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From the Director General's Desk

Globalization of trade in plants and plant products, increased the risk of invasion by plant pests across the globe. The threats are likely to increase further as a result of rapid growth in agricultural trade. Invasive pests that gained entry into India have caused catastrophic damage on coffee, papaya, coconut, casava and many other crops. Prevention of invasion by alien pests is the key in handling these risks. Various international agreements and protocols have to be adhered to protect a country's biosecurity.

According to International Plant Protection Convention (IPPC) and World Trade Organisation (WTO) agreement on the application of Sanitary and Phytosanitary (SPS) measures, spread of Invasive plant pests can be prevented through Phytosanitary measures, which must be justified by a science based Pest Risk Analysis (PRA).

FAO defines Pest Risk Analysis (PRA) as "the process of evaluating biological or other scientific and economic evaluation to determine whether a organism is a pest, whether it should be regulated and the strength of any phytosanitary measures to be taken against it". As part of PRA an "evaluation of the probability of the introduction and spread of a pest and the magnitude of the associated potential economic consequences" is conducted.

PRA examines the interconnectedness of different ecosystems to evaluate the risks associated with likely movement of pests, which can cause severe threats to agricultural biosecurity. PRA evaluates in detail the likelihood of the entry, establishment, or spread of a pest and the associated potential biological and economic consequences & identifies management options. Pest Risk Analysis (PRA) relies on scientific justification for initiating any official phytosanitary action to prevent the introduction and spread of pests of plants and plant products.

PRA plays a significant role in protection of biosecurity as well as trade facilitation. PRA being science based, plays a significant role in providing a level

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playing field to all countries in international trade. The last decade saw harmonization of the process through the intervention of International Plant Protection Convention (IPPC) and the Agreement on Sanitary and Phytosanitary Measures (WTO-SPS Agreement). Specific International Standards on Phytosanitary Measures (ISPMs) were developed and adopted to provide guidance on the basic principles and methodologies for PRA.

In the interests of developing countries it is essential to build PRA skills to promote export of agricultural commodities in a sustainable manner and at the same time protect the native ecosystems from the likely devastating impact of exotic invasive pests which can gain entry through imports. There is an urgent need to build capacity among different stakeholders including scientific personnel, quarantine authorities and the private industry. NIPHM has forged alliance with strategic partners like USDA-APHIS, USAID, DAFF-Australia etc., to focus on capacity building in PRA. I hope different Stakeholders will take advantage of the national & International programmes being organised by NIPHM to build capacity in Pest Risk Analysis in the country.

(K. Satyagopal)
Director General

Theme Article

Pest Risk Analysis: A Scientific Tool to Analyse & Manage Associated Pest Risks with Imported Plants & Plant Products

Dr. K. Susheela and Dr. N. Sathyanarayana

The global trade of plants and plant material over last two decades has steadfastly increased thereby enhancing the risk of entry and establishment of new plant pests and invasive alien species that are economically or environmentally damaging. These risks have long been recognised by biologists' world over. Recognition of these risks is reflected in legislation by many countries in order to control the movement of goods as a way of protecting animal and plant health. In present times, the threat is all time high due to increase in trade and changing climate. Quarantine policy and risk management measures are developed to prevent the movement of pests and pathogens and are based on analysis of risk. In recent times, the science of risk analysis has underpinned the understanding of the pests and pathogens; their biology, control and methods of detection. The International Plant Protection Convention (IPPC) has given a formal structure to quarantine risk analysis for plant pests to make the process acceptable, as driven by the obligations of transparency, harmony, equivalence and recognition of risk & Appropriate level of protection (ALOP) under the World Trade Organization's Sanitary & Phytosanitary Agreement (WTO-SPS Agreement) articles 7, 4, 3 and 5 respectively. Risk analysis is now a structured and transparent process based on sound science, is consistent and is repeatable as well. Individual countries can manage risks in a transparent and acceptable way by determining; (i) those pests that could cause unacceptable damage to plants or plant products, (ii) the means and likelihood of their introduction and (iii) the measures available to prevent such introduction.

The SPS recognises the following international standard setting bodies:

- *International Plant Protection Convention* (IPPC) for **Plant Health**
- *World Organisation for Animal Health* (OIE) for **Animal Health**
- *Codex Alimentarius Commission* (Codex) for **Food Safety.**

These three steps together constitute the process known as 'Pest Risk Analysis'. Pest risk analysis is a framework for organizing biological and other scientific and economic information to calculate risk (essentially the probability of an unwanted event or hazard occurring multiplied by the magnitude of the consequences if it does happen). This assessment of risk is used to identify appropriate measures to reduce risk to an acceptable level. PRA is tantamount to an early warning system forming a part of pre border activity, aiming ultimately to manage risks before the consignment arrives into the country. It aids in assessing the risks around the globe and informing border personnel about impending risks. The PRA will, where the risk is manageable, recommend pest risk management options which are aimed at ensuring that the exporting country meets the importing countries' ALOP. Options of management could be diverse; ranging from integrated management, inspection regimes, statistical sampling; to establishment of pest free areas / pest free production places / sites and to establishment of low pest prevalence. Where the ALOP cannot be achieved through the above mentioned options, then mitigation treatments can be considered. Thus, PRA serves as a decision making tool in international trade.

Pest Risk Analysis: The process of evaluating biological or other scientific and economic evidence to determine whether an **organism** is a **pest**, whether it should be regulated, and the strength of any **phytosanitary measures** to be taken against it [FAO, 1995; revised IPPC, 1997; ISPM No. 2, 2007]

PRA is the key element in tune with the objectives of IPPC, WTO-SPS Agreement and the Convention on Biological Diversity (CBD). The IPPC framework, including the national plant protection organizations of all contracting parties, could provide an institutional framework that serves the objectives of the CBD and WTO as well.

To comply with international agreements, countries imposing new phytosanitary regulations must either support them by the pest risk analysis or base them on relevant international standards. More specific international standards would be useful in harmonizing management options for pest risks. However, the wide variation in pest risks faced by individual countries in relation to introduction and spread of a pest (or pests) associated with a particular commodity usually makes it difficult to develop an agreed international standard. To date, only one specific commodity standard has been adopted under the IPPC as an international standard for phytosanitary measures, namely ISPM 15: *Guidelines for regulating wood packaging material in international trade*. The acceptance of this standard helped many countries in addressing the pest risks associated with wood packaging material. In the absence of an appropriate phytosanitary standard however, the Pest Risk Analysis specific to the commodity & pathway is the only alternative available to countries to support quarantine measures.

PEST RISK ANALYSIS: RELEVANT ISPMS

Assessment on the impact of plant pests and scientific information can provide the justification for regulatory measures. The first international pest risk analysis standard, ISPM 2: *Guidelines for Pest Risk Analysis* became available in February 1996. Five years later, ISPM 11 [2001]: *Pest Risk Analysis for Quarantine Pests* was adopted. However, the contracting parties to the IPPC have developed a reference standard specifically to target the analysis of environmental risks posed by plant pests. This was adopted in April 2003 as a supplement (*Analysis of Environmental Risks*) to ISPM 11. The standard has been further amended as ISPM 11 [2004]: *Pest risk analysis for quarantine pests, including analysis of environmental risks and living modified organisms*. The process of revising ISPM 11 [2001] took into account the CBD's guiding principles for the prevention, introduction and mitigation of impacts of invasive alien species. ISPM 11 and other relevant ISPMs provide specific guidance to countries on how to use the information available to make timely decisions about potential threats to plants and plant products from international trade.

ISPMs Related to PRA

ISPM No. 2 : *Framework for pest risk analysis*, 2007;
ISPM No. 11 : *Pest risk analysis for quarantine pests including analysis of environmental risks and living modified organisms,* 2004;
ISPM No. 21 : *Pest risk analysis for regulated non-quarantine pests;*
ISPM No. 32 : *Categorization of commodities according to their pest risk*

NATIONAL APPLICATION OF ISPMS

Although ISPMs are internationally agreed to and adopted, they are meant to serve as guidelines and their use is not mandatory as such within the framework of the IPPC. In addition, their interpretation and application at a national level may vary from country to country. This variation is illustrated by different national systems and procedures that exist for carrying-out PRA. Countries often may take slightly different approach in implementing the standards but staying true to the intent of the standard. The framework of ISPMs can be used as a basis to design country's national phytosanitary system often with integration of some additional elements to meet their specific needs.

THE PROCESS OF PEST RISK ANALYSISSteps involved in PRA

Pest risk analysis is a process consisting of three stages (1) initiation of the PRA through identification of a pest or pathway, or review or revision of an existing phytosanitary policy, (2) pest risk assessment, and (3) pest risk management. Risk communication is an integral component that occurs throughout each step. Pest risk analysis (PRA) is a science-based process that provides the rationale for determining appropriate phytosanitary measures for a specified PRA area. It is a process that evaluates technical, scientific and economic evidence to determine whether an organism is a potential pest of plants and, if so, how it should be managed.

Steps involved in PRA

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PRA is central to tackle the invaders since it not only provides a procedure to assess the risks of their entry, establishment and impacts but can also be used to identify the most appropriate options for the prevention of entry and management of outbreaks. There are two main approaches to conduct a PRA, one based on a commodity, the other on a particular pest associated with various commodities. The majority of risk analyses are conducted in response to a market access request and are therefore commodity-based.

As outlined in the International Standard for Phytosanitary Measures (ISPM) No. 11, *Pest Risk Analysis for Quarantine Pests, including analysis of environmental risks and living modified organisms,* there are three main stages in a PRA:

Stage 1: Initiation of the analysis: The aim of this stage is to identify the pests, organisms and pathways that the PRA will focus on and which should be considered for an in-depth evaluation, or pest risk assessment (Stage 2). The result of the initiation stage culminates into giving a list of potential quarantine pests for further consideration.

In the case of a pest PRA this is normally just one taxon, usually a species. In the case of a pathway PRA, there may be a long list of organisms potentially associated with that pathway. If no potential quarantine pests are identified in a given pathway, the PRA may stop at this point and the reasons should be recorded.

PRA Initiating Events

• New Import Proposal • Market access request • Detection of Quarantine pest in consignment • Pest outbreaks in PRA area • Request for pest to be imported for research • Overseas pest spread • Identification of an organism not previously known to be a pest • Identification of a pest that may require phytosanitary measures • New trade pathways • Identification of a pathway that presents a potential pest risk • Review or revision of existing phytosanitary policies and priorities

Stage 2: Risk assessment - the scientific evaluation of the biological risk and potential consequences: There are three steps in this stage, namely; (i) pest categorisation, (ii) assessment of the probability of introduction (entry and establishment) and spread, and (iii) assessment of potential impacts of introduction and spread. The pest risk assessment should consider all aspects of each pest including information about its geographical distribution, biology and economic importance in areas where it is already present. Expert judgement is then used to assess the likelihood of introduction, its potential for establishment, spread and economic importance in the PRA area. In characterising the risk, the amount of information available will vary with each pest and the sophistication of the assessment will vary with available tools. For example, one NPPO may have elaborate pest databases and geographical information systems; another may depend on books, printed soil maps, climate maps and expert opinion. In some cases, virtually no information may be available, or research may be needed to obtain it. Assessments will be limited by the amount and quality of information available. Countries where the pest is present may provide, upon request, available information to the country conducting the pest risk assessment.

Approaches to Pest Risk Assessment

Pest risk assessments can be carried out with qualitative data, quantitative data or a combination of both. Qualitative methods are often easier to understand and apply, but may be less transparent and the results may be less precise. Quantitative methods may be more explicit in presenting the risk (including uncertainty) but still incorporate assumptions and judgements. Quantitative approaches may present a precise result, but such results may be easily misinterpreted if the underlying assumptions are not clearly presented and understood. Hence, no single method of pest risk assessment has proven applicable to all

Qualitative vs. Quantitative

- **Qualitative risk analysis** methods use subjective information and judgements, based on evidence, experience and expert judgement, to provide a description of the risk. *e.g.* The risk estimates are relative like 'High' or 'Medium' or 'Low'
- **Quantitative methods** use objective information (usually numerical) and provide a numerical estimate of the risk. e.*g.* The economic consequence of a pest introduction is expressed in monetary terms.

Stage 3: Risk management - a process of determining appropriate measures to reduce risk: Pest risk management is the process of determining appropriate management options to reduce the risks identified in Stage 2, pest risk assessment, to an acceptable level. It involves the sequential strides such as identifying ways to react to a perceived risk, evaluating the efficacy of these actions and determining the most appropriate mitigation options to achieve the desired level of protection.

The Pest Risk Management for Indian Mangoes

The US banned import of Indian mangoes in 1989 on account of fruit flies and stone weevils. India suggested Hot Water Treatment (HWT) as a viable measure of pest control. The US, as an importing nation based on PRA, proposed nuclear irradiation. In 2006, after prolonged negotiations, US permitted the import of Indian mangoes with nuclear irradiation and strict inspection.

If the pest risk assessment determines that a specific pest presents an unacceptable risk, phytosanitary measures may be proposed to manage that risk and achieve the importing country's appropriate level of protection. Any phytosanitary measures chosen must be justified by the PRA and the level of phytosanitary protection required should be appropriate to the pest risk. The rationale for selecting measures should be apparent.

Risk communication is important throughout each stage of PRA, as outlined in ISPM No. 2 (*Framework for Pest Risk Analysis,* 2007). The process requires frequent consultation and communication with stakeholders including the applicant, scientists, government agencies and industry. Risk communication provides an opportunity for regulators to obtain new information that helps them to better understand the nature, severity or acceptability of risks to those affected or involved. The risk communication process is meant to facilitate both development of the PRA and understanding of its results. Risk communication gives all stakeholders an opportunity to provide input to the decision-making process. When risk communication is successful, risk management decisions are more completely understood and accepted by stakeholders.

Pest Risk Analysis thus is a handy tool to justify regulatory actions on scientific basis thereby enabling countries to prohibit, restrict or allow imports subject to the adherence of their ALOP. In addition, PRA has also proved to be the boon to identify the gaps in the regulatory system thereby helping to strengthen the biosecurity of a country.

PEST RISK ANALYSIS: INDIAN SCENARIO

Indian NPPO makes it mandatory to conduct PRA before any plant or plant material is permitted for import. In India, the import regulations are issued under The Destructive Insects and Pests Act, 1914 (DIP Act). The import of plants and plant material are covered under The Plant Quarantine (Regulation of Import into India) Order, 2003 issued under the Section 3 (1) of DIP Act, 1914 and amendments issued there under from time to time. After the emergence of WTO in 1995, all the member countries revised their plant quarantine regulations to meet the requirements of WTO-SPS agreements. Similarly in India, in PQ Order, 2003, the commodities are notified after carrying out Pest Risk Analysis based on scientific evidences. And these commodities are classified into prohibited, restricted, regulated and least risk based on Pest Risk Analysis and the quarantine pests of concern are notified in various Schedules.

- Certain commodities are prohibited for import from specific countries due to high risk of quarantine pests of concern to India. Such commodities are notified in Schedule-IV.
- Commodities for research purpose (germplasm) are allowed to import with certain restrictions and with the condition that they can be imported only with recommendations of authorized institutions. The restricted commodities are notified in Schedule-V.
- Commodities for commercial purpose are regulated for import with additional declarations and phytosanitary treatment, and are covered in Schedule –VI.
- Least risk commodities are allowed for import without permit for consumption purpose under Schedule-VII.

Categorization of commodities based on the risk levels

The Plant Quarantine Order, 2003 is the import regulation operative in India, (pertaining to plants and plant materials) issued under the Destructive Insects and Pests Act, 1914. The commodities are categorized into various schedules based on the risk posed by associated pests of concern to India. For example, Oil palm planting material is **prohibited** (Schedule-IV) from specific countries due to Cadang-cadang viroid, whereas the same is permitted from other countries for **research** purpose in Schedule-V and import by public is **permitted** in Schedule VI with prior permission from DAC EXIM Committees approval & import permit to safeguard the country from ingress of devastating pests. However, Oil Palm dried cake for consumption pose **least risk** and listed in Schedule-VII. The entire process is based on Pest Risk Analysis.

Commodities that are not covered under the above schedules and also existing commodities but from a new country; if required to be imported, the pest risk analysis is initiated. An Importer who intend to import a new commodity or from a country not covered under the list shall send a specific **Pest Risk Analysis Request Form** to the Plant Protection Adviser, D'te. of Plant Protection, Quarantine & Storage, N.H.-IV., Faridabad-121 001, Haryana.

ROLE OF NIPHM IN ACTIVITIES PERTAINING TO PEST RISK ANALYSIS:

Realizing the importance and role of PRA in managing the biosecurity threats to the Nation, NIPHM has taken an initiative to create a pool of human resource on PRA expertise. In this context, the scientists from ICAR, Agricultural Universities and regulatory officers from Central & State Government are being trained in PRA. The international training programme on PRA for officers from India, Brazil & South Africa (IBSA) was organized, and prioritized the list of plant & plant products for trade, identified major pests of concern in the pathway and discussions were held on harmonization of pest risk analysis, mitigation measures & treatments. Further, the need to organize level 2-PRA training at NIPHM for IBSA members to create a pool of master trainers was also deliberated.

To strengthen the competency of conducting PRA in South Asia & African region, NIPHM organized international training programme on PRA in collaboration with USAID/USDA and trained 27 officials from India, Bangladesh, Sri Lanka, Kenya, Malawi, Ghana and Mozambique.

PRA: MAJOR CHALLENGES & A WAY FORWARD

There are many challenges in analysing the pest risk appropriately to the level of protection envisaged by a country. The risk factors may vary on account of specific geographic, environmental, economic and social fabric of a given country. However, the major challenges that may typically be faced are enumerated below:

- The first major challenge of PRAs lies in its requirement of large amount of information on various parameters such as; the pest itself, the status in its current area of distribution, the movement pathways, the factors affecting its establishment & spread, impacts in the area under threat, the measures available for its management etc. Further, it is essential that data shall be authentic as justification of regulations is based on the outcomes of PRAs.
- The second major challenge is to bring together a multi-disciplinary team with the skills to exploit recent scientific advances and tackle key problems such as the assessment of economic and environmental impacts, capturing and communicating uncertainty, mapping endangered areas, summarising risk, linking pathway analysis to the construction of systems' approaches and creating a decision support system.
- The third major challenge occurs because many factors need to be ascertained to determine (a) whether particular pathways can introduce pests, (b) whether a particular pest can enter, establish and cause impacts in an area and (c) what measures would be appropriate to reduce the risk to an acceptable level.

The fourth major challenge is to address the non-adherence to transparency by NPPOs in giving access to the endemic pest data, which is a major prerequisite for PRA.

The PRA process can, therefore, be daunting for new users and time-consuming for experts while generating lengthy outputs that are difficult for regulators to assimilate. New or modified techniques need to be explored to enhance the user friendliness of PRA method. This shall reduce the time required to conduct PRAs for experienced pest risk analysts, especially in emergencies, and to improve the way PRAs are communicated to decision makers.

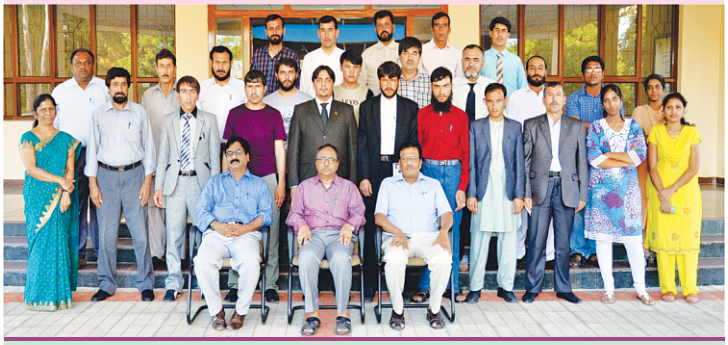
International Programmes

Pest Risk Analysis

An International training programme on Pest Risk Analysis was organized by NIPHM in collaboration with USDA at NIPHM, Hyderabad from 2nd to 6th September, 2013. USDA-APHIS experts viz. Dr. Stephanie Bloem & Ms. Neeley Alison associated with NIPHM faculty in organizing the training programme. 27 participants including 14 Indian participants - 6 ICAR Scientists, 5 DPPQS Officers & 3 NIPHM faculty and 13 international participants (4 from Bangladesh, two each from Sri Lanka, Ghana, Kenya, Malawi and one from Mozambique) took part in the training programme.

Plant Quarantine and Phytosanitary Measures

Under the twinning MoU between the Governments of India and Afghanistan, a training programme on Plant Quarantine and Phytosanitary measures for the Officials of Ministry of Agriculture, Irrigation & Live Stock, Afghanistan was organized. Twenty Officials were trained in 'Plant Quarantine and Phytosanitary measures' from 16th to 25th September 2013.



Pesticide Registration Procedures and Pesticide Inspections in Market

Training in Pesticide Registration, Inspection procedures in the markets (post registration verification) was organized from 1st to 10th Sept. 2013 for 21 participants from Dept. of Agriculture, Govt. of Afganisthan. They were trained on Legislation Registration, Sampling, and Prosecution etc., as per the international guidelines and the Insecticide Act 1968 and Rules 1971 which is the existing Act of our country to regulate the pesticides.

Special Events: 67th Independence Day Celebration

The 67th Independence Day was celebrated at NIPHM on 15th August 2013. The auspicious occasion started with the flag hosting by Dr. K. Satyagopal IAS, Director General NIPHM. The flag hoisting ceremony was followed by cultural programme Chaired by DG NIPHM. NIPHM staff members shared their ideas, new innovations and achievements for making NIPHM self-sustainable organization. DG addressed the gathering and touched upon the journey of NIPHM over past three years and future focus areas of NIPHM. He stressed the need to serve the farmers in a more effective manner through capacity building and R&D programmes.

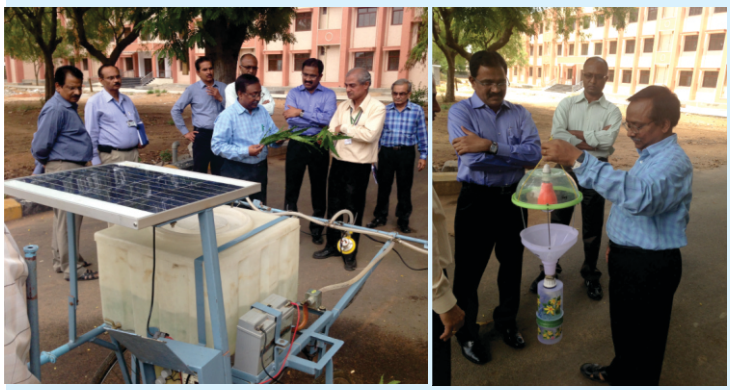
Visit of Officers of DAC & International Agencies

Mrs. Ranikumudani,IAS, Joint Secretary (Trade), Department of Agriculture & Cooperation visited NIPHM capacity building facilities including laboratories and field.

Mr. Scott Saxe, USDA & Dr. Shrivalli Ramakrishnan, USAID visited NIPHM on July 22nd, 2013 and held discussions on applied research projects by NIPHM for securing funding from USDA/USAID.

Collaboration between NIPHM and Tobacco

With the initiative of Dr. K. Satyagopal, IAS, Director General, NIPHM and D. K. Gopal, IAS, Chairman, Tobacco Board, NIPHM and Tobacco Board entered into an agreement of collaboration to promote Agro-ecosystem analysis based IPM in conjugation with Ecological Engineering for pest management. The aim of the programme is to reduce pesticide load and enhance adoption of biopesticides in tobacco cultivation. NIPHM is extending technical help to Tobacco Board to demonstrate the technologies for managing the insect-pests and diseases through bio-intensive approaches using eco-friendly methods and safe and judicious use of pesticides. *Trichoderma harzianum* and *Pseudomonas fluorescens* were used as seed, nursery and soil treatment to reduce disease incidence and increase plant growth & resistance.



Three demonstrations on tobacco seed & nursery treatment were conducted on August 19th in which 50 farmers from different auction platforms i.e. Rajavarum (Koyyalagudem), Cherukumalii (Devarapally), and Vellachinthalagudem (Gopalpuram) were trained.

A group of 90 B.Sc. Ag. final year students from Anbil Dharmalingam Agricultural College and Research Institute, TNAU, Kumulur, Tiruchirappalli visited NIPHM on 27th September 2013 to see the capacity building activities being undertaken by NIPHM.

Tobacco seed and nursery treatment with *Trichoderma harzianum* and *Pseudomonas fluorescens* resulted in disease free healthy seedlings compared to untreated plots.

Six field demonstrations on soil application (main field treatment) were conducted on 30th Sept., 1st Oct. 2013 in Gavaravaram, Kannapuram, Bodigudem, Yerrampet villages (Koyyalagudem), Vellachintalagudem (Gopalapuram), Cherukumilly villages (Devarapalli). A total of 150 farmers and field officers actively participated in all field demonstrations. NIPHM officers provided hands-on practices on biopesticide application and advised about safe pest management options for tobacco cultivation.

Capacity building programmes

Forth Induction Training Programme for New Recruits of DPPQ&S

Induction training programme for the newly recruited 21 officials of DPPQ&S was organized from 3rd June to 31st August 2013. The training focused on various aspects of Plant Biosecurity, Plant Health Management, Locust Management, Pesticide Management & Administrative aspects like procurement of goods and services, management aspects etc. The Officers who are working at CIPMC Centres were trained intensively in biocontrol agents production, quality control, AESA based PHM and ecological engineering for pest management. The Officers working with Plant Quarantine Stations were exclusively trained in detection & identification protocols for various types of pests, quarantine & SPS issues.

Orientation for PEQ inspection authorities

The live plant material are perishable in nature and pose very high pest risk. They are regulated under post entry quarantine (PEQ) for a specific period. Professor & Head, Department of Plant Pathology, Agri. /Horti. Universities are notified as inspection authorities to monitor such imported plants during the post entry quarantine period for new pest occurrence. Twelve notified officers from States of Tamil Nadu, Karnataka, Gujarat, Odisa, Maharashtra, Uttarakhand participated in the orientation programme.

Pest Surveillance

A training programme on Pest Surveillance was conducted from 12th to 19th August 2013with the aim to enhance the understanding of the Officers of State Agri/Horti. Department and Agriculture Universities in Pest Surveillance. The Concept, need, methodology, types and protocols of survey and surveillance and international standards formed the core areas of the programme together with its practical application in real field situations. 25 officials from state Horticulture/Agriculture departments of Tamilnadu, Karnataka, Orissa, Kerala, Jammu & Kashmir, Uttar Pradesh, Haryana, and Chattisgarh participated in the programme.

Orientation for PSC Issuing Authorities

Phytosanitary certification is an important aspect in exports of Agricultural commodities. To facilitate safe exports, the Department of Agriculture & Cooperation, Govt. of India has notified more than 150 public authorities of State /Central Government, ICAR Institutes & Agricultural Universities, as phytosanitary certificate issuing authorities. 14 Officers were trained in the training organized from 26th to 31st August 2013.

Quarantine Insects – Detection and Identification

A training programme on Quarantine Insects – Detection and Identification was organized from 25th September to 1st October 2013. Twenty two Officials from DPPQ&S, Agriculture/Horticulture Departments participated in the training programme.

Plant Quarantine National Regulations & Procedures

A training programme on 'Plant Quarantine National Regulations & Procedures was organized from 11th to 16th September 2013. Six Officers from State Department of Agriculture, DPPQ & S participated in the training programme.

Forced Hot Air Treatment

A training programme on Forced Hot Air Treatment was conducted from 19th to 23rd August, 2013. This training was tailored for phytosanitary treatment service providers in the area of Heat Treatment in line with International Standards for Phytosanitary Measure 15 (ISPM 15) and National Standards for Phytosanitary Measures 9 (NSPM 9). Seven participants from private industry & govt. sector were trained on the basic requirements for establishing & operating FHAT facilities in meeting the requirements of ISPM-15 and ISPM-9.

Capacity Building

Pesticide Formulation Analysis

A training programme on Pesticide Formulation Analysis (66 days) which is a mandatory training under the Insecticide Act 1968 and Rules 1971 for the Analysts of Government Pesticide Testing Laboratories was organized from 18th to 22nd August 2013. 27 participants from Andhra Pradesh, Tamil Nadu, Punjab, Maharashtra, Puducherry, NIPHM (AP) were trained in the techniques involved in both volumetric and instrumental analysis method of pesticide formulation.

International code of conduct on Pesticide Management and Pesticide Life Cycle Management with reference to safety

A training programme was conducted from 26th Aug. to 2nd Sept. 2013 to train the participants on international code of conduct with reference to safety.

Inspection, Sampling and Prosecution

A training programme for the Insecticide Inspectors of State Departments of Agriculture was conducted from 23rdto 28th Sept, 2013 for imparting the procedures for inspection, sampling and prosecution procedures under Insecticides Act- 1968. 22 participants underwent this programme.

Laboratory Quality System Management and Internal Audit

A training programme on Laboratory Quality System Management and Internal Audit as per ISO/IEC 17025-2005 was conducted during PFA programme for 23 participants imparting the required skills and procedures. Another programme was organized from 17th to 22 August 2013 to enable four participants to take up accreditation of their laboratories.

Calibration of Glassware and equipment for pesticide formulation Analysis

A training programme on calibration of Glassware and equipment was conducted from 10th to 17th Sept, 2013. Eight participants from different Pesticide Testing Laboratories participated in the programme. They were trained in the calibration procedures which are essential for the quality control of quality control laboratories and accredited laboratories.

Pesticide Residue Analysis

A training programme on Pesticide Residue Analysis was organized from 1st to 31st July 2013. Five participants were trained on various aspects of sample preparation, extraction, identification and quantification of pesticide Residues besides confirmatory analysis through latest analytical instruments like GC-MS/MS and LC-MS/MS.

Biointensive Plant Health Management and FFS for Tobacco Board Officers

A six-day training programme on Biointensive Plant Health Management and Farmers' Field School Methodology for Tobacco Board Officers was organized between 22nd July, 2013 and 27th July, 2013. 25 participants were exposed to the Agro-ecosystem Analysis based Plant Health Management & Ecological Engineering for Pest Management and other Biointensive Methods of Pest Management especially in Tobacco. Dr. K. Satyagopal IAS, DG NIPHM and Dr. K. Gopal IAS, Chairman Tobacco Board interacted with the participants.

Integrated Soil Nutrient and Weed Management

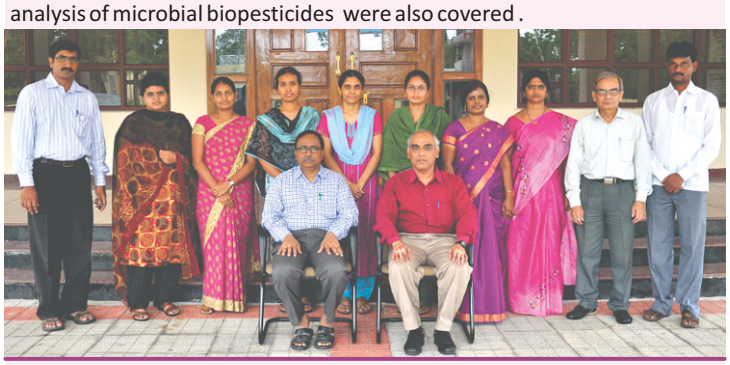
Two 7 day's duration courses on Integrated Soil Nutrient and Weed Management (ISNWM) were organized from 25th to 31st July and 4th to 11th September 2013. Six officers were trained in AESA, Ecological Engineering for pest management, Rhizosphere Engineering for soil health, Integrated Nutrient Management, Integrated Weed Management in different crops, weed surveillance, weed identification and weed vegetation analysis.

Safe and Judicious Use of Pesticides

Two training courses on Safe and judicious use of pesticides were conducted from 18th to 21st July and 12th to 19th August 2013. A total of 31 participants were trained in safe and judicious use of pesticides, principles of pesticide application techniques, pesticide formulation, GIS applications in agriculture, calibration and standardization of plant protection equipment.

Production Protocol of Biocontrol Agents and Quality Analysis & Quality Management of Microbial Biopesticides

A training programme was organized from 2 July to 22 July, 2013 in which seven participants were trained in Production of biocontrol agents & biopesticides such as *Trichogramma* sp., *Chaelonis* sp., *Trichoderma* sp., *Pseudomonas* sp., *NPV, Bacillus thuringiensis, B. subtilis, Metarhizium* sp. *Verticillium* sp. *Paecilomyces* sp. etc. Procedures and guidelines for biopesticide development & registration and the methods for quality analysis of microbial biopesticides were also covered .



Certificate Course on Urban Integrated Pest Management

Certificate Course on Urban Integrated Pest management was organized from 15th to 29th July, 2013 in which 10 participants were trained. in urban pest management techniques.

Principles of AESA and Ecological Engineering for PHM

Training programme on Principles of AESA and Ecological Engineering for Plant Health Management under CROPSAP Project" was organized from 29 to 31 August 2013. 34 officials from Maharashtra State Department of Agriculture, Thane division attended the programme. They were trained on crop health management aspects covering AESA, Ecological Engineering for pest management, Rhizosphere engineering, Integrated Soil, Nutrient and Weed Management, Good Agricultural Practices etc.

Rodent Pest Management (Off Campus)

Two programmes were was organized at Navsari Agricultural University, Gujarat from 2 to 9 July 2013 and at TNAU Coimbatore from 2 to 8 September 2013. 20 officers from state department of agriculture / horticulture were trained on rodent pet management aspects supported with field oriented practical.

Forthcoming Events: 2013

Pesticide Management Division

- Pesticide Residue Analysis. 18 November to 17 December. 2013
- Pesticide Formulation Analysis. 17 February to 22 April 2014
- Training on Aflatoxin Analysis.23 to 30 December 2013
- Conventional Methods in Pesticide Analysis. 27 February to 28 March 2014
- Laboratory Quality System Management and Internal Audit as per ISO/ IEC 17025-2005. 18 to 23 December, 2013
- Advances in Pesticide Residue Analysis (PRA). 21 to 28 January 2014
- Training on New Molecule of Pesticides (for SPTL Analyst Pre-requisite PFA trained only). 2 to 11 January 2014
- Inspection, Sampling & Prosecution Procedure under Insecticides Act- 1968. 10 to 15 February, 2014
- Analysis of Household Pesticides. 3 to 7 February 2014

Plant Health Management Division

- Crop specific AESA & Ecological Engineering for Pest Management in Rice. 4 December 2013 to 3 March 2014
- Agro-EcoSystem Analysis & Ecological Engineering for Pest Management in Vegetables . 12 February to 13 March 2014
- Agro-EcoSystem Analysis & Ecological Engineering for Pest Management. 4 to 24 December 2014 & 12 February to 4 March 2014
- Fundamentals of Plant Health Management for Plant Health Doctors. 17 January to 6 February 2014
- Bio intensive IPM for Rice including SRI. 26 December 2013 to 9 January 2014
- Integrated Soil Nutrient and Weed Management & Rhizosphere Engineering. 4 to 16 December 2013 & 12 to 24 February 2014
- Integrated Soil, Nutrient and Weed Management (ISNWM). 4 to 10 December 2013 & 12 to 18 February 2014
- Rhizosphere Engineering. 11 to 16 December 2013 & 19 to 24 February 2014
- System of Rice Intensification (SRI) 26 to 31 December 2013
- Principles of AESA & Ecological Engineering for PHM for Senior Officials. 10 to 13 February 2014
- Integrated Vertebrate Pest Management. 4 to 24 February 2014
- Rodent Pest Management in Endemic Areas. 21 to 31 January 2104
- Refresher Training on Rodent Pest Management. 21 to 27 January 2014
- Rodent Pest Management in Store Houses of Food Grains. 27 Nov. to 2 Dec. 2014
- Appropriate Pesticide Application Techniques and Farm Level Storage Practices. 2 to 9 January 2014

Plant Biosecurity Division

- Biosecurity and Incursion Management. 10 to 30 December 2013 & 11 February to 3 March 2014
- Harmonisation of Phytosanitary Procedures for SAARC Countries. 4 to 18 Dec. 2013
- Pest Surveillance. 3 to 10 January 2014
- Pest Risk Analysis. 16 to 21 December 2013 & 17 to 22 February 2014
- Fundamentals of Plant Biosecurity. 10 to 15 December 2013 & 11 to 16 February 2014
- Plant Quarantine National Regulations & Procedures. 4 to 9 December 2013
- Emergency Preparedness and Incursion Management. 23 to 30 December 2013
- Stored Gain Pest Management. 20 to 25 January 2014
- Orientation for Post entry Quarantine Inspection Authorities. 27 January to 1 February 2014
- Plant Quarantine Procedures for Imports & Exports. 20 to 24 January 2014
- Forced Hot Air Treatment. 25 to 29 November 2014
- Induction Training for New recruits. 5 February to 5 May 2014

Nominations may be sent by Email to:- niphm@nic.in

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