

PEST SURVEY, SURVEILLANCE, FORECASTING, SAMPLING METHODS

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Cotton whitefly



Banana skipper



Coconut mite



Papaya mealy bug



Tomato pinworm



Sugarcane woolly aphid



Cotton mealy bug

Pest survey:

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

Two types of survey - Roving survey and fixed plot survey

A. Roving survey

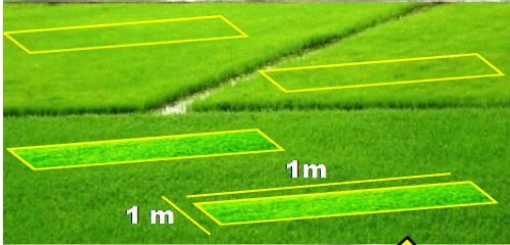
- Assessment of pest population/damage from randomly selected spots representing larger area
- Large area surveyed in short period

B. Fixed plot survey

- Assessment of pest population/damage from a fixed plots of a region.
- The data on pest population/damage recorded periodic from sowing till harvest.

METHOD OF SURVEY

BLOCK SURVEY METHODOLOGY



In one acre field, choose 4 blocks each of 1 sq.m in random



In each block select 10 tillers in random and look for damage

Grade	No. of tillers affected
0	0
I	1-5
II	5-10
III	> 10

Survey Methodology (Jassids)



In one acre field, select 10 points in random

'V' shaped yellowing near leaf tip

Observe for per cent yellow leaves from each plant

Grade the pest according to the standards

Survey grades

Grade	Per cent yellowing per plant
0	Healthy
1	Yellowing of 10 % leaves
2	Yellowing of 11-40 % leaves
3	> 40 % of leaves with burnt appearance

Pest Surveillance

Refers to an official process which collects and records data on pest occurrence or absence by survey, monitoring or other procedures .



Objectives of Pest Surveillance

1. to know existing and new pest species
2. to assess pest population and damage at different growth stage of crop
3. to study the influence of weather parameters on pest
4. to study changing pest status (Minor to major)
5. to assess natural enemies and their influence on pests
6. effect of new cropping pattern and varieties on pest

There are two major types of surveillance systems

General surveillance:

Process whereby information on particular pest which is of concern for an area is gathered from many sources, wherever it is available and provided for use by NPPOs (National Plant Protection Organizations)

Specific survey:

Procedures by which NPPOs obtain information on pest of concern on specific sites in an area over a defined period of time

Pest Forecasting

Forecasting of pest incidence or outbreak based on information obtained from, pest surveillance.

Uses

- Predicting pest outbreak which needs control measure
- Suitable stage at which control measure gives maximum protection

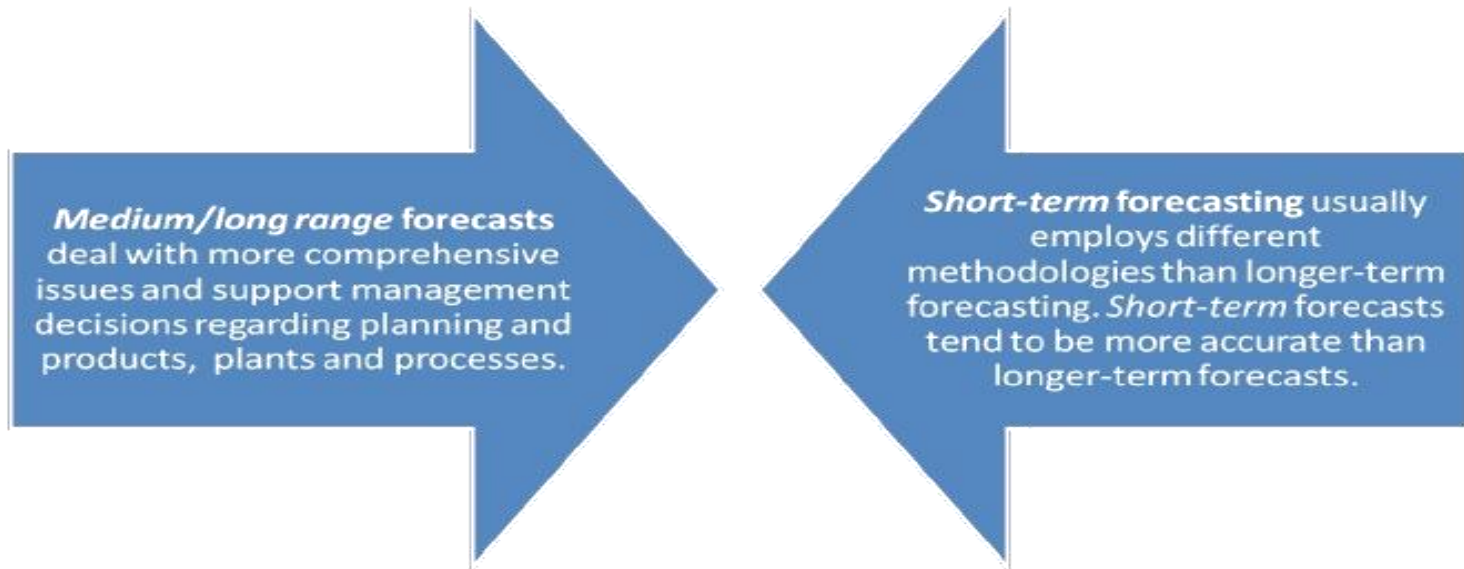
Insect pest forecasting concept



Two types of pest forecasting

- a. Short term forecasting - Based on 1 or 2 seasons
- b. Long term forecasting - Based on affect of weather parameters on pest

Short-term vs. Longer-term Forecasting



Sampling Techniques

1. **Absolute sampling** - To count all the pests occurring in a plot
2. **Relative sampling** - To measure pest in terms of some values which can be compared over time and space
e.g. Light trap catch, Pheromone trap.



Light trap



Yellow sticky trap



Pheromone trap

Methods of sampling

a. **In situ counts** - Visual observation on number of insects on plant canopy (either entire plot or randomly selected plot)



b. **Knock down** - Collecting insects from an area by removing from crop and (Sudden trap) counting (Jarring)



c. **Netting** - Use of sweep net for hoppers, grasshopper etc.

d. **Norcotised collection** - Quick moving insects anaesthetized and counted

e. **Trapping** - Light trap - Phototropic insects
Pheromone trap - Species specific
Sticky trap - Sucking insects
Bait trap - Sorghum shoot fly - Fishmeal trap
Emergence trap - For soil insects



Pheromone trap



Light trap

f. **Crop samples**

Affected plant parts are counted *e.g. Bollworms*

Stage of Sampling

- Usually most injurious stage counted
- Sometimes egg masses counted - Practical considerations
- Hoppers - Nymphs and adult counted

Sample Size

- Differs with nature of pest and crop
- Proper sample size gives accurate results

Decision Making

- Population or damage assessed from the crop
- Compared with ETL and EIL
- When pest level crosses ETL, control measure has to be taken to prevent pest from reaching EIL.

THANK YOU

