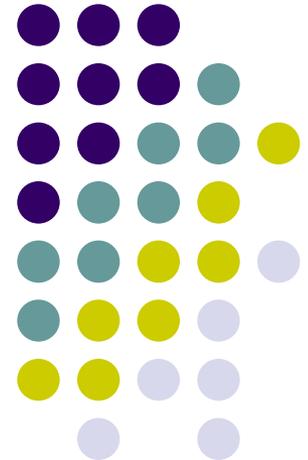
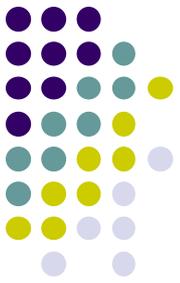


Guidelines for Plant Pest Surveillance

**Mohammed BOULIF,
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National School of Agriculture,
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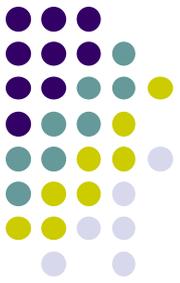
What is a plant pest ?



Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products :

Rodents, arthropods, weeds, fungi, bacteria, viruses, mycoplasma and mycoplasma-like organisms

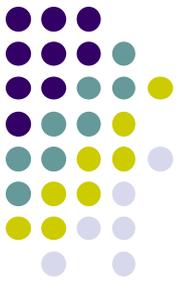
What is surveillance?



Surveillance :

An official process which **collects and records** data on pest occurrence or absence by **survey, monitoring** or other procedures

What is survey?



Survey :

An official procedure conducted over a period of time to determine the characteristics of a pest population or to determine which species occur in an area.

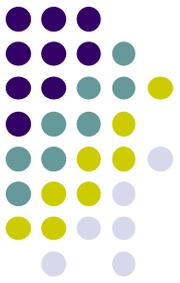
What is a specific survey?



Specific Survey :

Procedure by which NPPOs obtain information on pests of concern on **specific sites** in an area over a **defined period of time**.

Specific Surveys: 3 categories



Detecting survey:

Survey conducted in an area to determine if pests are present.

Monitoring survey:

Ongoing survey to verify the characteristics of a pest population over time.

Delimiting survey:

Survey conducted to establish the **boundaries** of an area considered to be infested by or free from pests.

Importance of Plant Disease Surveillance



- 1. Trade of agricultural commodities may contribute to dissemination of pathogens**
- 2. Plant Health has become a trade policy issue**
- 3. Health Status of a country's agricultural and forestry industries has become a necessity and has many applications :**
 - Developing effective quarantine policies**
 - Management of plant disease Epidemics**

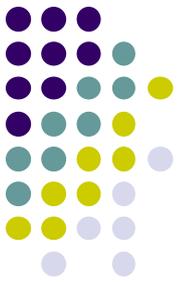
Importance of Plant Disease Surveillance (Ctd)



In terms of plant disease management it is essential to know farmers' current Disease Management Practices, especially, their impact:

- on control targeted pathogens
- on quality of food produced
- on health of consumer
- on environment

Importance of Plant Disease Surveillance

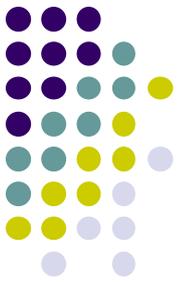


**World Trade Organization (WTO)
is a Rule based organization,**

The rules governing trade in agricultural commodities set out in the Agreement on the Application of Sanitary and Phytosanitary Standards (the **SPS Agreement, 1995).**

Since 1995, Developed countries expanded their exports by using the rules of SPS, entering markets previously closed on questionable Quarantine measures

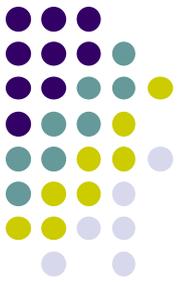
Importance of Plant Disease Surveillance



Governments in many countries are under pressure from their farmers to use rules to exclude commodities that they see as **threats to their agricultural industries.**

A country that cannot provide an adequate description of the health status of its agricultural industries is at **disadvantage when **negotiating access to foreign markets**.**

Importance of Plant Disease Surveillance



Prospective importers will assess risk based on their knowledge of a pest in the country seeking export, the likelihood of introducing exotic pests of concern with the imported commodity and the availability of phytosanitary measures to reduce risk to an acceptable level.

Thus,

surveillance programs, focusing on the pests that might be carried on the commodity to be exported, are of paramount importance. Often, trading partner will specify the extent of the surveillance activities to be undertaken, but not always.

Importance of Plant Disease Surveillance



**Plant Health has
become a major
trade-policy issue**

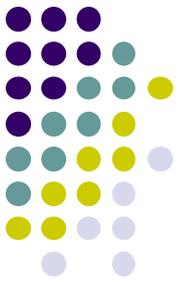
What are the Standards?



International Standards have been developed to guide agricultural commodities trade with lowest risks of moving pests between trading countries.

The main standards are the series of International Standards for Phytosanitary Measures (ISPMs) developed by the Interim Commission Phytosanitary Measures (ICPM) under the aegis of ICPP

Designing a specific survey



Major decisions:

1. Answer the 3 main questions :
 - Where to look?
 - How many places to look in?
 - What sort of data to collect?
2. Develop a survey plan that is:
 - robust (representing reality)
 - feasible both physically & Financially

Steps in designing a survey

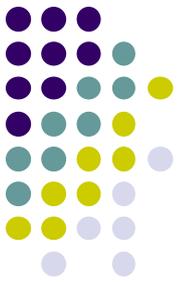


There are 21 steps :

Step 1. Choosing a title and recording authors

- Record the title of your survey and
- Record the names of authors

Steps in designing a survey



Step 2. Record the purpose of your survey :

- To develop a list of pests present in an area
- To demonstrate pest-free area or places of low prevalence for trade purposes
- To develop a baseline list of pests before ongoing monitoring for changes in pest status
- For pest management and control
- For early detection of exotic pests

Steps in designing a survey

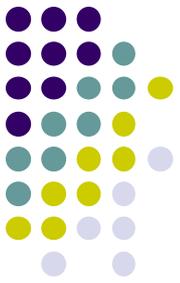


Step 2. Contd:

- For early detection of established organisms becoming pests
- To delimit the full extent of a pest following an incursion
- To monitor progress in a pest eradication campaign.

Others reasons that are combinations of the above

Steps in designing a survey



Step 3. Identify target pests:

- If targeted pests are not yet known go to steps 4.
- If you do know which pests you intend to survey, this step involves gathering as much information as possible about the pests :
 - Pest (s) names
 - Importance of the pest(s)
 - Pest characteristics including life cycle?
 - Create any pest information sheets to be used in field

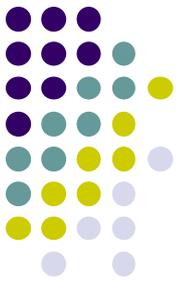
Steps in designing a survey



Step 4. Identify target hosts and record:

- Names of host plants
- Importance of host plants
- Growth habits of host plants
- Accessibility if considering a specific survey
- Regional distribution of host plants

Steps in designing a survey



Step 5. Alternative hosts

Record Alternative pest reservoirs

Steps in designing a survey



Step 6. Review of earlier survey plans

Collect accessible survey or surveillance plans or reports.

Steps in designing a survey

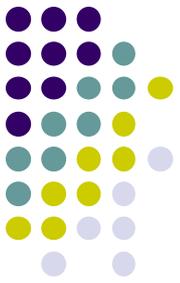


Steps 7 to 10. Site selection

There are usually 6 levels involved in site selection:

1. Area: country, part of country or several countries
2. Districts: growing districts or groups of districts
3. Places that could be surveyed: farms, forests, communities, villages, ports or markets, etc.
4. Field sites: fields, plantation lots, market stalls (selling target commodity) or agroforestry gardens
5. Sampling site within each field
6. Sampling point when you need to choose specimens.

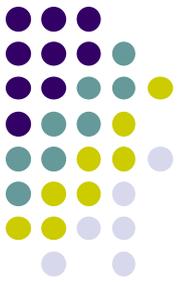
Steps in designing a survey



Steps 7. Site selection

- **Record the area for your survey, which will be the same as that recorded at Step 5.**
- **Provide brief details on the climate, topography and geographic coordinates.**

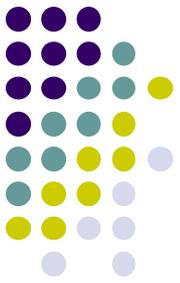
Steps in designing a survey



Steps 8. Site selection

- **Record the district(s) for your survey, clearly identifying each and providing general coordinates**

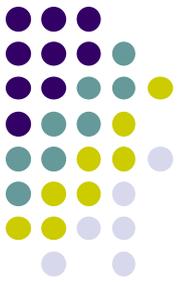
Steps in designing a survey



Steps 9. Site selection

- **Record the characteristics of places, field sites and sampling sites.**

Steps in designing a survey



Steps 10. Methods for choosing sites

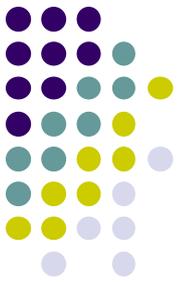
- Record method for choosing places to survey
- Record methods for choosing field sites to survey
- Record method for choosing sampling sites to survey.
- Tabulate all possible places, field sites and sampling sites being considered, providing these with individual identifiers

Steps in designing a survey



Steps 11. Calculating sample size

Steps in designing a survey



Steps 12. Timing of survey

- **Life cycle of the pest: Maxi growth**
- **Phenology of host: Susceptible stage**
- **Timing of pest management programs**
- **Pest best detected on crop in active growth or in harvested produce**

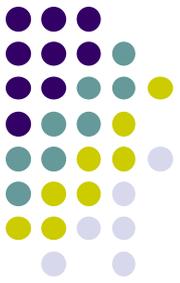
Steps in designing a survey



Steps 13. Planning data collection in field

- **Method of marking site.**
- **Form for recording data – if appropriate**
- **Need to collect specimens? If yes, continue to Step 14**

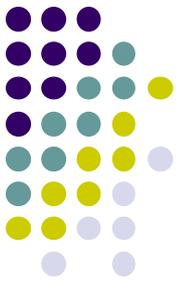
Steps in designing a survey



Steps 14. Collecting specimens

- **What types of specimens to collect if pest is found**
- **How to label specimens**
- **How specimens will be prepared, treated and identified**
- **List of things needed to take with, when surveying.**

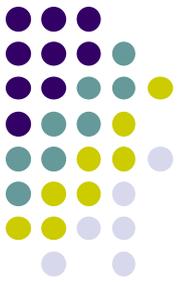
Steps in designing a survey



Steps 15. Electronic data storage

- **Design a spreadsheet or database in which to electronically store the data.**
- **Decide how you will create backup copies of the data and how often you will do so.**

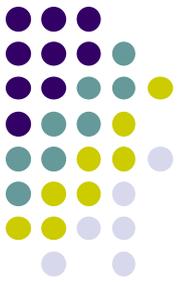
Steps in designing a survey



Steps 16. People

- **Record members of survey team**
- **Organize information and training for the team**
- **Record other people who will be involved in the design, data analysis, pest identification or any other part of the survey.**

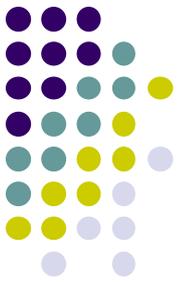
Steps in designing a survey



Steps 17. Obtaining permits and access permission

- **What sort of permits and permissions will be needed, and from whom to seek them? Note time frames for permission.**
- **Begin seeking permission when appropriate.**

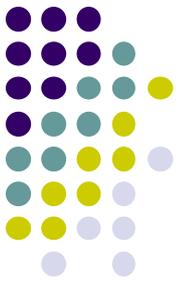
Steps in designing a survey



Step 18. Pilot study

- **Perform pilot study**
- **Add new findings to survey plan**

Steps in designing a survey



Step 19. Performing the survey

- **Perform survey**
- **Collect data in the field**

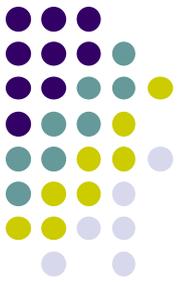
Steps in designing a survey



Step 20. Data analysis

- **Store, tabulate and analyze survey data**

Steps in designing a survey



Step 21. Reporting the results