1. Biosecurity and Incursion Management (BIM)

**Aim:**
- To create a pool of experts to identify and address the Plant biosecurity threats of concern to India and South Asian Region

**Course Outline:**
- Basic concepts of Plant biosecurity
- International and National regulations pertaining to plant biosecurity
- Pest Risk Analysis - Process
- Pre-border, border and post-border biosecurity continuum strategies
- Import Regulations & Phytosanitary certification
- Pest Surveillance concept and methodologies
- Pest Incursion Management of introduced pests
- Evaluation of eradication / containment programmes

**Skills that will be acquired:**
- Identify imminent biosecurity threats
- Carry out Pest Risk Analysis
- Knowledge on International and national regulations / obligations to prevent entry, establishment and spread of pests
- Identification of Appropriate phytosanitary measures to promote safe trade
- Tools to be employed in pest surveillance
- Plan and execute detection, delimiting and monitoring surveys
- Plan and execute emergency action plans to eradicate / contain pest incursion
- Identification of appropriate mitigation measures in the event of pest incursion

**Duration:**
- 21 days

**Utility of the training programme:**
The participants will be able to
- Identify the Biosecurity threats
- Carry out PRA to identify various pathways of entry, establishment and spread potential of plant pests
- Implement import regulations and phytosanitary certification to promote safe trade
- Identify appropriate types of pest survey based on need
- Realize the importance of cooperation among South Asian countries in safeguarding the biosecurity of the region
- Implement strategies involved in Biosecurity Continuum

**Methodology**
2. Quarantine Pests Detection and Identification

**Aim:**
- To create pool of experts in detection and diagnosis of pests of quarantine significance by employing appropriate methods

**Course Outline:**
- Role of international and national regulations in plant biosecurity
- Pest Risk Analysis as a tool to identify pests of concern
- Pre-border, border and post-border biosecurity continuum strategies
- Inspection and sampling techniques
- Detection and diagnosis of quarantine pests
- Appropriate mitigation measures
- Pest Monitoring tools

**Skills that will be acquired**
- Knowledge on International and national regulations / obligations to prevent entry, establishment and spread of pests
- Basic understanding of PRA as a tool to identify pests of concern
- Detection and Diagnosis of quarantine pests by employing
- Seed-health testing protocols
- Molecular diagnosis
- Specific tests - microscopic, washing, sieving, agar plate, etc.
  - Identification of insect pests, nematodes, pathogens & weed seeds
  - Appropriate mitigation measures in the event of pest interception
  - Tools for monitoring exotic pests

**Duration**
- 21 days

**Utility of the training programme**
The participants will be able to
- Identify the quarantine pests of concern
- Employ various detection and diagnostic protocols to identify quarantine pests
- Analyse various mitigation options in the event of pest interception
- Employ monitoring tools to prevent establishment and spread

**Methodology**
- a) Theory : 40%
- b) Exercises : 10%
c) Lab Practicals : 40%

d) Field Visits: 10%

3. Phytosanitary Treatments (MBr and AlP fumigation)

**Aim:**
- To promote expertise among phytosanitary service providers for treatment of internationally traded agricultural commodities to facilitate safe trade

**Course Outline:**
- International and national regulations/requirements pertaining to phytosanitary treatments
- Various phytosanitary treatments available
- Role of NPPO in promoting safe trade
- Accreditation procedures for MBr as per NSPM-11 & for Aluminium phosphide fumigation as per NSPM-22
- Restricted fumigants, its properties, principles of fumigation, safety issues in fumigation etc.
- Fumigation procedure (MBr & AlP)
- Do’s and Don’ts during fumigation
- Personnel safety

**Skills that will be acquired**
- Appropriate procedures to be followed during fumigation of commodities by using restricted fumigants
- Selection of appropriate fumigant based on commodity / target pest
- Calculation of volume and dosage
- Use of various fumigation equipment such as vapourizer, Personal Protective Equipment (PPE), Gas Monitoring equipment, Leak detector, etc.
- Do’s and Don’ts during fumigation
- Environmental / health hazards related to fumigants
- Safety measures during fumigation

**Duration**
- 15 days

**Utility of the training programme**
- The participants will be able to
- Follow requirements as specified in relevant ISPM’s and NSPM’s to promote safe trade
- Use fumigants judiciously
- Follow procedures as laid down in NSPM’s / ISPM’s
- Take appropriate safety precautions
- Take up fumigation activities based on sound scientific knowledge
- Keep up proper record of fumigation activities
Methodology
   a) Theory : 30%
   b) Exercises : 10%
   c) Lab Practicals : 40%
   d) Field Visits: 20%

4. International Training programme on Regional Plant Health Systems Analysis

   Aim:
   ✓ To create a pool of experts to analyse Plant Health Systems and safeguard native agricultural biosecurity and build SPS capacity to gain market access

   Course Outline:
   ✓ International and national regulations or policies in place with relevance to IPM, Pest Surveillance, Pest Identification, Seed certification, Plant Quarantine, Pesticide usage etc.
   ✓ AESA based plant protection measures to enhance production
   ✓ On-farm production of biocontrol agents
   ✓ Judicious use of pesticides
   ✓ Ecological engineering for pest management
   ✓ Rodent pest control
   ✓ Basic concepts of plant biosecurity
   ✓ PRA as a tool to identify threats to the region
   ✓ Looming pest threats of concern
   ✓ Phytosanitary measures to prevent pest entry through trade
   ✓ Import Regulations and Phytosanitary certification
   ✓ Biosecurity continuum at pre-border, border and post-border
   ✓ Pest surveillance
   ✓ Pest incursion management
   ✓ Systems Approach to gain market access

   Skills that will be acquired
   ✓ Understand plant health systems in place and identify the gaps
   ✓ Identify strategies to strengthen plant health system of a country
   ✓ Promote sustainable production of agriculture
   ✓ Promote usage of low-cost, on-farm production of biocontrol agents to minimize usage of pesticides
   ✓ Ecological engineering for pest management
   ✓ Analyse the plant quarantine system in place and identify the gaps
   ✓ Strengthen pest surveillance and plan surveys based on need
   ✓ identify looming pest threats to the region and identify preventive measures by carrying out PRA
   ✓ Systems Approach to reduce pest risks and gain market access

   Duration
Utility of the training programme
- The participants will be able to
- Analyse the present plant health systems in place and identify the gaps
- Identify strategies to strengthen plant health system of a country
- Promote sustainable agricultural production practices
- Promote low-cost, on-farm techniques among stakeholders to minimize input cost
- Demonstrate AESA based approach and ecological engineering for pest management strategies – to equip farmers to take informed decisions
- Identify imminent pests of concern through traded commodities / natural pathways and take preventive measures
- Plan and carry out pest surveys and document pest surveillance data
- Implement plant quarantine regulations

Methodology
a) Theory : 60%
   b) Exercises : 5%
   c) Lab Practicals : 10%
   d) Field Visits: 25%

5. Pest Surveillance

Aim: To impart skills of pest surveillance, to manage pests, incursion as well as promote international trade

Course Outline:
- Role of Pest Surveillance in plant biosecurity
- Various ISPMs relevant to Pest Surveillance
- Types of Pest surveillance/ survey
- Role of pest surveillance in
  - PRA
  - Market access
  - Pest Incursion management
- Pest Surveillance tools

Skills that will be acquired
- Organize target oriented pest surveillance to promote export
- Selection of appropriate pest survey type based on need i.e. detection/delimiting/ monitoring surveys
- Organize surveillance programmes for Establishment, Declaration and maintenance of Pest Free Areas (PFA) and Areas of Low Pest Prevalence (ALPP)
- Appropriate use of pest surveillance tools

Duration
- 15 days
Utility of the training programme
The participants will be able to
✓ Select appropriate type of pest surveillance
✓ Adopt procedures for detection survey / delimiting survey / monitoring survey
✓ Plan and execute pest scouting methodologies
✓ Plan and prepare budget outlays for pest surveillance programmes
✓ Monitor for exotic pest incursion
✓ Establish PFA’s and ALPP’s

Methodology
a) Theory : 50%
   b) Exercises : 5%
   c) Lab Practicals : 15%
   d) Field Visits: 30%

6. Stored Grain Pest Management for FCI & CWC

Aim: To build capacity of warehouse personnel in scientific grain storage and management of stored grain pests

Course Outline: Importance of stored grain pest management for sustainable use
✓ Market access issues w.r.t. to stored grain pests
✓ Major stored grain pests of import / export concern
✓ Proper storage procedures
✓ Problems in grain storage
✓ Appropriate mitigation / management measures to promote safe trade
✓ Systems approach concept
✓ Safe use of AIP fumigant

Skills that will be acquired
✓ Identification of stored grain insect pests
✓ Appropriate management options
✓ AIP fumigation procedures
✓ Appropriate storage requirements

Duration
✓ 6 days

Utility of the training programme
The participants will be able to
✓ Adopt appropriate measures in storage of grains to minimize damage due to pests
✓ Identify important stored grain pests
✓ Adopt ALP fumigation procedures scientifically
✓ Identify appropriate mitigation measures
✓ Monitor stored grain insect pests by employing various detection techniques
✓ Adopt systems approach to mitigate pests to promote export

**Methodology**

a) Theory : 40%
b) Exercises : 5%
c) Lab Practicals : 15%
d) Practicals: 40%

7. Stored Grain Pests : Detection and Identification

**Aim:** To build capacity in general and advanced detection methods of stored grain pests

**Course Outline:**

✓ Major stored grain pests of import / export concern
✓ Market access issues w.r.t. to stored grain pests
✓ General and Advanced detection and diagnostics employed in stored grain identification
✓ Identification of important stored grain insect pests
✓ Stored grain insect biology

**Skills that will be acquired**

✓ General and advanced detection methods
✓ Identification of stored grain insect pests of concern in import and phytosanitary certification
✓ Employ appropriate techniques for accurate diagnosis

**Duration**

✓ 6 days

**Utility of the training programme**

The participants will be able to

✓ Identify appropriate techniques for detection and diagnosis of stored grain insect pests
✓ Identify important stored grain pests

**Methodology**

a) Theory : 40%
b) Exercises : 5%
c) Lab Practicals : 40%
d) Field Visits: 15%
8. Pest Risk Analysis

**Aim:**
To create a pool of experts in Pest Risk Analysis (PRA) to identify potential pests of concern to protect native biodiversity due globalization of trade and to enhance market access.

**Course Outline:**
- Basic concepts of Plant biosecurity
- International and National regulations pertaining to plant biosecurity
- ISPM’s w.r.t. Pest Risk Analysis
- PRA process
- Types of PRA
- Role of PRA in plant biosecurity continuum *i.e.* pre-border, border and post-border
- Identification of quarantine pest of concern

**Skills that will be acquired**
- Carry out Pest Risk Analysis
- Identify appropriate phytosanitary measures
- Develop regulated pest list and list of prohibited commodities based on the risk posed by pests
- Evaluate eradication / management options for the recently introduced pests
- Facilitate trade while protecting agricultural biosecurity

**Duration**
- 6 days

**Utility of the training programme**
The participant will be able to
- Carry out Pest Risk Analysis for commodities moving in international trade
- Identify and suggest appropriate mitigation measure
- Prepare regulated pest list
- Carry out Export PRA to promote export
- Carry out PRA for recently introduced pests to evaluate eradication / management options

**Methodology**
- a) Theory : 40%
- b) Exercises : 60%

9. PQ National Regulations & Procedures

**Aim:**
- To create awareness among public sector officials on National Regulations and Standards to promote safe trade
**Course Outline:**

- International and National regulations pertaining to plant biosecurity
- Import Regulations and procedures
- Phytosanitary certification Procedure
- Online PQIS system
- Understand procedures involved in Import / export of Biocontrol agents, germplasm material, growing media, GMO etc.

**Skills that will be acquired**

- Understand import regulations to prevent entry and establishment of exotic pests
- Understand export procedures to promote safe trade
- Carry out online procedures of import / export activities
- Adopt procedures involved in import / export of Biocontrol agents, germplasm materials, growing media, GMO etc.

**Duration**

- 6 days

**Utility of the training programme**

The participants will be able to

- Implement import regulations to prevent entry and establishment of exotic pests
- Carry out phytosanitary certification in efficient manner to promote safe trade
- Carry out online procedures of import / export activities
- Advise stakeholders to adopt procedures involved in import / export of Biocontrol agents, germplasm materials, growing media, GMO etc.

**Methodology**

a) Theory : 40%

b) Exercises : 55%

c) Institutional Visits: 5%

**10. Orientation for PEQ Inspection Authorities**

**Aim:**

- To enhance capacity of PEQ Inspection Authorities to prevent entry and establishment of quarantine pests of concern associated with planting material

**Course Outline:**

- Basic concepts of Plant biosecurity
- International and National regulations pertaining to plant biosecurity
- Pest Risk Analysis - Process
- Pre-border, border and post-border biosecurity continuum strategies
- Salient features of Import Regulation
10. Procedure for certification of Post entry quarantine facility

11. Procedure for Inspection, sampling, testing and final clearance of plants grown in PEQ facilities

12. Role and responsibilities of Inspection Authorities

13. Appropriate mitigation measure in the event of pest interception

14. Record keeping and report of non-compliance

**Skills that will be acquired**

1. Identify quarantine pest of concern associated through imported planting material
2. Inspect and certify PEQ facility
3. Inspect and Segregate doubtful material for further observation and confirmation of pest identification
4. Employ appropriate detection and diagnostic protocols for accurate identification of the pest
5. Advise appropriate plant protection measures to mitigate the pest
6. Document the PEQ activities for auditing
7. Report non-compliance

**Duration**

1. 6 days

**Utility of the training programme**

1. The participants will be able to
2. Adopt procedures specified in the SOP for uniformity
3. Advise appropriate PEQ facility design and type to importer for facility certification
4. Inspect and certify PEQ facility
5. Inspect and issue final clearance of commodities grown under PEQ facility
6. Take appropriate mitigation measures in the event of quarantine pest interception
7. Document PEQ activities

**Methodology**

a) Theory : 40%
b) Exercises : 50%
c) Institutional Visits: 10%

11. Orientation for Phytosanitary Certificate issuing authorities

**Aim:**

1. Build capacity of Phytosanitary Certificate Issuing Authorities to promote safe trade

**Course Outline:**

1. Role of WTO-SPS and IPPC in safe trade promotion
2. Role of NPPO in implementing requirements under IPPC obligations
3. Role and Responsibilities of PSC issuing authorities
Harmonization of phytosanitary certification procedures
- Requirements for establishing relevant labs for testing and certifying freedom for quarantine pests of concern to importing country
- Inspection and sampling protocols
- Online PQIS system
- Online sources to obtain Importing country requirement’s
- Documentation of phytosanitary certification activities
- Agencies involved in Phytosanitary Certification activities

**Skills that will be acquired**
- Adopt appropriate inspection, sampling and testing protocols to promote safe trade
- Carry out phytosanitary certification in scientific way / as per the requirement of SOP for Phytosanitary Certificate Issuing Authorities/ ISPM-6
- Online PQIS system
- Obtain importing country’s requirement
- Promote safe trade by employing appropriate phytosanitary measures

**Duration**
- 6 days

**Utility of the training programme**
The participants will be able to
- Carry out phytosanitary certification in harmonized manner
- Implement procedures involved in phytosanitary certification as per SOP
- Carry out inspection, sampling, and testing in a scientific manner to promote safe trade
- Identify appropriate phytosanitary measure to mitigate pests
- Aid NPPO in fulfilling the obligations under WTO-SPS and IPPC to promote export and to avoid non-compliance

**Methodology**
- a) Theory : 40%
- b) Exercise : 40%
- c) Lab Practical : 10%
- d) Institutional Visits: 10%

**12. PQ Procedures for Imports & Exports**

**Aim:**
- To create awareness among entrepreneurs on National Regulations and Standards to promote safe trade

**Course Outline:**
- International and National regulations pertaining to plant biosecurity
- Import Regulations and procedures
- Phytosanitary certification Procedure
✓ Role of various agencies involved in safe trade of agricultural materials
✓ Online PQIS system
✓ Procedures involved in Import / export of Biocontrol agents, germplasm material, growing media, GMO etc.

**Skills that will be acquired**
✓ Understand import regulations to prevent entry and establishment of exotic pests
✓ Understand export procedures to promote safe trade
✓ Carry out online procedures of import / export activities
✓ Adopt procedures involved in import / export of Biocontrol agents, germplasm materials, growing media, GMO etc.

**Duration**
✓ 5 days

**Utility of the training programme**
The participants will be able to
✓ Follow/ adopt import regulations to prevent entry and establishment of exotic pests
✓ Follow / adopt export procedures to promote safe trade
✓ Carry out online procedures of import / export activities
✓ Adopt procedures involved in import / export of Biocontrol agents, germplasm materials, growing media, GMO etc.

**Methodology**
- a) Theory : 40%
- b) Exercise : 55%
- c) Institutional Visits: 5%

13. Phytosanitary Treatments (FHAT)

**Aim:**
✓ To create a pool of phytosanitary service providers for treatment of wooden pallets in line with National and International Standards

**Course Outline:**
✓ International and National regulations pertaining to treatment of wood packaging materials
✓ Importance of ISPM-15 implementation to avoid non-compliances w.r.t. wood packaging materials
✓ Establishment of FHAT facility as per NSPM -9
✓ Accreditation procedures
✓ FHAT procedures for treatment and certification
✓ Agencies involved in phytosanitary certification
✓ Documentation of FHAT

**Skills that will be acquired**
✓ Establish FHAT facility for accreditation
Follow FHAT treatment procedure as per NSPM-9 & ISPM-15 to promote safe trade
Skills to get accredited from NPPO

**Duration**
- 5 days

**Utility of the training programme**
The participants will be able to
- Establishment FHAT facility as per NPSM-9
- Obtain accreditation for the firm and or the personnel from NPPO for carrying out FHAT of wood packaging materials moving in international trade
- Carry out FHAT treatment as per NSPM-9 and ISPM-15
- Document the FHAT activities for auditing

**Methodology**

a) Theory : 30%
b) Exercise : 30%
c) Practicals: 40%

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**Aim:**
- To create a pool of experts in Pest Risk Analysis (PRA) in South Asia / developing countries identify potential pests of concern to protect native biodiversity due globalization of trade and enhance market access

**Course Outline:**
- Basic concepts of Plant biosecurity
- International and National regulations pertaining to plant biosecurity
- ISPM’s w.r.t. Pest Risk Analysis
- PRA process
- Types of PRA
- Role of PRA in plant biosecurity continuum i.e. pre-border, border and post-border
- Identification of quarantine pest of concern

**Skills that will be acquired**
- Carry out Pest Risk Analysis
- Identify appropriate phytosanitary measures
- Develop regulated pest list and list of prohibited commodities based on the risk posed by pests
- Evaluate eradication / management options for the recently introduced pests
- Facilitate trade while protecting native agricultural biosecurity

**Duration**
- 5 days

**Utility of the training programme**
The participant will be able to

✓ Carry out Pest Risk Analysis for commodities moving in international trade
✓ Identify and suggest appropriate mitigation measure
✓ Prepare regulated pest list
✓ Carry out Export PRA to promote export
✓ Carry out PRA for recently introduced pests to evaluate eradication / management options

**Methodology**

a) Theory : 40%
b) Exercise : 60%