private sector?				

OPERATIONAL PROCESSES					
CONTROL POINTS/CRITERIA		NOTATION			
		1	2	3	4
4. National pest surveillance program					
4.1.	Is a national pest surveillance program based on risk analysis clearly established?				
4.2.	Is the national surveillance program consistent with the priorities and the phytosanitary policy, in connection with the development of trade and the protection of plant resources and the environment?				
4.3.	Is a cost-benefit analysis of the national surveillance program being conducted?				
5. Administrative and technical procedures					
5.1.	Are clear administrative and technical procedures consistent with the requirements of international standards on phytosanitary measures defined and appropriately implemented to ensure consistent and uniform maintenance of official documents including protocols and technical instructions governing surveillance activities at the various locations identified in the surveillance plans?				
5.2.	Do the NPPO and the various stakeholders have adequate and sufficient human, financial and material resources (infrastructure, equipment, and consumable supplies) to carry out the various tasks foreseen in the implementation of the phytosanitary surveillance programs?				
5.3	Are pest surveillance activities implemented by the various stakeholders in the national pest surveillance program in accordance with existing administrative and technical protocols and instructions?				
6. Laboratories for detection and phytosanitary diagnostic					
6.1	Are laboratories capable of performing detection and diagnostic work related to the needs of implementing surveillance activities available?				
6.2	Do the diagnostic laboratories have the appropriate infrastructure, equipment, and human resources to carry out detection and phytosanitary diagnostic work and research, in conjunction with pest surveillance programs?				
6.3	Is there an appropriate and sustainable funding system for diagnostic laboratories to carry out detection, diagnostic, and research work, linked to the needs of implementing a national surveillance system that meets the requirements of international standards for phytosanitary measures?				

OPERATIONAL PROCESSES						
CONTROL POINTS/CRITERIA		NOTATION			
		1	2	3	4
7. Procedures for reporting and managing alerts					
7.1	Are awareness and information programs implemented to encourage (technical services, producers, supervisors, researchers, scientists) to report pests on the national territory?				
7.2	Is a reliable pest management system established and implemented throughout the country, including the management of reports and information from official sources in other countries?				
7.3	Is an appropriate reporting and alert system in place that is capable of ensuring widespread and rapid reporting, management of pest outbreaks, crises, incursions or infestations, and dissemination of alerts to the various national stakeholders in the phytosanitary system (general public, producers, producers' cooperatives, exporters, supervisors, researchers, etc.)? Is the system in place?				
8. Collection, storage and management of information and data					
8.1.	Are information and data collection, storage, and management systems in place to ensure centralized compilation of all national surveillance program information and data?				
82.	Are appropriate standard operating procedures established and implemented to ensure the consistency, integrity, and storing of information and data in the national surveillance system?				
8.3.	Are appropriate standard operating procedures established and implemented to ensure quality control, validation and reporting of pest surveillance information and data?				
9. Audit of the national phytosanitary surveillance system					
9.1.	Does the NPPO have an audit system in place for the national surveillance program that meets the requirements of independence and transparency?				
9.2.	Is the audit program implemented and does it cover all activities of the surveillance programs?				
9.3.	Are procedures for the implementation of corrective actions to improve the effectiveness of surveillance programs defined and implemented, linked to the results and conclusions of audits?				

MANAGEMENT OF SKILLS AND COMPETENCE					
CONTROL POINTS/CRITERIA		NOTATION			
		1	2	3	4
10. Skills and Competences development programs					
10.1.	Are there national training programs for the various stakeholders (NPPO staff, producers, supervisors, etc.) in activities and procedures related to pest surveillance, with reference to international standards for phytosanitary measures?				
10.2.	Do NPPO staff and the various stakeholders in the national surveillance system have sufficient training and skills to carry out the activities in the national surveillance program?				
10.3.	Is an appropriate funding system in place to ensure ongoing training and capacity building for NPPO staff and other stakeholders in the national surveillance program?				

COMMUNICATION AND RELATIONSHIP DYNAMICS						
CONTROL POINTS/CRITERIA		NOTATION			
		1	2	3	4
11. Stakeholder consultation mechanisms for the national surveillance program					
11.1.	Is there a formalized mechanism to guide consultations and dialogue between the NPPO and stakeholders in the national pest surveillance program?				
11.2.	Are the processes for prioritizing and planning surveillance activities and their financing based on the results of dialogue between the NPPO and the various stakeholders in the phytosanitary system?				
11.3.	Is a system for reporting, sharing, and disseminating information and data from the national surveillance program implemented and does it feed into official production and control programs?				
12. Stakeholder information and awareness					
12.1.	Are the objectives, priorities, surveillance programs implemented, and their results duly reported on a regular basis?				
12.2.	Is awareness raising and communication to the various stakeholders on the main issues and implications of pest surveillance programs conducted on a regular basis towards the community, including other services and actors involved in the control, transport, import or export of plants and plant products (customs and law enforcement at border control posts, etc.)?				
12.3.	Does the NPPO implement information and awareness campaigns to encourage the general public to report the presence of pests, in relation to plant health risks and the issues and targets of the national surveillance program?				

5.3. Appendix 3 – Action plan template from the evaluation of a national surveillance system

PILLAR	REFERENCE OF THE CONTROL POINTS	ACTIONS TO BE IMPLEMENTED	DEADLINE	PERSON IN CHARGE
Governance System				
Operational processes				
Management of Skills and Competences				
Communication and relationship dynamics				

5.4. Appendix 4 – Bibliography and useful resources

- R-SAT. COLEAD SPS Rapid Assessment Tool for Strengthening National Sanitary and Phytosanitary Systems in ACP Countries. User's Guide. June 2021.
- A guide to understanding the key requirements of surveillance programs for national plant protection organizations. FAO and COLEAD. 2020.
- COLEAD and IPPC self-study courses on plant health including surveillance, 2022
- FAO/IAEA give guidelines on the most widely used trapping systems, including traps and attractants, trapping applications, as well as procedures for assessment of trap layouts and trap densities based on pest risk, data recording and analysis.
- IPPC Implementation & Capacity Development: SURVEILLANCE and EXTERNAL RESOURCES

International standards for phytosanitary measures related to pest surveillance issues are listed below:

- ISPM 1. Phytosanitary principles for the protection of plants and the application of phytosanitary measures in international trade. Rome, IPPC, FAO (adopted 2006, published 2006)
- ISPM 2: Framework for Pest Risk Analysis. Rome, IPPC, FAO, 2007
- ISPM 3: Guidelines for the export, shipment, import and release of biological control agents and other beneficial organisms Rome, IPPC, FAO, 2005
- ISPM 6: Surveillance. Rome, IPPC, FAO, 2018
- ISPM 7: Phytosanitary certification system. Rome, IPPC, FAO, 2016
- ISPM 8: Determination of pest status in an area. Rome, IPPC, FAO, 2021
- ISPM 10: Requirements for the establishment of pest free places of production and pest free production sites. Rome, IPPC, FAO, 2016
- ISPM 11: Pest risk analysis for quarantine pests. Rome, IPPC, FAO, 2013
- ISPM 17: Pest reporting. Rome, IPPC, FAO, 2002
- ISPM 19: Guidelines on lists of regulated pests. Rome, IPPC, FAO, 2016
- ISPM 21: Pest risk analysis for regulated non-quarantine pests. Rome, IPPC, FAO, 2004
- ISPM 22: Requirements for the establishment of areas of low prevalence. Rome, IPPC, FAO, 2005
- ISPM 26: Establishment of pest free areas for fruit flies (*Tephritidae)*. Rome, IPPC, FAO, 2015
- ISPM 29: Recognition of pest free areas and areas of low pest prevalence. Rome, IPPC, FAO, 2007
- ISPM 45: Requirements for national plant protection organizations if authorizing entities to perform phytosanitary actions. Rome, IPPC, FAO, 2021

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