Food and Agriculture Organization of the United Nations

International Plant Protection Convention

Plant pest surveillance overview

Africa Phytosanitary Programme

(APP) Phase 2 · Train-the-Trainer workshop

23–27 June 2025 · Mpumalanga, South Africa

Descartes Koumba, IPPC Secretariat

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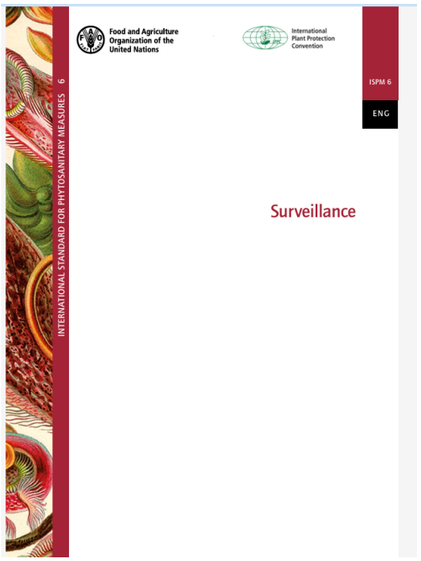
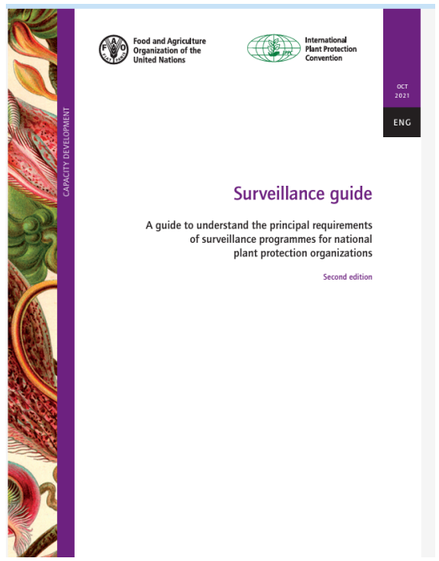
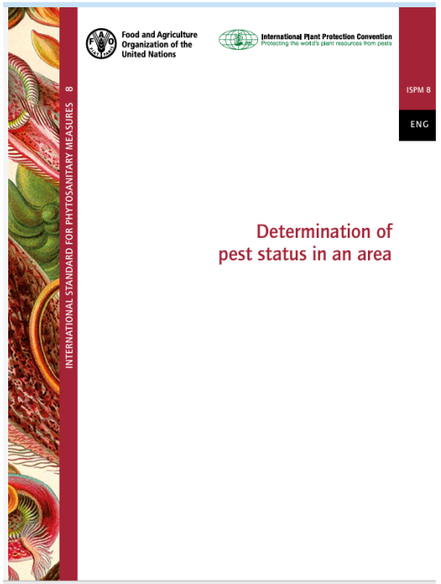
Introduction

Surveillance is an **official process** which collects and records data on pest presence or absence by survey, monitoring or other procedures

Surveillance is an essential component in **national phytosanitary systems,** as prescribed by **Article IV** of the International Plant Protection Convention (IPPC), which **requires NPPOs to conduct surveillance of plants to report and control pests**.







Understanding Surveillance Approaches

General Surveillance

Collection of pest information from government bodies, research institutions, universities, and the public.

Supports pest status declarations and enables early detection of exotic pests.

Specific Surveillance

Active collection of pest data by the NPPO over defined periods.

Includes surveys to determine pest characteristics or identify **species presence/absence in an area**.

Survey Types

Detection surveys (pest presence),
Delimiting surveys (boundaries of infestation), and
Monitoring surveys (tracking pest population characteristics over time).

Organizational arrangements for effective surveillance

The organizational structure of a national plant pest surveillance system requires multiple components working in harmony. National legislation provides the foundation, while adequate funding ensures sustainability. A clear management structure with defined responsibilities, supported by trained personnel and robust information systems, completes the framework necessary for effective surveillance operations.

National Legislation

Provides legal authority and responsibility to the NPPO

Funding & Sustainability

Ensures adequate resources for operations

Management Structure

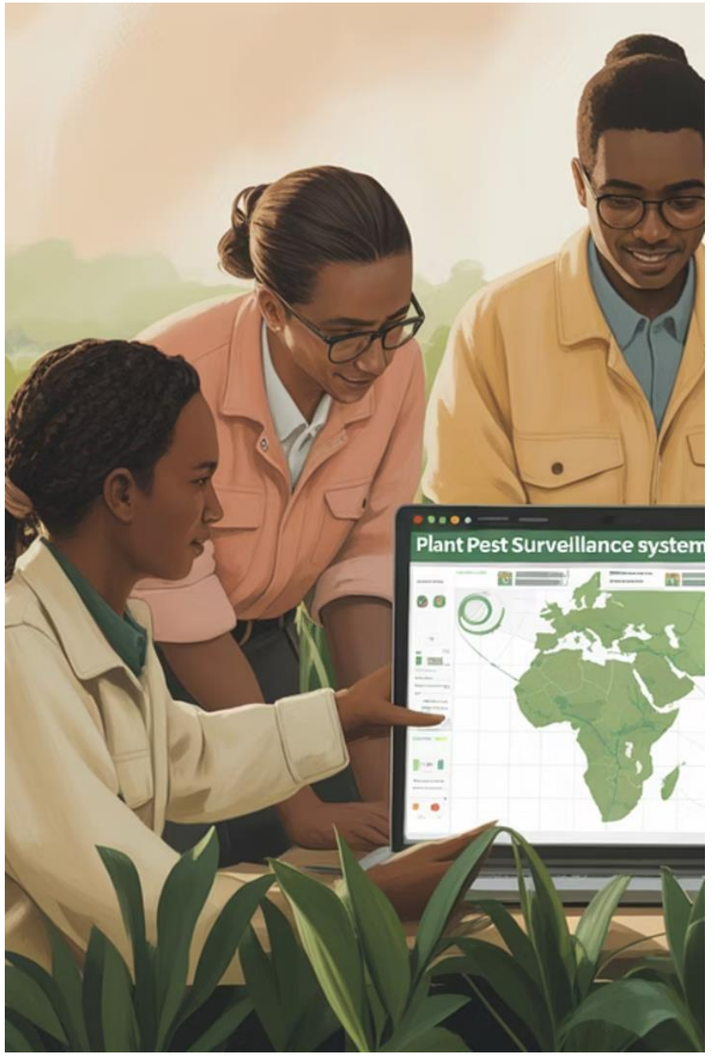
Establishes clear lines of command and delegation

Human Resources

Provides trained personnel for implementation

Information Management

Facilitates data collection, analysis and reporting



National Legislation and Funding

Legislative Authority

Phytosanitary legislation grants NPPOs authority to conduct surveillance, including rights to enter premises, inspect plants, and collect samples.

Operational Powers

Laws should require mandatory pest reporting and establish formal exclusion mechanisms to protect against phytosanitary threats.

Government Funding

Government support is essential, recognizing surveillance as a public good for national biosecurity and plant health.

Industry Partnerships

Government-industry cost-sharing arrangements can support surveillance priorities, especially for sectors that directly benefit.

International Support

Technical and financial assistance from importing countries and international institutions can strengthen surveillance systems.

Emergency Response

Dedicated contingency funds ensure rapid response capabilities when new pest threats are detected.

Management and Human Resources

Strategy Development

Create a clear vision that relates to national priorities regarding trade and protection of plant resources and the environment.

Authority Delegation

Establish clearly defined lines of command and delegation of different levels of authority throughout the organization.

Planning and Implementation

Develop documented procedures to ensure consistency at all levels of operations and adequate supporting systems.

Performance Review

Conduct regular reviews against targets, goals and objectives to ensure the program is reliable and credible to stakeholders.

- Effective management of surveillance programs requires skilled personnel at all levels.
- Training should be provided for managers, supervisors, field personnel, and stakeholders to ensure competency in their respective roles.

Information Management and Communication

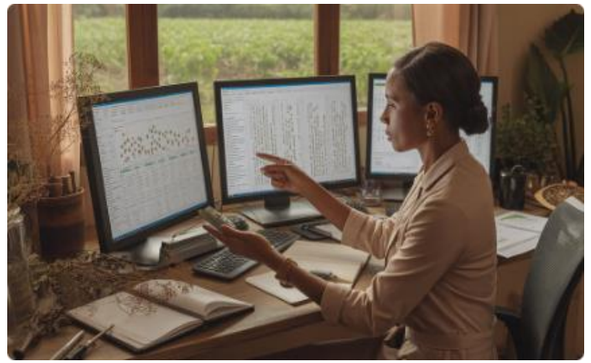
Effective pest surveillance relies on a systematic approach to managing information and communicating findings.

Data Collection

Gather field data using standardized forms and protocols to ensure consistency and reliability

Data Storage

Maintain secure databases with validation procedures to preserve data integrity



Data Analysis

Process information to identify patterns and trends that inform decision-making

Reporting

Share findings with stakeholders and international partners through appropriate channels

Key Considerations for Effective Management

Records Management

Records should include scientific names of pests, collection details, location data, identification information, and verification

Communication Strategy

Communication strategies should consider the needs of internal staff, stakeholders, and international partners

Audience-Specific Channels

Use appropriate communication channels for each audience to ensure

Planning and Prioritization

Cost-Benefit Analysis

Evaluate economic value against program costs to ensure resources are allocated efficiently. This crucial step helps NPPOs determine which surveillance activities provide the greatest return on investment.

Risk-Based Prioritization

Focus on high-risk pests and pathways that threaten market access. Priority should be given to early detection of invasive species and updating regulated pest lists to facilitate trade.

Survey Design

Develop statistically valid methodologies tailored to the purpose of surveillance, whether detecting unknown pests, gathering data about existing pest populations, or determining infestation boundaries.

Planning a surveillance program requires careful consideration of these elements. The design must include appropriate statistical basis, sampling procedures, and diagnostic protocols to ensure reliable and credible results for all stakeholders.

Designing Specific Surveillance Programs

Pest-Specific Surveillance

Definition: Focuses on target pests with defined scope, timing, and methodology.

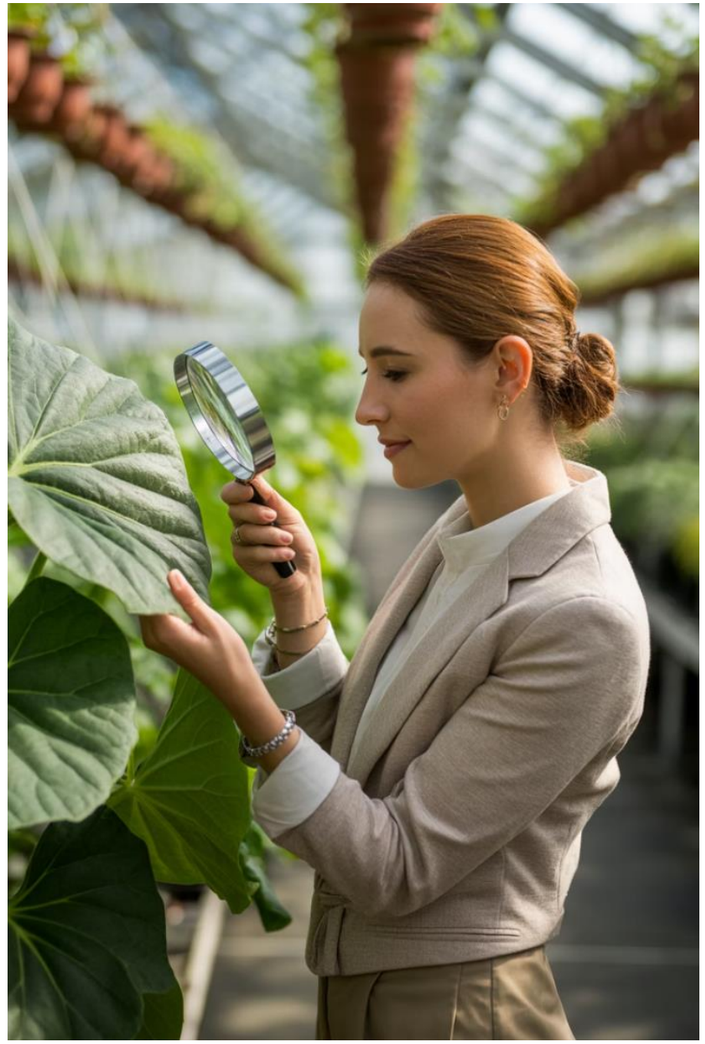
Requirements: Identification of the target pest, geographic area, production system, season, and statistical basis for sampling.

Components: Detailed survey methodology and quality management procedures.

Commodity-Specific Surveillance

Purpose: Gathers information on pests associated with specific commodities.

Site Selection Factors: Geographic distribution of production areas, pest management programs, cultivars present, and points of consolidation of harvested commodities.



Response and Delimiting Surveillance

Timing: Conducted following pest detection to determine extent of infestation.

Elements: Pathway analysis, investigation plans, and delimiting surveys.

Objectives: Establish boundaries of affected areas and support eradication or containment decisions.

Operational resources and methodologies

Resource Type	Examples	Considerations
Human Resources	Field inspectors, laboratory staff, data analysts	Technical skills, training needs, time allocation
Financial Resources	Travel expenses, equipment, supplies, per diems	Budget planning, cost management, funding sources
Physical Resources	Vehicles, traps, laboratory equipment, GPS units	Maintenance, replacement schedules, technological updates
Information Resources	Databases, software, reference materials	Compatibility, security, accessibility, updates

Surveillance methodologies should be based on recognized guidelines and international protocols. Standard Operating Procedures (SOPs) must be developed for all surveillance activities, including sampling, trapping, inspection, and sample handling. These procedures ensure consistency and reliability in data collection and analysis.

Field operations and stakeholder interaction

Sample Collection

Field personnel must follow proper procedures for collecting, labeling, and preserving specimens. Each sample should have a unique identifier to enable tracking from collection through identification. Samples must be handled according to protocols to maintain integrity.

Stakeholder Engagement

Effective interaction with stakeholders is critical for successful surveillance. This includes obtaining permission to enter properties, explaining the purpose of visits, providing information about pests, and sharing results when appropriate.

Field Communication

Regular communication between field staff and surveillance managers ensures timely reporting of findings and resolution of operational issues. Pre-survey briefings, in-field updates, and post-survey debriefings help maintain program effectiveness.

Supervision and quality assurance

Key Elements of Effective Supervision

Effective supervision is essential to ensure that field officers deliver survey activities in accordance with relevant SOPs. The three core components of effective supervision include compliance with SOPs, record-keeping, and field confirmation.

Evaluation Requirements

A minimum of 2 independent evaluations should be conducted annually for long-term surveillance programs. Regular evaluations should assess the effectiveness of surveillance activities, addressing all aspects related to the ability to detect targeted pests within required timeframes.

Record Management Standards

100% of surveillance records should be complete and up-to-date. Quality assurance measures should include verification of records, field confirmation of data accuracy, and feedback mechanisms from stakeholders.

Program Credibility and Compliance

These processes help maintain the credibility and reliability of the surveillance program, ensuring that it meets both national objectives and international standards.

Thank you

Train-the-Trainer workshop

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