Annual Report 2013-14

वार्षिक प्रतिवेदन

Ecological Engineering for Pest Management

सत्यमेव जयते

राष्ट्रीय वनस्पति स्वास्थ्य प्रबंधन संस्थान

कृषि एवं सहकारिता विभाग, कृषि मंत्रालय, भारत सरकार

रा व स्वा प्र सं
NIPHM

NATIONAL INSTITUTE OF PLANT HEALTH MANAGEMENT

Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India

On-farm Production of Biocontrol Agents

रा व स्वा प्र सं
NIPHM

Farmer's Army
Defenders

रा. व. स्वा. प्र. सं.
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राष्ट्रीय वनस्पति स्वास्थ्य प्रबंधन संस्थान

(स्वायत्त)

कृषि एवं सहकारिता विभाग, कृषि मंत्रालय, भारत सरकार

हैदराबाद

NATIONAL INSTITUTE OF PLANT HEALTH MANAGEMENT

(Autonomous)

Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India

Hyderabad

विषय-सूची

Pests

CONTENT

Preface

Indian agriculture, over the years, has made impressive gains in food production to meet the requirements of food security. However, in view of the wide spread adverse impact on agroecosystems due to excessive reliance on chemical pesticides, there is a need to shift the focus to food safety issues also. In order to achieve food security without compromising food safety, there is an urgent need to shift the IPM strategies to sustainable approaches that rely on AESA based Plant Health Management in conjunction with Ecological Engineering for Pest Management. Sustainable agricultural practices maintain the delicate and dynamic balance of ecosystems and will help in reducing the excessive reliance on chemical pesticides. NIPHM is playing a significant role in building the capacity of Agricultural Extension Officers of Central and State Governments, Scientists of ICAR and SAUs in the above sustainable approaches.

During the year, NIPHM has also focused its attention on building capacity of stake holders in Biosecurity & Incursion Management and SPS awareness to protect the agricultural biosecurity. In addition NIPHM has built the capacity of Pesticide Analysts of Central and State Pesticide Testing laboratories by organizing programmes in Pesticide Formulation Analysis, Pesticide Residue Analysis, Laboratory Quality Management and Internal Audit. NIPHM has also organized Proficiency testing and Inter laboratory comparison testing programmes to compare the proficiency of different pesticide testing laboratories.

During the year, twenty students have completed PGDPHM course in the on-campus programme. Concurrent PGDPHM courses were offered during the year in Marathwada Krishi Vidyapeeth, Parbhani (Maharashtra), and Dr.YSR Horticultural University, Hyderabad (Andhra Pradesh). During the year NIPHM has entered into an agreement with Directorate of Agriculture, Government of Kerala for offering PGDPHM programme in off-campus mode.

Twenty one newly recruited Officers of DPPQ&S have attended the 4th batch of Induction Training Programme. NIPHM has also trained seventeen DPPQ&S Officers who were transferred to PQ stream and twenty one Officers who were transferred to IPM stream.

International Training Programmes were organized in collaboration with USDA/ USAID which included building capacity of NIPHM faculty through capacity building programmes at CPHST, USDA, USA. International Training Programmes were also organized jointly at NIPHM on Pest Risk Analysis in which, Agricultural Officers from Bangladesh, Sri Lanka, Ghana, Kenya, Malawi & Mozambique, Senior Scientists of ICAR Institutes and DPPQ&S have participated.

NIPHM has also organized workshops for creation of Sanitary and Phytosanitary (SPS) Awareness among Officers of South Asia in collaboration with DAFF, Australia. Workshops were held in New Delhi and Colombo. NIPHM has also organized a workshop on Harmonization of PRA Methodologies among members of IBSA Countries. Special Training Programmes were also organized during the year for Officials from Afghanistan on Plant Quarantine and Phytosanitary measures and on Pesticide Registration Procedures and Inspection.

I wish to express my sincere thanks to Shri Ashish Bahuguna, IAS, Secretary, Department of Agriculture & Co-operation, Shri Avinash Kumar Srivastava, IAS, Additional Secretary (PP) and Shri Utpal Kumar Singh, IAS Joint Secretary (PP), DAC for their guidance, constant encouragement and support for strengthening the organization. I also thank my senior colleagues, the faculty and administrative staff for their continued support and commitment in building the organization.

Hyderabad
October, 2014

Dr. K. Satyagopal IAS
Director General

रा.व.स्वा.प्र.सं.

राष्ट्रीय वनस्पति स्वास्थ्य प्रबंधन संस्थान (रा.व.स्वा.प्र.सं.), कृषि एवं सहकारिता विभाग, कृषि मंत्रालय, भारत सरकार के अंतर्गत एक अग्रणी स्वायत्त संस्थान है, जो विविध व परिवर्तित कृषि जलवायु स्थितियों में पर्यावरणात्माक रूप से सतत वनस्पति स्वास्थ्य प्रबंधन एवं केंद्रीय व राज्य सरकारों को नीति समर्थन देने के अलावा क्षमता निर्माण कार्यक्रमों के माध्यम से जैविक संरक्षण प्रबंधन पद्धतियों को बढ़ावा देता है। रा.व.स्वा.प्र.सं. के वनस्पति स्वास्थ्य प्रबंधन कार्यक्रमों का मुख्य उद्देश्य, कृषक खेत पाठशालाओं (एफएफएस) के माध्यम से कृषि पारिस्थितिकी प्रणाली विश्लेषण (एईएसए) आधारित वनस्पति स्वास्थ्य प्रबंधन को बढ़ावा देना है, जिसमें पर्यावरण प्रणाली के विभिन्न घटकों में अन्तर्निभर जटिलता एवं पर्यावरण प्रणाली सेवाओं के प्राकृतिक प्रवाह की भूमिका पर ध्यान दिया जाता है। रा.व.स्वा.प्र.सं., जैवसुरक्षा व इन्कर्शन (वनस्पति पर आक्रमण) प्रबंधन, वनस्पति संगरोध, स्वच्छता एवं वनस्पति स्वच्छता मुद्दों के संबंध में क्षमता वर्धन के लिए प्रशिक्षण कार्यक्रम चलाए जाते हैं, ताकि कृषि-क्षेत्र में व्यापार के वैश्वीकरण से उत्पन्न होने वाली चुनौतियों को प्रभावी ढंग से सुलझाया जा सके । पीड़कनाशी प्रबंधन, कृंतक/कशेरुकी पीड़क प्रबंधन, जैवनियंत्रण अभिकर्ताओं और एकीकृत पोषक का उत्पादन तथा खरपतवार प्रबंधन आदि क्षेत्रों में भी विशेष कार्यक्रम चलाए जाते हैं। पीड़कनाशियों के सुरक्षित और विवेकपूर्ण उपयोग को बढ़ावा देने के उद्देश्य से पीड़कनाशी अनुप्रयोग प्रौद्योगिकी के विषय पर भी महत्वपूर्ण व विशेष कार्यक्रम चलाए जाते हैं।

ऐतिहासिक पृष्ठभूमि

केंद्रीय पौध संरक्षण प्रशिक्षण संस्थान (सीपीपीटीआई) वर्ष 1966 में पौध संरक्षण, संगरोध एवं संग्रह निदेशालय के तहत पौध संरक्षण प्रौद्योगिकी के क्षेत्र में मानव संसाधन विकास हेतु स्थापित किया गया था। संस्थान का प्रमुख उद्देश्य राज्यों/संघशासित क्षेत्रों के कृषि विभागों और केंद्र सरकार में सुयोग्य पीड़क प्रबंधन कर्मी तैयार करना था, जो कृषकों को कृषि-संबंधी अनिवार्य प्रशिक्षण प्रदान कर सकें । विश्व बैंक द्वारा सहायता-प्राप्त राष्ट्रीय कृषि विस्तार परियोजना-III के अंतर्गत संस्थान को खाद्य और कृषि संगठन (एफएओ) द्वारा क्षेत्रीय पौध संरक्षण प्रशिक्षण केंद्र और पौध संरक्षण प्रौद्योगिकी में प्रशिक्षण देने हेतु निर्धारित उत्कृष्ट केंद्र की मान्यता प्राप्त हुई। तदुपरांत संस्थान का पुनर्नामकरण हुआ और यह राष्ट्रीय पौध संरक्षण प्रशिक्षण संस्थान (एनपीपीटीआई) बना।

राष्ट्रीय पौध संरक्षण प्रशिक्षण संस्थान (एनपीपीटीआई) का पुनर्गठन एक स्वायत्त निकाय के रूप में किया गया। अर्थात् राष्ट्रीय वनस्पति स्वास्थ्य प्रबंधन संस्थान (रा.व.स्वा.प्र.सं.) को 24 अक्तूबर, 2008 से आंध्र प्रदेश सोसायटी पंजीकरण अधिनियम, 2001 (अधिनियम सं.35,2001) के अंतर्गत पंजीकृत (सं. 1444, 2008) किया गया। वर्तमान में यह दक्षिण एशियाई क्षेत्र में कृषि-संबंधी क्षमता वर्धन करने की महत्वपूर्ण भूमिका निभाने के लिए कृषि एवं सहकारिता विभाग, कृषि मंत्रालय, भारत सरकार के नियंत्रणाधीन कार्यरत है। निम्नलिखित लक्ष्य और उद्देश्य, कृषि के सतत विकास की दिशा में केंद्रित हैं।

दृष्टि

बदलती और विविध कृषि-जलवायु परिस्थितियों में, पर्यावरण के अनुकूल वनस्पति स्वास्थ्य प्रबंधन की कार्यविधियों को बढ़ावा देने के उद्देश्य से और स्वच्छता एवं वनस्पति स्वच्छता मुद्दों तथा उभरती जैव-सुरक्षा संबंधी चुनौतियों की दिशा में नीति समर्थन प्रदान करने हेतु अंतर्राष्ट्रीय स्तर पर ख्याति प्राप्त उत्कृष्ट केंद्र के रूप में उभरना।

मिशन

शिक्षण, प्रशिक्षण, अनुसंधान, प्रमाणीकरण, मान्यता, एसपीएस मुद्दों पर नीति समर्थन तथा राष्ट्रीय और अंतर्राष्ट्रीय संदर्भों में उत्पन्न जैव-सुरक्षा संबंधी चुनौतियों की मुख्य भूमिका द्वारा भारत सरकार, राज्यों और अन्य हितधारकों (स्टेकहोल्डरों) की सहायता करते हुए वनस्पति स्वास्थ्य प्रबंधन के क्षेत्र में उभरती चुनौतियों को चिन्हित करने व कृषि-उत्पाद बढ़ाने में एक महत्वपूर्ण भूमिका निभाना ।

रा.व.स्वा.प्र.सं. के लक्ष्य और उद्देश्य

1. पौध संरक्षण प्रौद्योगिकी, वनस्पति संगरोध एवं जैवसुरक्षा, फसल आधारित समेकित पीड़क प्रबंधन प्रणालियों और पीड़कनाशी गुणवत्ता परीक्षण तथा गुणवत्ता स्तर निगरानी हेतु पीड़कनाशी अवशेष विश्लेषण आदि व अन्य संबंधित क्षेत्रों में कार्यरत सार्वजनिक तथा निजी दोनों क्षेत्रों में मानव संसाधन का विकास करना।
2. वनस्पति संरक्षण प्रौद्योगिकी के क्षेत्र में विशिष्ट निष्पत्ति के राज्य, क्षेत्रीय, राष्ट्रीय तथा अंतर्राष्ट्रीय संस्थानों के बीच सुनियोजित सहलग्नता विकसित करना।
3. पौध संरक्षण प्रौद्योगिकी पर नवीनतम सूचना का आदान-प्रदान करने हेतु नोडल एजेंसी/मंच के रूप में कार्य करना।
4. राज्य विस्तार कर्मियों और किसानों के बीच पौध संरक्षण प्रौद्योगिकी पर सूचना एकत्रित और व्यवस्थित करना।

5. पौध संरक्षण प्रणालियों तथा नीतियों के साथ-साथ प्रत्येक चरण पर आनेवाली परिचालनात्मक समस्याओं और अड़चनों पर अन्तर्दृष्टि डालना।
6. समस्या समाधान तरीके से आधुनिक प्रबंध व तकनीक पहचानना, प्रशस्त करना और विकसित करना तथा उसका उपयोग कार्मिक प्रबंधन, संसाधन प्रबंधन, आदान प्रबंधन एवं संगठनात्मक स्तर पर आक्रमण प्रबंधन हेतु करना।
7. वनस्पति संरक्षण कार्यक्रमों के संचालन हेतु आवश्यकतानुसार मध्यम तथा वरिष्ठ स्तर के पदाधिकारियों हेतु प्रशिक्षण तथा पुन:प्रशिक्षण कार्यक्रम आयोजित करना। कार्यक्रमों की अधिकतम पहुंच सुनिश्चित करने के लिए 'प्रशिक्षकों का प्रशिक्षण' तरीका अपनाना।
8. वनस्पति संरक्षण, समेकित पीड़क प्रबंधन, पीड़कनाशी प्रबंधन, वनस्पति संगरोध तथा पीड़कनाशी वितरण प्रणालियों व अवशेषों के क्षेत्र में आयोजित प्रशिक्षण कार्यक्रमों पर प्रतिपुष्टि (फीडबैक) प्रदान करना व कार्यक्रम-आधारित अनुसंधान करना।
9. वनस्पति संरक्षण प्रबंधन विषय के संदर्भ में सूचना, विचारों के संग्रह के रूप में क्षेत्रीय, राष्ट्रीय और अंतर्राष्ट्रीय स्तर पर संचार सेवाओं का विकास और प्रलेखीकरण करना।
10. राष्ट्रीय व अंतर्राष्ट्रीय संस्थानों के मध्य सहलग्नता स्थापित करना और संस्थागत सहयोग एवं परामर्शदाताओं के माध्यम से साझेदारी व ज्ञान सृजन नेटवर्क बनाना।
11. वनस्पति संरक्षण के विभिन्न क्षेत्रों में केंद्र सरकार के लिए समेकित पीड़क प्रबंधन (आईपीएम), पीड़कनाशी प्रबंधन, वनस्पति संगरोध, जैव-सुरक्षा, स्वच्छता एवं पादप स्वच्छता (एसपीएस) तथा बाज़ार में पहुंच आदि मुद्दों पर नीति सहयोग व कार्य करना।

संगठन और प्रबंधन

महापरिषद्, रा.व.स्वा.प्र.सं. के कार्यों का सामान्य तौर पर नियंत्रण करती है तथा कुशल प्रबंधन और प्रशासन के लिए आवश्यक निर्देश जारी करती है। सचिव, कृषि एवं सहकारिता विभाग (डीएसी) भारत सरकार, महापरिषद् के अध्यक्ष होते हैं तथा इसके सदस्य डीएसी (कृषि एवं सहकारिता विभाग) के वरिष्ठ अधिकारियों व वनस्पति संरक्षण के क्षेत्र में कार्यरत प्रख्यात वैज्ञानिकों में से चुने जाते हैं। कार्यकारी परिषद् (ईसी), संस्थान के कार्यों के प्रबंधन और प्रशासन के लिए ज़िम्मेदार है। अपर सचिव, कृषि एवं सहकारिता विभाग, भारत सरकार, कार्यकारी परिषद् के अध्यक्ष होते हैं तथा इसके सदस्य, डीएसी के अधिकारियों व वनस्पति संरक्षण के क्षेत्र में कार्यरत वरिष्ठ वैज्ञानिकों में से चुने जाते हैं। महानिदेशक (डीजी), जो संस्थान के अध्यक्ष होते हैं, संस्थान के कार्यों के उचित प्रबंधन और प्रशासन के लिए ज़िम्मेदार हैं। महानिदेशक, स्थायी समितियों जैसे चयन समिति और शैक्षणिक समिति के अध्यक्ष होते हैं ।

गतिविधि प्रोफ़ाइल

रा.व.स्वा.प्र.सं. की गतिविधियां छ: क्षेत्रों पर केंद्रित हैं, नामत: क्षमता निर्माण, अनुकूली अनुसंधान, परामर्श कार्य, नीति विकास, शिक्षा और परियोजनाएं।

दीर्घावधि के कार्यक्रमों को लघु अवधि वाले मॉड्यूलों के अंतर्गत विकसित किया गया, ताकि प्रतिभागी इनमें से किसी मॉड्यूल को अपनी कुशलता और कार्य-निर्दिष्ट आवश्यकताओं के आधार पर चयनित कर सकें। इससे वरिष्ठ अधिकारियों को भी विषयगत लघु अवधि के दिग्विन्यास कार्यक्रमों में भाग लेने में सहूलियत होगी। इस मॉड्यूलार दृष्टिकोण को उन सभी प्रशिक्षण कार्यक्रमों में अंतर्निहित किया गया, जो 10 दिनों से अधिक अवधि के हैं।

आधारभूत संरचना

संकाय-सह-प्रशिक्षण भवन (महात्मा गांधी ब्लॉक) का उद्घाटन

इस नये संकाय भवन-सह-प्रशिक्षण ब्लॉक का निर्माण कृषि एवं सहकारिता विभाग, भारत सरकार द्वारा मंजूर की गई रू. 9.76 करोड़ की राशि की लागत से की गई है। इस ब्लॉक में पांच व्याख्यान सभागार, मिनी ऑडोटोरियम, विडीयो कॉन्फ्रेंस, तीन कॉन्फ्रेंस सभागार एवं वातानुकूलन सहित तमाम सुविधाएं वरिष्ठ अधिकारियों, राष्ट्रीय एवं अन्तर्राष्ट्रीय प्रतिभागियों को प्रशिक्षण कार्यक्रम के दौरान उपलब्ध होंगी। माननीय कृषि मंत्री श्री शरद पवार ने 21 अप्रैल, 2014 को इसका उद्घाटन किया। उद्घाटन समारोह में कृषि एवं सहकारिता विभाग, भारत सरकार के श्री अशीष बहुगुणा, सचिव, श्री सिरज हुसैन, विशेष सचिव, श्री रघु चंद्र, आईएएस एवं श्री उत्तपल कुमार सिंह, संयुक्त सचिव (पीपी), एनआईपीएचएम के महानिदेशक डॉ. के. सत्यगोपाल, आई.ए.एस, श्री शैलेन्द्र शर्मा, मुख्य अभियंता, सीपीडब्ल्यूडी एवं समस्त कर्मचारी एवं प्रशिक्षार्थीगण उपस्थित थें। समारोह के दौरान राजेन्द्रनगर के विधायक श्री टी. प्रकाश गौड़ भी मौजूद थे।

अंतर्राष्ट्रीय प्रतिभागियों के लिए नया छात्रावास भवन

बुनियादी सुविधाओं को और मजबूत करने के क्रम में रूपये 593.31 लाख की लागत से अंतर्राष्ट्रीय प्रतिभागियों के लिए एक नया छात्रावास भवन का निर्माण-कार्य केंद्रीय लोक-निर्माण विभाग (सीपीडब्ल्यूडी) को सौंपा गया था। प्रतिभागियों के लिए अतिरिक्त आवास उपलब्ध कराने के लिए प्रथम मंजिल की विस्तारित भाग का निर्माण प्रगति पर है।

प्रयोगशालाएं

संस्थान में विभिन्न प्रशिक्षण कार्यक्रम आयोजित करने हेतु आधुनिक उपकरणों से सुसज्जित प्रयोगशालाएं हैं जैसे :-

- विभिन्न फसलों के नाशीकीटों व उनके प्राकृतिक शत्रुओं का विशाल संरक्षित संकलन है।
- विभिन्न कृंतक (चूहा, गिलहरी आदि) प्रजातियों के नमूनों व कृंतक प्रबंधन के पारंपरिक व आधुनिक उपकरणों का विशाल संग्रहण।
- आणविक स्तर पर नाशीजीव नमूनों की जांच करने हेतु आधुनिक उपकरणों-युक्त आणविक निदान प्रयोगशाला।
- जैवनियंत्रक उत्पादन प्रोटोकॉल एवं सूक्ष्मजैविक जैवकीटनाशियों की गुणवत्ता विश्लेषण हेतु जैविक नियंत्रण प्रयोगशाला।
- सूक्ष्मदर्शी, टीकाकरण चैंबर, ओटोक्लेव, बीओडी इन्क्यूबेटर्स आदि सुविधाओं से युक्त प्रयोगशाला है।
- कीटनाशी संरचना/कीटनाशी अवशेष विश्लेषण हेतु स्पेकटोमीटर, GLC, HPLC, GC-MS-MS, LC-MS-MS आदि उन्नत विश्लेषणात्मक उपकरणें।

कार्यशाला

समुचित पीड़कनाशी अनुप्रयोग तकनीक को प्रोत्साहित करने हेतु संस्थान के वनस्पति स्वास्थ्य अभियांत्रिकी प्रभाग में अनुसंधान एवं प्रशिक्षण आयोजन के लिए आधुनिक उपकरणों एवं सुविधाओं से युक्त अनोखी कार्यशाला है।

कृषि फार्म

संस्थान के पास 9.26 हेक्टेयर कृषि फार्म है, जिसमें नाशीजीव प्रबंधन के लिए कृषि पारिस्थितिकी तंत्र विश्लेषण तथा पारिस्थितिकी अभियांत्रिकी प्रदर्शन व परीक्षण कार्य किया जाता है।

कंप्यूटर प्रयोगशाला

संस्थान में 20 कंप्यूटरों से सुसज्जित प्रयोगशाला में उच्च गति इंटरनेट एवं Wi-Fi सुविधा है। वहीं सभी संकाय सदस्यों, अधिकारियों एवं स्टाफ को भी डेस्कटॉप, लैपटॉप एवं संबंधित सहायक तंत्रों की सुविधा प्रदान की गई है। मुख्य पाठ्यक्रम एवं प्रेरण प्रशिक्षण कार्यक्रम में सूचना तकनीक के मूलभूत प्रयोग को शामिल किया गया है। सूचना एवं संचार प्रौद्योगिकी प्रभाग पौध संरक्षण में सूचना तकनीक सेवाओं के उपयोग, वेबसाइट डिज़ाइन व विकास एवं इसके प्रशासन तथा संधारण के लिए भी उत्तरदायी है। संस्थान के पास दक्षतापूर्ण दूरसंचार संचालन के लिए अपनी सर्वर प्रयोगशाला है।

पुस्तकालय एवं प्रलेखन

संस्थान का पुस्तकालय वनस्पति स्वास्थ्य प्रबंधन, जैव सुरक्षा, कीटनाशक प्रबंधन और पादप स्वास्थ्य अभियांत्रिकी के क्षेत्र में प्रशिक्षुओं, शोधकर्ताओं और शिक्षकों के लिए सूचना सेवाएं प्रदान करने में एक महत्वपूर्ण भूमिका निभाता है। लाइब्रेरी को पूरी तरह से वातानुकूलित और पुनर्निर्मित किया गया है। लाइब्रेरी मे पौध संरक्षण, पादप स्वास्थ्य प्रबंधन और संबद्ध क्षेत्रों पर किताबें और प्रतिष्ठित पत्रिकाओं का समृद्ध संग्रह है, जिसमें अंग्रेजी की 9,124 तकनीकी पुस्तकें और हिन्दी में 1,249 पुस्तकें हैं। पुस्तकालय सेवा भुगतान के आधार पर बाहरी लोगों के लिए भी उपलब्ध कराई जाती है।

शैक्षणिक कार्यक्रम

वनस्पति स्वास्थ्य प्रबंधन में स्नातकोत्तर डिप्लोमा (PGDPHM)

वनस्पति स्वास्थ्य प्रबंधन के क्षेत्र में स्नातकोत्तर डिप्लोमा (पीजीडीपीएचएम), इस संस्थान के प्रमुख कार्यक्रमों में से एक है, जिसे समर्पित और दक्ष कृषि-संबंधी व्यावसायिकों के विकास हेतु अभिकल्पित किया गया है। इस कार्यक्रम का एक और उद्देश्य है, पर्यावरणीय रूप से सतत वनस्पति स्वास्थ्य प्रबंधन, जैवसुरक्षा और पीड़कनाशी प्रबंधन को बढ़ावा देना। यह कार्यक्रम 12 महीनों की अवधि का है, जिसमें दो समेस्टर होते हैं तथा इनमें राज्य कृषि/बाग़बानी विभागों के सेवाधीन कार्मिक तथा नवस्नातक और स्नातकोत्तर व्यक्ति भाग ले सकते हैं। तीसरा पीजीडीपीएचएम कार्यक्रम जुलाई, 2013 से आरंभ हुआ, जिसमें कुल 17 प्रतिभागियों ने भाग लिया।

पादप स्वास्थ्य प्रबंधन में डिप्लोमा (DPHM)

कुशलता से अपने कर्तव्यों का निर्वहन करने व ज्ञान अद्यतन करने के लिए कृषि विस्तार अधिकारियों हेतु छह महीने की अवधि का डिप्लोमा विशेष रूप से फायदेमंद है। इस कार्यक्रम में पादप स्वास्थ्य प्रबंधन सिद्धांतों, कृषि पारिस्थितिकी प्रणाली विश्लेषण, कीट प्रबंधन के लिए पर्यावरण इंजीनियरिंग, कृषि इनपुट मैनेजमेंट शामिल किया गया है। अगस्त, 2013 से जनवरी 2014 तक पाठ्यक्रम में कृषि विभाग, मध्य प्रदेश सरकार द्वारा नामित दो कृषि अधिकारियों ने Bracon, ट्राइकोग्रामा, ट्राइकोडर्मा और VAM के उत्पादन पर अपनी परियोजना कार्य पूरा किया।

वनस्पति स्वास्थ्य प्रबंधन में समवर्ती स्नातकोत्तर डिप्लोमा पाठ्यक्रम (CPGDPHM)

राज्य कृषि विश्यविद्यालयों के स्नातक/स्नातकोत्तर/पीएचडी विद्यार्थियों को समवर्ती कार्यक्रम के रूप में वनस्पति स्वास्थ्य प्रबंधन के क्षेत्र में स्नातकोत्तर डिप्लोमा के अनुरूप राज्य कृषि विश्वविद्यालयों के छात्रों के लिए पाठ्यक्रम आयोजन किया गया। यह कार्यक्रम चार सेमेस्टर में फैला हुआ है, जिसके तहत मराठवाड़ा कृषि विद्यापीठ, परभणी (महाराष्ट्र) और वाईएसआर विश्वविद्यालय बागवानी कॉलेज परिसर हैदराबाद के छात्रों ने भाग लिया। वर्ष के अंत में छात्रों ने NIPHM में विशेषज्ञता के क्षेत्र विशेष सत्र में भाग लेकर प्रयोगशाला अभ्यास पर भागीदारी कक्षा शिक्षण, स्वयं अभ्यास करने और फील्ड दौरों के माध्यम से अवलोकन कौशल बढ़ाने के लिए प्रोत्साहित कर सक्षम बनाया गया।

परिसर के बाहर स्नातकोत्तर डिप्लोमा पाठ्यक्रम (PGDPHM Kerala)

कृषि विभाग केरल के कृषि अधिकारियों के लिए परिसर के बाहर PGDPHM कार्यक्रम के लिए कृषि निदेशालय, केरल सरकार के साथ एक समझौता दर्ज किया है। इस कार्यक्रम का उद्घाटन डॉ. के. सत्यगोपाल, IAS, महानिदेशक, NIPHM द्वारा 19 दिसंबर 2013 को SAMETI, केरल में श्री के.आर. ज्योतिलाल, IAS, सचिव, कृषि केरल सरकार की उपस्थिति में किया गया। इस कोर्स

के लिए दो साल की अवधि में कृषि निदेशालय केरल से 35 विस्तार अधिकारियों को कोर्स फीस रुपये 1,50,000/- प्रति व्यक्ति सहित नामित किया गया है।

वनस्पति स्वास्थ्य प्रबंधन प्रभाग

कृषि कई जैविक और अजैविक कारकों से प्रभावित होती है। इन्हें निरंतर बहुआयामी रणनीतियों के माध्यम से प्रबंधित किया जाता है। वनस्पति स्वास्थ्य प्रबंधन की दिशा में कृषकों का ज्ञान बढ़ाने के लिए रा.व.स्वा.प्र.सं., मास्टर प्रशिक्षकों का एक दल तैयार कर रहा है। व.स्वा.प्र., जैव-अभिकर्ताओं/जैवपीड़कनाशियों के व्यापक उत्पादन और गुणवत्ता विश्लेषण, एकीकृत मृदा पोषक तत्व और अपतृण प्रबंधन, फार्मर्स फील्ड स्कूल आदि विषयों पर प्रशिक्षण प्रदान करता है। वर्ष 2013-14 के दौरान पादप स्वास्थ्य प्रबंधन प्रभाग द्वारा निम्नलिखित कार्यक्रमों का आयोजन किया गया।

अ) पीड़क प्रबंधन के लिए कृषि पारिस्थितिकी तंत्र विश्लेषण (AESA) और पारिस्थितिक अभियांत्रिकी (EE) आधारित प्रशिक्षण कार्यक्रम

फसल विशिष्ट AESA – चावल

भारत चावल उत्तपादन करने वाला दूसरा बड़ा देश है। प्रबंधन और पीड़कों का आक्रमण भी इस फसल पर अधिक होता है। इसलिए यह आवश्यक है कि पीड़कों की परिस्थिति की सही समझ हो और जैविक तथा अजैविक पर प्रभाव हो। कृषकों के प्रयोगात्मक शिक्षण एईएसए पर आधारित है। जिसमें पर्यावरण की आत्मनिर्भरता की जैविक एवं अजैविक दोनों का बोध होता है, जो कृषकों द्वारा निर्णय लिए जाते हैं। इस बात को ध्यान में रखते हुए एनआईपीएचएम ने 90 दिनों के लिए 'चावल विषय से संबंधित कृषि प्रणाली विश्लेषण' पर एक लंबा प्रशिक्षण कार्यक्रम आयोजित किया।

फसल विशिष्ट AESA – सब्जियां

सब्जियों में फसल विशिष्ट AESA पर तीस दिनों के प्रशिक्षण कार्यक्रम का आयोजन किया गया, जिसमें प्रतिभागियों को AESA, पारिस्थितिक अभियांत्रिकी, सजीव मिट्टी संकल्पना, rhizosphere इंजीनियरिंग, INM, IWM, जैव नियंत्रण एजेंटों और माइक्रोबियल जैवकीटनाशकों के सिद्धांतों से अवगत कराया गया। इस कार्यक्रम में तमिलनाडु सरकार के बाग़बानी विभाग से आये 18 अधिकारियों ने भाग लिया।



गोभी में कीट प्रबंधन के लिए पारिस्थितिक इंजीनियरिंग के संयोजन में AESA आधारित PHM का प्रदर्शन

गोभी की फसल कीट प्रबंधन के लिए पारिस्थितिक इंजीनियरिंग के साथ संयोजन के रूप में कृषि पारिस्थितिकी तंत्र विश्लेषण (AESA) आधारित पादप स्वास्थ्य प्रबंधन (PHM) अपनाए गए थे। कीट प्रबंधन रणनीति के लिए पारिस्थितिक इंजीनियरिंग के भाग के रूप में फूलों के पौधों और साथी पौधों मुख्य गोभी की फसल के साथ लगाया गया। इनके अलावा, फसल चक्र, जैविक उर्वरक और मिट्टी परीक्षण की रिपोर्ट के आधार पर अकार्बनिक उर्वरकों के उपयोग को अपनाया गया। दोनों प्रणालियों को रासायनिक कीटनाशकों के बिना कीट नियंत्रण करने और अच्छी उपज देने मे प्रभावी पाया गया।

पीड़क प्रबंधन के लिए कृषि पारिस्थितिक विश्लेषण (एईएसए) एवं पारिस्थितिक अभियांत्रिकी (ईई) कार्यक्रम

इस कार्यक्रम मे प्रतिभागियों को एईएसए एवं पारिस्थितिक अभियांत्रिकी के साथ साथ जैविक नियंत्रण तकनीकियों के बारे में जानकारी मुहैया करवाई गई। प्रतिभागियों को जैवएजेंटों के ऑन-फॉर्म प्रोडक्शन के बारे में प्रशिक्षित किया गया। इस कार्यक्रम में आंध्रप्रदेश, पंजाब एवं कर्नाटक के एक-एक प्रतिभागी उपस्थित थें।

पादप स्वास्थ्य डॉक्टरों के लिए मौलिक पादप स्वास्थ्य प्रबंधन का प्रशिक्षण कार्यक्रम

पादप स्वास्थ्य प्रबंधन के महत्व को देखते हुए NIPHM द्वारा पादप स्वास्थ्य प्रबंधन के विभिन्न मुद्दों पर मास्टर ट्रेनर्स का एक दल बनाने के लिए इस 21 दिनों के प्रशिक्षण कार्यक्रम का आयोजन किया गया। प्रशिक्षुओं को कीटों के निदान, एकीकृत रोग, निमेटोड, खरपतवार प्रबंधन, जैव नियंत्रण एजेंटों और माइक्रोबियल आदि के बड़े पैमाने पर उत्पादन के लिए पारिस्थितिक इंजीनियरिंग के साथ संयोजन के रूप में कृषि पारिस्थितिकी तंत्र विश्लेषण आधारित पादप स्वास्थ्य प्रबंधन से अवगत कराया गया। उन्हे जैविक और अजैविक क्षति लक्षणों के साथ ही कीटों, रोगों, नेमाटोड द्वारा क्षति का निदान करने के साथ ही EPN व

Mycorrhiza के बड़े पैमाने पर उत्पादन की तकनीक में प्रशिक्षित किया गया। कार्यक्रम में 20 प्रतिभागियों ने पादप स्वास्थ्य प्रबंधन के विभिन्न पहलुओं में विशेषज्ञता विकसित की है।

एकीकृत मिट्टी, पोषक तत्व और खरपतवार प्रबंधन (ISNWM)

एकीकृत पोषक तत्व प्रबंधन (INM) मिट्टी की उर्वरता प्रबंधन के साथ कार्बनिक, खनिज और जैव संसाधनों के संयुक्त और सामंजस्यपूर्ण उपयोग के माध्यम से विभिन्न कृषि प्रणालियों में फसल प्रबंधन में एक महत्वपूर्ण भूमिका निभाता हैं। इसे देखते हुए NIPHM ने एकीकृत मृदा पोषक तत्व और खरपतवार प्रबंधन में मास्टर ट्रेनर्स के कौशल और ज्ञान को अद्यतन करने के लिए क्षमता निर्माण कार्यक्रमों का आयोजन किया। प्रशिक्षण के दौरान विभिन्न फसलों में सजीव मृदा संकल्पना, जड़क्षेत्र अभियांत्रिकी, INM, IWM, AESA, पारिस्थितिक इंजीनियरिंग के सिद्धांतों को शामिल किया गया। वर्ष के दौरान ISNWM पर चार कार्यक्रमों का आयोजन किया गया, जिसमें विभिन्न राज्यों से 27 प्रतिभागियों को प्रशिक्षित किया गया।

राईजोस्फियर अभियांत्रिकी

फसल की गहन खेती प्रथाएं लगातार मिट्टी में पोषक तत्वों के खनन के साथ ही जड़क्षेत्र (Rhizosphere) में सूक्ष्मजैविक आबादी को कम कर रहे हैं। मिट्टी की उर्वरता, फसल संरक्षण एवं उत्पादन बढ़ाने में सूक्ष्मजीवों की भूमिका पर जागरूकता पैदा करने के उद्देश्य से NIPHM द्वारा rhizosphere इंजीनियरिंग में एक लघु अवधि कोर्स प्रारम्भ किया है। वर्ष के दौरान आयोजित दो प्रशिक्षण पाठ्यक्रमों में विभिन्न राज्यों से 18 अधिकारियों को प्रशिक्षण दिया गया। इसी तरह ISNWM और जड़क्षेत्र अभियांत्रिकी के दोनों पहलुओं को शामिल कर एक 13 दिवसीय प्रशिक्षण पाठ्यक्रम भी वर्ष के दौरान पेश किया गया था, जिसमें राज्य कृषि विश्वविद्यालयों और राज्यों से 5 अधिकारियों ने भाग लिया।

कृषक खेत पाठशाला पद्धति

किसानों को ज्ञान और कुशलता प्रदान करने के उद्देश्य से कृषि अधिकारियों का कृषक खेत पाठशाला पद्धति पर एक लघु अवधि (8 दिन) का प्रशिक्षण कार्यक्रम संस्थान द्वारा आयोजित किया गया।

ब) जैव नियंत्रण एजेंटों का उत्पादन और Biointensive रणनीति को अपनाने के लिए प्रशिक्षण

जैव नियंत्रण एजेंटों और माइक्रोबियल जैवकीटनाशकों की गुणवत्ता के आकलन और गुणवत्ता प्रबंधन के लिए उत्पादन प्रोटोकॉल

प्राकृतिक दुश्मनों और जैवकीटनाशकों का उपयोग कम पारिस्थितिक प्रभाव के साथ उच्च उत्पादन को बनाए रखने के लिए एक विकल्प है। कई कीट हानिकारक कीड़ों को मारने या उनकी शक्ति कम करने में सक्षम हैं। जैवनियंत्रण अभिकर्ताओं और जैवपीड़कनाशियों के लिए उत्पादन प्रोटोकॉल कार्यक्रमों में 29 प्रतिभागियों को प्रशिक्षित किया गया।

रा.व.स्वा.प्र.सं. ने निम्नलिखित विषयों पर मॉड्यूलार प्रशिक्षण कार्यक्रम आयोजित किए

1) जैवनियंत्रण अभिकर्ताओं और जैवपीड़कनाशियों के लिए उत्पादन प्रोटोकॉल (11 दिन)
2) सूक्ष्मजीवी जैवपीड़कनाशियों का गुणवत्ता निर्धारण और गुणवत्ता प्रबंधन (10 दिन)
3) जैवनियंत्रण अभिकर्ताओं और जैवपीड़कनाशियों के लिए उत्पादन प्रोटोकॉल और सूक्ष्मजीवी जैवपीड़कनाशियों का गुणवत्ता निर्धारण और गुणवत्ता प्रबंधन (21 दिन)

जैवपीड़कनाशियों का गुणवत्ता निर्धारण और गुणवत्ता प्रबंधन: पीड़कों के सफल जैविक नियंत्रण के लिए यह आवश्यक है कि प्रयोग में लाए गए जैवनियंत्रण अभिकर्ताओं और जैवपीड़कनाशियों की गुणवत्ता सही हो और इसका अनुप्रयोग ठीक समय पर किया जाता हो। विभिन्न राज्यों से आए 3 प्रतिभागियों ने प्रशिक्षण प्राप्त किया।

जैवनियंत्रण अभिकर्ताओं और जैवपीड़कनाशियों के लिए उत्पादन प्रोटोकॉल और सूक्ष्मजीवी जैवपीड़कनाशियों का गुणवत्ता निर्धारण और गुणवत्ता प्रबंधन: कुल 40 प्रतिभागियों ने इस 21 - दिवसीय प्रशिक्षण कार्यक्रम में भाग लिया।

जैविक नियंत्रण में विशेष कार्यक्रम: जैव नियंत्रण एजेंटों और जैवकीटनाशकों के लिए उत्पादन प्रोटोकॉल पर नियमित प्रशिक्षण कार्यक्रमों के अलावा 6 दिनों की अवधि हेतु एक कार्यक्रम कृषि विज्ञान विश्वविद्यालय रायचूर के 27 छात्रों के लिए bioagents और जैवकीटनाशकों के उत्पादन पर आयोजित किया गया था।

धान के लिए एस आर आई सहित बायो-इंटेंसिवआईपीएम: पर्यावरण और गैरलक्ष्य जीवों पर कीटनाशियों के निरन्तर उपयोग से जुड़े प्रतिकूल प्रभाव के कारण धान पारिस्थितिकी तंत्र के कीट प्रबंधन के लिए बायो-इंटेंसीव तरीकों की तत्काल आवश्यकता है। इस प्रशिक्षण कार्यक्रम के दौरान प्रतिभागियों ने एस आर आई तकनीकि का अभ्यास किया। प्रशिक्षण के दौरान जड़क्षेत्र अभियांत्रिकी, ब्राउन प्लांट हॉपर, चूहों आदि के नियत्रण में एस आर आई के महत्व को विस्तार से समझाया गया। प्रशिक्षुओं को जैवनियंत्रण कारकों के बड़े पैमाने पर उत्पादन हेतु अभ्यास कराया गया। एस आर आई पर दो छः दिवसीय प्रशिक्षण कार्यक्रम और एस आर आई सहित आईपीएम पर दो 15 दिवसीय प्रशिक्षण कार्यक्रमों का आयोजन किया गया, जिसमें विभिन्न राज्यों से कुल 12 प्रशिक्षुओं ने भाग लिया।

बहुभोजी कीटों जैसे हेलिकोवर्पा एवं स्पोडोप्टेरा के नियंत्रण सहित जैवकारकों के उत्पादन पर प्रशिक्षण: बहुभोजी कीट हमारी फसलों को आर्थिक रूप से भारी नुकसान पहुंचाते हैं। इस प्रशिक्षण के दौरान प्रतिभागियों को एइएसए आधारित पीएचएम और साथ-साथ बहुभोजी कीटों के प्रबंधन के लिए पारिस्थितिकी अभियांत्रिकी और नए प्रबंधन तरीकों सहित बड़े पैमाने पर जैवकारकों के उत्पादन का प्रशिक्षण दिया गया।

स) गन्ने के जड़ भेदक कीट के जैविक नियंत्रण के लिए कीटरोगजनक सूत्रकृमि (EPN)

एनआईपीचए द्वारा क्रॉपसैप प्रशिक्षण के दौरान प्रशिक्षुओं ने कीटरोगजनक सूत्रकृमि (ईपीएन) का बड़े पैमाने पर उत्पादन तथा इसके उपयोग के बारे में प्रशिक्षण लिया। ईपीएन उपयोग के लिए महाराष्ट्र के सांगली और कोल्हापुर जिलों में प्रदर्शन आयोजित किया गया और कम समय के भीतर ही जड़ भेदक कीटों की आबादी में काफी कमी पायी गई। सांगली जिले से 29 प्रगतिशील किसानों ने संस्थान द्वारा आयोजित तीन दिवसीय प्रशिक्षण कार्यक्रम में भाग लिया।

द) केंद्र, राज्य सरकार और अन्य संगठनों के साथ सहयोग

कृषि विभाग, महाराष्ट्र सरकार के साथ सहयोग: क्रॉपसैप परियोजना के तहत कृषि विभाग, महाराष्ट्र सरकार के अधिकारियों के लिए कृषि पारिस्थितिकी प्रणाली विश्लेषण और पारिस्थितिकी अभियांत्रिकी के सिद्धांतों पर सात चरणों में प्रशिक्षण कार्यक्रम आयोजित किया गया। इस प्रशिक्षण के दौरान प्रशिक्षुओं को विभिन्न पहलुओं जैसे कृषि पारिस्थितिकी तंत्र विश्लेषण, जड़क्षेत्र अभियांत्रिकी, पादप जैव-सुरक्षा के सिद्धांत, कीटनाशक उपयोग तकनीक, एकीकृत कशेरुक नाशीजीव प्रबंधन आदि पर प्रशिक्षण दिया गया। साथ ही साथ जैव-कारकों के बड़े पैमाने पर उत्पादन का अभ्यास भी कराया गया। वर्ष के दौरान महाराष्ट्र के 210 अधिकारियों ने प्रशिक्षण प्राप्त किया।

तम्बाकू बोर्ड, भारत सरकार के साथ सहयोग: तम्बाकू बोर्ड के अधिकारियों के लिए बायो-इंटेंसिव वनस्पति स्वास्थ्य प्रबंधन, कृषक खेत पाठशाला तकनीक और तम्बाकू के उत्पादन में बायोइंटेंसिव आईपीएम रणनीति का प्रदर्शन किया गया। संस्थान द्वारा तम्बाकू बोर्ड से तम्बाकू फसल के पारिस्थितिकी तंत्र के बायो - इंटेंसिव प्रबंधन को बढ़ावा देने के लिए एक समझौता किया गया। उपरोक्त जरूरतों को ध्यान में रखते हुए वर्ष के दौरान 7 दिनों की अवधि वाले दो प्रशिक्षण कार्यक्रमों का आयोजन किया गया। इन कार्यक्रमों के दौरान आंध्र प्रदेश और कर्नाटक के टोबैको बोर्ड से जुड़े 50 अधिकारियों को नाशीजीव प्रबंधन पर प्रशिक्षण दिया गया।

कृषि विज्ञान केन्द्रों के साथ सहयोग: कीट प्रबंधन के लिए पारिस्थितिक इंजीनियरिंग के साथ AESA आधारित PHM को बढ़ावा देने के क्रम में गैर सरकारी संगठनों के अधीन कार्यरत कृषि विज्ञान केन्द्रों के साथ सहयोग करने के लिए NIPHM पहल की है। इस योजना के तहत् विषय विशेषज्ञ में कौशल प्रदान करने के लिए AESA आधारित कीट प्रबंधन के लिए पारिस्थितिक इंजीनियरिंग के साथ संयोजन के रूप में जैव नियंत्रण एजेंटों और माइक्रोबियल जैवकीटनाशकों के उत्पादन पर क्षमता निर्माण कार्यक्रमों का आयोजन किया गया। वर्ष के दौरान गैर सरकारी संगठनों के अधीन कार्यरत 15 कृषि विज्ञान केन्द्रों ने NIPHM के साथ सहमति पत्र प्रवेश किया।

CNBRCD के साथ सहयोग: NIPHM प्राकृतिक जैविक संसाधन और सामुदायिक विकास केंद्र CNBRCD, बंगलौर, जो वैज्ञानिक तथा औद्योगिक अनुसंधान विभाग भारत सरकार द्वारा मान्यता प्राप्त एक गैर सरकारी संगठन है, के साथ समझौता ज्ञापन विशेष रूप से माइक्रोबियल biofertilizers और Mycorrhiza के संदर्भ में PHM को बढ़ावा देने में अनुसंधान विकास किया।

VIKASA अराकू वैली के साथ सहयोग: आंध्रपदेश क विशाखापत्तनम जिले में स्थित अराकू वैली, जनजातीय समुदायों के बीच प्रशिक्षण और अनुसंधान के माध्यम से पर्यावरण की दृष्टि से स्थायी पौध स्वास्थ्य प्रबंधन प्रथाओं को बढ़ावा देने के लिए NIPHM ने VIKASA के साथ समझौता ज्ञापन किया।

कशेरुकी पीड़क प्रबंधन प्रभाग

वर्तमान में कशेरुकी पीड़क (जिनके अंतर्गत कृंतक, पक्षी और वन्य-प्राणी आते हैं) फसल-उत्पादन के क्षेत्र में प्रमुख बाधकों के रूप में गिने जाते हैं। कृंतक पीड़कों की अंतर्जात जनन-क्षमता और व्यवहार-संबंधी लचीलेपन के कारण कृषि और सार्वजनिक स्वास्थ्य-क्षेत्रों में कृंतक पीड़कों के प्रबंधन की चुनौती उग्र रूप लेकर सामने आ रही है। कशेरुकी पीड़क प्रबंधन के क्षेत्र में रा.व.स्वा. प्र.सं. द्वारा कई गतिविधियां आयोजित की जा रही हैं, जो निम्न प्रकार हैं:



कृंतक पीड़क प्रबंधन पर पुनश्चर्या प्रशिक्षण

विस्तार कार्यकर्ताओं के लिए रा.व.स्वा.प्र.सं. में एक 7 दिवसीय पुनश्चर्या प्रशिक्षण कार्यक्रमों का आयोजन किया गया, जिसमें 30 विस्तार कार्यकर्ताओं ने भाग लिया।

परिसर के बाहर स्थानिक राज्यों में कार्यक्रम

आम तौर पर कृषि क्षेत्र में कृंतक कीट समस्याएं स्थानिक राज्यों में स्पष्ट हो रही हैं। इसकी प्रकृति को देखते हुए 7 दिनों की अवधि के पांच रिफ्रेशर प्रशिक्षण कार्यक्रम परिसर के बाहर साझेदारी केन्द्रों - पीएयू लुधियाना, पंजाब टीएनएयू-तमिलनाडु, एन ए यू नवसारी, गुजरात, SKUAST जम्मू, और AAU-जोरहट, असम के सहयोग से विस्तार कार्यकर्ताओं की भागीदारी बढ़ाने के लिए आयोजित किए गए। प्रत्येक कार्यक्रम में संबंधित राज्यों से कृषि और बागवानी के 20 क्षेत्र विस्तार कार्यकर्ताओं को प्रशिक्षित किया गया।

खाद्यान्न भंडारों में कृंतक कीट प्रबंधन

एक 6 दिवसीय प्रशिक्षण कार्यक्रम राज्य भंडारण निगमों के 4 भंडारण पेशेवरों के लिए NIPHM पर आयोजित किया गया, जिसमें कृंतक कीट प्रजातियों के निदान, संक्रमण माप, baiting चारा तैयार करने और तकनीक में कौशल के साथ प्रदान किया गया।

एकीकृत कशेरुकी पीड़क प्रबंधन प्रशिक्षण

संस्थान में कृषि विश्वविद्यालयों के वैज्ञानिकों शिक्षकों के लिए एकीकृत कशेरुकीय कीट प्रबंधन पर एक 21 दिवसीय कार्यक्रम का आयोजन किया गया। कृषि पारिस्थितिकी प्रणालियों जीव विज्ञान, पारिस्थितिकी और आचारविज्ञान और कृन्तकों कीटों के प्रबंधन में विभिन्न कशेरुकी जंगली सूअर, पक्षियों की समस्याओं के विभिन्न पहलुओं और उनके प्रबंधनों को पाठ्यक्रम में शामिल किया गया।

शहरी एकीकृत पीड़क प्रबंधन पर प्रमाणपत्र पाठ्यक्रम

शहरी एकीकृत कीट प्रबंधन पर 15 दिनों की अवधि के दो प्रमाण पत्र पाठ्यक्रम मानव बस्तियों, संस्थानों और संरचनात्मक कीट प्रबंधन पेशेवरों के लिए औद्योगिक परिसर में सफलतापूर्वक वाणिज्यिक शहरी कीट नियंत्रण सेवाएं शुरू करने के लिए तकनीकी जनशक्ति का निर्माण करने के उद्देश्य से आयोजित किए गए।

वनस्पति स्वास्थ्य अभियांत्रिकी प्रभाग

फसलों के उत्पाद में वृद्धि के लिए नाशीजीव प्रबंधन में पीड़कनाशी अनुप्रयोग एक महत्वपूर्ण भूमिका निभा रहा है। फसल की सुरक्षा के लिए पीड़कनाशियों का बेधड़क प्रयोग हो रहा है। इससे मानव-स्वास्थ्य और पर्यावरण पर प्रतिकूल प्रभाव पड़ रहा है। पीड़क प्रबंधन कार्यप्रणालियों की सफलता, पीड़कनाशियों के अनुप्रयोग की उचित तकनीक अपनाने और प्रयुक्त उपकरणों के सही प्रयोग में निहित है। रा.व.स्वा.प्र.सं., पीड़कनाशी अनुप्रयोग के सही चयन और तकनीकों के संबंध में हितधारकों को प्रशिक्षित करने के साथ ही पीड़कनाशियों के सुरक्षित व विवेकपूर्ण उपयोग की दिशा में क्षमता वर्धन भी करता है।

इस संबंध में यह बेहद ज़रुरी है कि खेत-सलाहकार, उत्पादक, स्प्रे ऑपरेटर, स्प्रे उपकरण निर्माता और पीड़कनाशीनिर्माता, इन मुद्दों की संपूर्ण जटिलता को समझें। देश के जनसमुदाय की मांगों को पूरा करने के क्रम में प्रशिक्षण और शिक्षा पर नए सिरे से जोर देने की तथा ऑपरेटरों के लिए व्यावसायिकता के एक नए स्तर को विकसित करने की आवश्यकता है।

क) पीड़कनाशियों का सुरक्षित और विवेकपूर्ण उपयोग

इस पाठ्यक्रम का उद्देश्य, एकीकृत पीड़क प्रबंधन में पीड़कनाशियों के सुरक्षित और विवेकपूर्ण उपयोग के बारे में, विस्तारकार्यकर्ताओं के ज्ञान और उनकी तकनीकी क्षमता को अद्यतित करना है। पीड़कनाशियों के सुरक्षित और विवेकपूर्ण उपयोग पर दो कार्यक्रम आयोजित किए गए जिनमें विभिन्न राज्यों से 31 अधिकारियों को प्रशिक्षण दिया गया।

निजी उद्योग के लिए कीटनाशकों के सुरक्षित और विवेकपूर्ण उपयोग पर विशेष कार्यक्रम: संस्थान में मेसर्स कोरोमंडल प्रा. लि. के 20 वरिष्ठ फील्ड ऑफिसरों के लिए एक 4 दिवसीय विशेष कार्यक्रम का आयोजन किया। कार्यक्रम में कीटनाशकों के सुरक्षित और विवेकपूर्ण उपयोग के लिए अंतर्राष्ट्रीय आचार-संहिता के महत्व, अंशांकन, नलिका और अनुप्रयोग तकनीक, सुरक्षा सावधानियों, कीटनाशकों के कारण विषाक्तता, विषाक्तता के लक्षण, प्राथमिक उपचार और आवश्यक antidotes भी समझाया गया।

कीटनाशक अनुप्रयोग प्रौद्योगिकी: आठ दिन की अवधि का एक प्रशिक्षण कार्यक्रम नलिका, रखरखाव, खरपतवार नियंत्रण तकनीकों और कृंतक नियंत्रण तकनीक के उपकरण, औजार का चयन, तकनीक का उचित चयन, मशीनों के सुरक्षित और विवेकपूर्ण उपयोग के ज्ञान पर बल देते हुए आयोजित किया गया। कार्यक्रम में 21 विस्तार कार्यकर्ताओं ने प्रशिक्षण प्राप्त किया।

उपयुक्त कीटनाशक अनुप्रयोग तकनीक और फार्म स्तर भंडारण आचरण: आठ दिन की अवधि का यह कार्यक्रम उचित तकनीक के इस्तेमाल, सही उपकरण का चयन, उसके रखरखाव, उपकरण का अंशांकन, कीटनाशकों के सुरक्षित और विवेकपूर्ण उपयोग के चयन पर कौशल और ज्ञान प्रदान करने के लिए डिजाइन किया गया था। वाणिज्यिक या खेत स्तर, पारंपरिक और बेहतर भंडारण संरचनाओं में खाद्यान्न के भंडारण की समस्याओं, खेत स्तर पर आधुनिक भंडारण संरचनाओं, नमी और खाद्यान्न की क्षति और खेत स्तर पर संग्रहित अनाज कीट के नियंत्रण की समस्याओं पर चर्चा की गई। वर्ष के दौरान दो कार्यक्रमों का आयोजन किया, जिनमें 40 अधिकारियों ने भाग लिया। वर्ष 2013-14 के दौरान डिवीजन में कुल 6 कार्यक्रमों का आयोजन किया और 112 प्रतिभागियों को प्रशिक्षित किया गया।

ख) अनुसंधान और विकास

NIPHM धान ड्रायर: संस्थान द्वारा विशेष रूप से बरसात के मौसम के दौरान खाद्यान्नों के खेत सूखने पर सक्षम करने के लिए 2 टनक्षमता का एक धान ड्रायर विकसित किया गया है। ड्रायर के प्रयोगात्मक परीक्षण में भी नम धान का उपयोग किया गया है और यह देखा गया कि नमी 12 घंटे में 28% से 14% तक कम हो गई उत्पाद इंजी. जी. शंकर संयुक्त निदेशक द्वारा विकसित किया गया था।

सौर हाइब्रिड ड्रायर: ड्रायर में सौर ऊर्जा के अनुप्रयोग से फसल कटाई के बाद फसल नुकसान को कम कर सकते हैं। dryers में सौर ऊर्जा के अनुप्रयोग के लिए सौर संकर ड्रायर तैयार किया गया था और गिरी, मिर्च और किशमिश के रूप में विभिन्न उत्पादों के लिए प्रायोगिक परीक्षण आयोजित किया गया। उत्पाद इंजी. जी. शंकर संयुक्त निदेशक, इंजी. एम उदय भानु, वैज्ञानिक अधिकारी और डॉ. के. सत्यगोपाल, आईएएस, महानिदेशक द्वारा विकसित किया गया।

पीड़कनाशी प्रबंधन प्रभाग

विभिन्न प्रकार के पीड़कों की वजह से फसलों को होने वाले नुकसान को कम करने में रासायनिक और जैव पीड़कनाशी एक महत्वपुर्ण भूमिका निभाते हैं। पीड़कनाशी प्रबंधन संबन्धित हितधारकों के लिए विभिन्न जगहों पर पीड़कनाशकों के वैज्ञानिक प्रबंधन के लिए उचित परामर्श प्रदान करने के लिए विशेष शाखा के रूप मे उभरा है। यह संस्थान कीटनाशक अधिनियम के अनुसार कीटनाशी सूत्रीकरण विश्लेषण में अनिवार्य प्रशिक्षण कार्यक्रम प्रदान करने के लिए नामित संस्थाओ में से एक है। केंद्र और राज्य पीड़कनाशी परीक्षण प्रयोगशालाओ के विश्लेषकों व हितधारकों की क्षमता निर्माण का कार्यादेश संस्थान को सौंपा गया है। वर्ष के दौरान प्रभाग द्वारा आयोजित कार्यक्रम इस प्रकार हैं:-

I. कीटनाशकों की गुणवत्ता नियंत्रण हेतु क्षमता निर्माण कार्यक्रम

कीटनाशक सूत्रीकरण विश्लेषण पाठ्यक्रम (पीएफए): पाठ्यक्रम का उद्देश्य पीड़कनाशक परीक्षण प्रयोगशालाओं में काम करने वाले विश्लेषकों की क्षमता का निर्माण करना है। प्रतिभागियों को पीड़कनाशक के सूत्रीकरण के विश्लेषण के लिए कानूनी तौर पर वैध भारतीय मानक ब्यूरो, पंजीकरण समिति और केन्द्रीय कीटनाशक बोर्ड द्वारा अनुमोदित विश्लेषणात्मक विधियों का प्रयोग करने में प्रशिक्षित किया गया है। पीएफए कार्यक्रम 66 दिनों की अवधि का है। इस वर्ष के दौरान ऐसे दो कार्यक्रम आयोजित किए गए, जिनमें कुल 50 प्रतिभागियों ने प्रशिक्षण लिया है।

पीड़कनाशक सूत्रीकरण के नए अणुओं के विश्लेषण पर पुनश्चर्या कार्यक्रम: इस पाठ्यक्रम का उद्देश्य पीड़कनाशक प्रयोगशालाओं के विश्लेषकों को नये कीटनाशक सूत्रीकरण का विश्लेषण करने में उनकी क्षमता का निर्माण करना और आधुनिक विश्लेषणात्मक उपकरणों का उपयोग कर अपने विश्लेषणात्मक कौशल, रखरखाव सहित विश्लेषण के तरीको को अध्ययन करना है। इस 10 दिवसीय पाठ्यक्रम में 9 प्रतिभागियों ने भाग लिया।

II. कीटनाशक अधिनियम 1968 कीटनाशक नियम 1971 के प्रवर्तन पर कार्यक्रम

1कीटनाशक प्रबंधन के सिद्धांत: इस 21 दिवसीय पाठ्यक्रम का उद्देश्य उन कृषि विश्वविद्यालयों और अन्य हितधारकों के संकाय की क्षमता का वर्धन करना था, जो पीड़कनाशी प्रबंधन में शामिल हैं। इसके अंतर्गत कीटनाशी अधिनियम 1968, नियम 1971 तथा अंतर्राष्ट्रीय आचार-संहिता के अनुसार पंजीकरण से लेकर निपटान तक के विभिन्न पहलू आते हैं। इस पाठ्यक्रम मे 2 प्रतिभागियों ने भाग लिया।

कीटनाशी अधिनियम, 1968 के अंतर्गत निरीक्षण, नमूना-चयन और अभियोजन कार्यविधियां: पाठ्यक्रम का उद्देश्य कीटनाशी अधिनियम 1968 की धारा 19 के अंतर्गत नियुक्त उन कीटनाशी निरीक्षकों की क्षमता का वर्धन करना था, जो कीटनाशी अधिनियम 1968 के अनुसार ग्रहण की गई निरीक्षण, सैंप्लिंग और अभियोजन कार्यविधियों तथा पीड़कनाशियों के नमूना-चयन हेतु आवश्यक बीआईएस विनिर्देशों का अनुपालन सुनिश्चित करते हैं। वर्ष के दौरान प्रत्येक 6 दिनों के दो कार्यक्रम, 57 प्रतिभागियों सहित आयोजित किए गए।

कीटनाशक डीलरों के लिए प्रशिक्षण कार्यक्रम: तीन दिवसीय कार्यक्रम विशेषकर वितरकों और व्यापारियों के लिए आयोजित किया गया था, जिसमें 5 कीटनाशक उद्योगो ने 42 सदस्यों को प्रायोजित किया। कार्यक्रम में कीटनाशक अधिनियम 1968 और नियम 1971 के विभिन्न पहलुओं के साथ प्रतिभागियों को परिचित कराया गया।

III. कीटनाशक अवशेषों विश्लेषण में क्षमता निर्माण

कीटनाशक अवशेष विश्लेषण (पीआरए): इस पाठ्यक्रम का उद्देश्य विभिन्न कीटनाशक अवशेष परीक्षण प्रयोगशालाओं में कार्यरत कीटनाशक अवशेष विश्लेषकों की क्षमता निर्माण करना है। प्रतिभागियों को नमूने, निकासी, विभिन्न विश्लेषणात्मक तरीकों, निष्कर्षों की सफाई और आकलन की तैयारी में प्रशिक्षित किया गया। इन 30 दिवसीय 3 कार्यक्रमों में 20 प्रतिभागियों ने भाग लिया।

पीआरए के लिए सब्जियां, फल और कृषि वस्तुओं के नमूना लेना: पाठ्यक्रम का उद्देश्य विशेष रूप से कृषि जिंसों के निर्यात के संदर्भ में अंतर्राष्ट्रीय मानदंडों के अनुसार कीटनाशक अवशेषों के विश्लेषण के लिए खेतों से कृषि जिंसों के नमूने में विश्लेषकों की क्षमता का निर्माण करना था। प्रतिभागियों को कृषि क्षेत्र का प्रतिनिधित्व करने के अनुसार कीटनाशक अवशेष विश्लेषण के लिए नमूने लेने की विभिन्न तकनीकों और तरीकों में प्रशिक्षित किया गया। वर्ष के दौरान 2 दिन की अवधि के दो कार्यक्रमों आयोजित किए गए।

IV. आईएसओ-17025:2005 पर आधारित प्रयोगशाला गुणवत्ता प्रबंधन और आंतरिक लेखापरीक्षा

इस 6 दिवसीय पाठ्यक्रम का उद्देश्य, आईएसओ 17025-2005 के मानदंडों के अनुसार प्रयोगशालाओं को संगठित और प्रबंधन करना और एन ए बी एल मान्यता प्राप्त करने के लिए खुद को तैयार करने के लिए PTLs में काम कर रहें विश्लेषकों की क्षमता का निर्माण करना है। यह कार्यक्रम कैंपस में तीन बार आयोजित किया गया, जिनमें 34 प्रतिभागी प्रशिक्षित किए गए। कैंपस से बाहर भी राज्य पीड़कनाशी परीक्षण प्रयोगशालाओं में कार्यक्रम आयोजित किया गया, जिनमें 18 प्रतिभागियों ने भाग लिया।



V. परामर्शी सेवाओं की पेशकश

आईएसओ-17025:2005 के अनुसार प्रयोगशाला प्रबंधन और आंतरिक लेखा परीक्षा पर एनएबीएल प्रत्यायन हासिल करने के लिए प्रशिक्षण: NIPHM विभिन्न कृषि विभाग और कृषि विश्वविद्यालयों की SPTLs को आईएसओ 17025-2005 के तहत एनएबीएल से मान्यता के लिए आंतरिक PTLs की लेखा परीक्षा और तैयारियों के लिए परामर्श प्रदान करता है। संस्थान ने कीटनाशक अवशेष प्रयोगशाला, महाराष्ट्र के लिए परामर्श की पेशकश की है और लैब मान्यता प्राप्त किया। संस्थान ने वर्ष के दौरान आईएसओ 17025-2005 के अनुसार प्रयोगशाला प्रबंधन और आंतरिक लेखा परीक्षा में एन ए बी एल मान्यता प्रदान करने और प्रशिक्षण हासिल करने के लिए राज्य कीटनाशक परीक्षण प्रयोगशालाओं के लिए परामर्श सेवाएं प्रदान की गई है।

प्रवीणता परीक्षण: वर्ष के दौरान कीटनाशक अवशेष विश्लेषण के लिए दक्षता परीक्षण हेतु 23 जल नमुनों और 21 टमाटर नमुनों में अवशेष विश्लेषण किया गया। परिणामों के मूल्यांकन के आधार पर सभी प्रयोगशालाओं को रिपोर्ट सूचित कर दिया गया है।

इंटर प्रयोगशाला तुलना परीक्षण: NIPHM मे गुणवत्ता नियंत्रण और अवशेष विश्लेषण के लिए कीटनाशकों के विश्लेषण के लिए इंटर प्रयोगशाला तुलना परीक्षण भी आयोजित किया गया।

VI. जैव-उत्पादों का विश्लेषण

NIPHM द्वारा सिंथेटिक कीटनाशकों के साथ मिलावट का पता लगाने के लिए जैव उत्पादों का विश्लेषण किया। वर्ष के दौरान विभिन्न राज्य कृषि विभागों व केंद्रीय कीटनाशक प्रयोगशाला, फरीदाबाद से 920 नमूने प्राप्त हुए थें, जिनमें से 670 नमूनों का विश्लेषण किया गया और अन्य 250 नमूने इस प्रक्रिया में हैं। चिंतित करने वाले परिणामों की सूचना संबंधित को दी गई।

VII. कीटनाशक अवशेषों की निगरानी पर राष्ट्रीय परियोजना (NPMPR)

यह कीटनाशक अवशेषों की निगरानी पर राष्ट्रीय परियोजना के तहत मान्यता प्राप्त केंद्रों में से एक है। वर्ष के दौरान विभिन्न वस्तुओं के 951 नमूने परियोजना के तहत विश्लेषण किया गया और रिपोर्ट परियोजना संयोजक को प्रस्तुत की गई।

पादप जैवसुरक्षा प्रभाग

भारत दुनिया के 12 बड़े जैव विविधता केंद्रो में से एक है और विदेशी आक्रामक कीटों के लिये अत्यधिक संवेदनशील है। कई प्रकार के कीटों के प्रवेश, उनके ठहरने या निवास-स्थान और प्रसार के दूरगामी परिणामों की वजह से विशेषत: भारत जैसे देश को डर बना रहता है, क्योंकि यहाँ विभिन्न प्रकार की कृषि जलवायु परिस्थितियां पाई जाती है और भारत देश मुख्यत: कृषि पर निर्भर है। देश में कृषि जैव सुरक्षा मजबूत करने व सभी हितधारकों की क्षमता विकसित करने के लिए संस्थान को कृषि मंत्रालय द्वारा नोडल केंद्र के रूप में नामित किया गया है। पादप जैवसुरक्षा प्रभाग द्वारा कई प्रकार के प्रशिक्षण कार्यक्रम आयोजित किये जाते हैं, जो इस पकार हैं -

क्षमता निर्माण कार्यक्रम

1. जैव सुरक्षा और विदेशी कीट आक्रमण प्रबंधन

- **जैव सुरक्षा और विदेशी कीट आक्रमण प्रबंधन कार्यक्रम:** तेजी से वैश्वीकरण, परिवहन, यात्रा और पर्यटन के क्षेत्र में प्रगति, व्यापार के उदारीकरण के साथ मिलकर देश में विदेशी और आक्रामक कीटों के प्रवेश को बढावा देता है। अत: इस 21 दिवसीय कार्यक्रम का आयोजन किया गया, जिसमें राज्य कृषि विभाग/विश्वविद्यालयों तथा पाद्प संरक्षण, संघरोध और संग्रह निदेशालय, फरीदाबाद के 9 प्रतिभागियों ने भाग लिया।
- **पादप संगरोध कीट:** जॉच और पहचान - इस विषय पर 6 दिवसीय कार्यक्रम का आयोजन किया गया, जिसमें विभिन्न राज्यों के 22 प्रतिभागियों ने भाग लिया। कार्यक्रम में प्रतिभगियों को संगरोध महत्व के कीटों की जानकारी के साथ निर्यात महत्व के कीटों की पहचान करने मे सक्षम बनाने पर जोर दिया गया।
- **कीट निगरानी:** कीट निगरानी कार्यक्रम आक्रामक कीटों के पूर्वानुमान मे सहायता करता है, जो इसके उन्मूलन के लिए बहुत आवश्यक है। स्टेकहोल्डरों में जागरूकता पैदा करने और विशेषज्ञता का निर्माण करने के लिए 8 दिवसीय 3 कीट निगरानी प्रशिक्षण कार्यक्रमों का आयोजन किया गया, जिसमें विभिन्न राज्यों से 102 प्रतिभागियों ने भाग लिया।



- **संग्रहित अनाज कीट-जांच और पहचान तथा पादप उपचार (मिथायल ब्रोमाइड और एल्यूमिनियम फास्फाइड):** भंडारित अनाज और संग्रहीत उत्पादों का बढ़ता व्यापार जैव सुरक्षा के लिए चिंता का कारण है। भारत में फोस्फिन और मेथाइल ब्रोमाइड द्वारा धूमन उपचार किया जाता है। निर्यात, आयात, विस्तार, उपचार, संगरोध विनियमन, अनुसंधान, भंडारण,

प्रशिक्षण और शिक्षण में शामिल विभिन्न कर्मियों को इसके लिए जागरूक होने की जरूरत है। इस उद्देश्य से 21 दिन की अवधि का प्रशिक्षण कार्यक्रम दो उप मॉड्यूल (1) संग्रहित अनाज कीट-जांच और पहचान (2) पादप उपचार में एक कार्यक्रम आयोजित किया गया, जिसमें 20 प्रतिभागियों ने हिस्सा लिया।

- **एफ सी आई एवं सी डब्ल्यू सी हेतु संग्रहित अनाज कीट प्रबंधन कार्यक्रम:** संग्रहित अनाज और उत्पादों के अंतराष्ट्रीय व्यापार में कीटों की मामूली उपस्थिति मात्र के गंभीर परिणाम साबित हो सकते हैं। इसी संदर्भ मे एक छह दिवसीय कार्यक्रम आयोजित किया गया, जिसमें भारतीय खाद्य निगम, केंद्रीय भंडारण निगम और राज्य भंडारण निगम के 41 प्रतिभागियो ने भाग लिया।
- **पी ई क़्यु निरीक्षण अधिकारियों के लिए अभिविन्यास कार्यक्रम:** आयातित पादप सामग्री से संगरोध कीटों के प्रवेश की संभावनाएं रहती हैं। इस विषय पर संस्थान में एक छह दिवसीय प्रशिक्षण कार्यक्रम आयोजित किया गया, जिसमें 12 प्रतिभागियों ने भाग लिया।

2. स्वच्छता और पादप स्वच्छता (एसपीएस) उपाय

I. सार्वजनिक क्षेत्र के लिए कार्यक्रम

- **पादप संगरोध राष्ट्रीय नियम और प्रक्रियाएं:** विदेशी कीटों के प्रकोपों से देश की कृषि अर्थव्यवस्था और जैव विविधता की रक्षा करने के लिए आईपीपीसी की प्रत्येक करार पार्टी को राष्ट्रीय पादप संरक्षण संगठन के निर्माण का प्रावधान है। पादप संगरोध अधिकारियों, पीएससी जारी करने वाले अधिकारियों और पी ई क़्यू निरीक्षण अधिकारियों को जैव सुरक्षा और सुरक्षित व्यापार को सुविधाजनक बनाने के लिये पादप संगरोध नियमों, प्रक्रियाओं और प्रलेखन पर उचित ज्ञान प्राप्त करने की आवश्यकता है। इन हितधारकों के ज्ञान को अद्यतन करने के लिए छह दिवसीय प्रशिक्षण कार्यक्रम का आयोजन किया गया, जिसमें 23 प्रतिभागियो ने भाग लिया।

- **कीट जोखिम विश्लेषण (पी आर ए):** कीट जोखिम विश्लेषण अंतराष्ट्रीय व्यापार के दौरान किसी भी देश से सम्बंधित विदेशी कीट से निपटने के लिए एक विज्ञान आधारित तकनीक है। इसकी सहायता से विदेशी कीट के प्रवेश, उसके ठहरने या निवास स्थान बनाने एवं प्रसार के जोखिम का पता लगाया जाता है। कीट जोखिम विश्लेषण कार्य करने मे सक्षम बनाने के लिये एक प्रशिक्षण कार्यक्रम का आयोजन किया गया, जिसमें 17 प्रतिभागियों ने हिस्सा लिया।

- **पादप स्वास्थ्य प्रमाणपत्र जारी करने वाले अधिकारियों हेतु अभिविन्यास कार्यक्रम:** निर्यात को बढ़ावा देने के लिए कृषि एवं सहकारिता विभाग ने पादप स्वास्थ्य प्रमाणीकरण के लिए 155 से अधिक सरकारी अधिकारियों को नामित किया गया है। इसी संदर्भ मे डी पी.पी.क़्यू.एस द्वारा देश में एक समान निर्यात तंत्र की स्थापना के लिए "निर्यात प्रमाणीकरण हेतु मानक संचालन प्रक्रम" का निर्माण किया था। इसी क्रम में एक छह दिवसीय कार्यक्रम का आयोजन किया गया, जिसमें 14 वैज्ञानिकों ने भाग लिया।

II. निजी क्षेत्र के लिए कार्यक्रम

- **आयात और निर्यात संबंधी पादप संगरोध प्रक्रियाए कार्यक्रम:** आयात और निर्यात हेतु पादप संगरोध प्रक्रियाओं के संबंध में हितधारकों में ज्ञान की कमी को एन.आई.पी.एच.एम द्वारा पहचाना गया और उनके जरूरतों को पूरा करने के उद्देश्य से पांच दिवसीय दो प्रशिक्षण कार्यक्रम का आयोजन किया गया। जिसमें कुल 14 प्रतिभागियों ने भाग लिया।

- **पादप स्वच्छता** उपचार: पादप उपचार अक्सर निर्यात के अंतिम बिंदु पर एक समाधान के रूप में कार्य करता है। पादप उपचार जैव सुरक्षा में और बाजार पहुँच पाने में सहायक होते हैं। विभिन्न प्रकार के पादप उपचार संबंधी उपाय भारत में अनुमोदित किये जा रहे हैं, लेकिन हर उपचार निश्चित प्रोटोकॉल या विशेष मानक के अनुपालन में लागू किया जा रहा है। हितधारकों को इस विषय में विशेषज्ञता हासिल करवाने के लिए पादप उपचार पर निम्नलिखित कार्यक्रम आयोजित किये गये –

- **धूमन (मिथाईल ब्रोमाईड और एल्यूमिनियम फोस्फाईड):** कीटनाशक नियम 1971 के तहत अधिसूचित संस्थानों में से एक होने के कारण एनआईपीएचएम वाणिज्यिक कीट नियंत्रण ऑपरेटरों के लिए मिथाइल ब्रोमाइड और फास्फिन के उपयोग हेतु प्रशिक्षण प्रदान करता है। इसी संदर्भ मे दो 15 दिवसीय प्रशिक्षण कार्यक्रमों का आयोजन किया था, जिनमें 27 कीट नियंत्रण ऑपरेटरों व 5 पीजीडीपीएचएम के विद्यार्थियों ने भाग लिया।

- **तीव्र गर्म वायु उपचार:** कृषि मूल की पैकेजिंग सामग्री दुनिया भर में लकड़ी कीट के आक्रमण के लिए सबसे खतरनाक मार्ग है। आईपीपीसी के सदस्य देशों द्वारा इस जोखिम को कम करने के लिए अन्तर्राष्ट्रिय मानक (आई एस पी एम-15) अपनाया गया है। आईएसपीएम-15 मे पैकेजिंग सामग्री के लिये तीव्र गर्म वायु उपचार को मान्यता दी गई। एनआईपीएचएम भारत में एकमात्र संस्थान है, जो तीव्र गर्म वायु उपचार पर विशेष प्रशिक्षण कार्यक्रम संचालित करता है। इस वर्ष तीन कार्यक्रम आयोजित किए गए, जिसमें 34 प्रतिभागियों को प्रशिक्षित किया गया।

- **सजावटी पौधों के निर्यात के लिए पादप स्वच्छता आवश्यकता:** पूर्वी गोदावरी में कडीयम मंडल के 11 गांवों में 3500 एकड़ में कडीयम नर्सरी फैली हुई है, जो अच्छा व्यवसाय कर रही है और देशभर में सजावटी पौधों की आपूर्ति कर रहे हैं। निर्यात की संभावना को देखते हुए भारतीय उद्योग परिसंघ (सीआईआई) व ग्रीन पहल, हैदराबाद ने नर्सरी मालिकों के लिए पादप आवश्यकताओं पर प्रशिक्षण प्रदान करने के लिए एनआईपीएचएम से संपर्क किया। तदनुसार "सजावटी पौधों के निर्यात के लिए फाइटोसेनेटरी आवश्यकता" पर एक प्रशिक्षण कार्यक्रम आयोजित किया गया। डॉ. के. सत्यगोपाल, आई ए एस, महानिदेशक, एनआईपीएचएम ने कार्यक्रम का उद्घाटन किया। श्री के. एस. वेंकटगिरी, उप कार्यकारी निदेशक, सीआईआई, हैदराबाद ने सजावटी पौधों के निर्यात पर कडीयम के नर्सरीवालों में जागरूकता पैदा करने में सीआईआई की भागीदारी के बारे में जानकारी दी।

अंतर्राष्ट्रीय सहभागिता

❖ यूनाइटेड स्टेट डिपार्टमेंट ऑफ़ एग्रीकल्चर (यूएसडीए) के साथ सहभागिता

यह संस्थान जैव सुरक्षा में मानव संसाधन और नीति विकास के लिए अंतर्राष्ट्रीय स्तर पर प्रशंसित केंद्र के रूप में उभरने के लिए और स्थायी पाद्प स्वास्थ्य प्रबंधन के लिए उत्कृष्टता का प्रयास कर रहा है। पादप स्वास्थ्य प्रबंधन और पाद्प जैव सुरक्षा के क्षेत्र में प्रशिक्षण, अनुसंधान और नीति के मुद्दों को मजबूत करने के लिए एनआईपीएचएम ने यूएसएड/यूएसडीए के साथ सहयोग शुरू किया है। सहभागिता का मुख्य उद्देश्य क्षेत्रीय और अन्तर्राष्ट्रिय स्तर पर पादप स्वास्थ्य प्रबंधन और पाद्प जैव सुरक्षा के मुद्दों से निपटने के लिए उन्नत तरीकों को क्षमता निर्माण कार्यक्रमों मे शामिल कर पादप स्वास्थ्य और जैव सुरक्षा को मजबूत करना है। वर्ष 2013-14 मे निम्नलिखित गतिविधियों की गई :

➢ एनआईपीएचएम अधिकारियों के लिए अमेरिका आधारित प्रशिक्षण कार्यक्रम:

- एनआईपीएचएम के दो अधिकारी डॉ. एन. सत्यनारायण, निदेशक (पाद्प जैव सुरक्षा) और इंजी. जी. शंकर, संयुक्त निदेशक (पीएचई) ने 17-28 जून, 2013 के दौरान सीपीएचएसटी, संयुक्त राज्य अमेरिका में पादप स्वास्थ्य प्रणाली विश्लेषण प्रशिक्षण कार्यक्रम में भाग लिया।
- संस्थान के डॉ. गिरीश और डॉ. सतीश ने अमेरिका में 10-28 मार्च 2014 के दौरान जोखिम विश्लेषण सलाह कार्यक्रम (रैंप) में भाग लिया। डॉ. गिरीश ने बुवाई के लिए टमाटर के बीजों के नीदरलैण्ड से आयात के लिए जोखिम विश्लेषण किया तथा डॉ. सतीश ने दक्षिण अफ्रीका से खपत उद्देश्य के लिए अंगूर फल के आयात के लिए जोखिम विश्लेषण किया।

➢ एनआईपीएचएम के वरिष्ठ अधिकारियों का अमेरिका दौरा:

डॉ के. सत्यगोपाल, IAS, महानिदेशक और डॉ. एन. सत्यनारायण, निदेशक (पाद्प जैव सुरक्षा) ने अमेरिका में संबंधित संस्थानों/विश्वविद्यालयों के प्रमुखों के साथ व्यवस्था कार्रवाई की। एक विस्तृत योजना विकसित करने के लिये 9-23 नवम्बर 2013 के दौरान संयुक्त राज्य अमेरिका का दौरा किया। इस यात्रा का मुख्य उद्देश्य सहयोगात्मक अनुसंधान के अवसरों का पता लगाने के लिए अमेरिका में विभिन्न स्थानों पर यूएसडीए पेशेवरों और विश्वविद्यालय के सह-ऑपरेटरों के साथ बातचीत कर क्षेत्रीय पादप स्वास्थ्य प्रणाली विश्लेषण पाठ्यक्रम विकसित करने, एनआईपीएचएम मे संयुक्त अंतराष्ट्रीय प्रशिक्षण कार्यक्रम आयोजित करने और दूरस्थ शिक्षा मॉडुल विकसित करना था।






❖ एनआईपीएचएम में आयोजित संयुक्त अंतर्राष्ट्रीय प्रशिक्षण कार्यक्रम:

- कीट जोखिम विश्लेषण कार्यक्रम
- एनआईपीएचएम-यूएसडीए सहयोग के तहत एक संयुक्त अंतर्राष्ट्रीय प्रशिक्षण कार्यक्रम 2 से 6 सितंबर, 2013 को आयोजित किया गया, जिसमें यूएसडीए से आये दो विशेषज्ञों डॉ स्टेफ़नी ब्लोएम और सुश्री नीली एलिसन ने भी प्रशिक्षण प्रदान किया। प्रशिक्षण कार्यक्रम में 13 अंतर्राष्ट्रीय प्रतिभागियों सहित कुल 27 प्रतिभागियों ने भाग लिया!

❖ डीएएफएफ, आस्ट्रेलिया के साथ सहभागिता:

- **स्वच्छता और पादप स्वच्छता (एसपीएस) पर दक्षिण एशिया के लिए जागरूकता कार्यशाला:**

  विश्व व्यापार संगठन-एसपीएस समझौता पादपों और पादप उत्पादों के अंतर्राष्ट्रीय व्यापार में महत्वपूर्ण समझौता है। डीएएएफ, ऑस्ट्रेलिया और एनआईपीएचएम के सहयोग से नई दिल्ली में 13 से 17 मई 2013 को भारत, नेपाल, भूटान, बांग्लादेश, पाकिस्तान, अफगानिस्तान, मालदीव और श्रीलंका के अधिकारियों के लिए एसपीएस जागरूकता पर कार्यशाला का आयोजन किया गया।

- **स्वच्छता और पादप स्वच्छता (एसपीएस) पर श्रीलंका अधिकारियों के लिए जागरूकता कार्यशाला:**

  एनआईपीएचएम के सहयोग से डीएएएफ, ऑस्ट्रेलिया ने कोलंबो, श्रीलंका में एसपीएस जागरूकता कार्यशाला का आयोजन किया गया। डॉ. के. सत्यगोपाल, IAS, महानिदेशक और डॉ. एन. सत्यनारायण, निदेशक ने एनआईपीएचएम का प्रतिनिधित्व किया। कार्यशाला मे कीट प्रबंधन और पादप उपचार एवं पादप स्वास्थ्य, पशु स्वास्थ्य और वैश्विक व्यापार वातावरण में खाद्य सुरक्षा, जैव सुरक्षा निरंतरता के साथ जोखिम प्रबंधन विकल्प, नमूने, सिस्टम दृष्टिकोण पर ध्यान केंद्रित किया।



❖ कीट जोखिम विश्लेषण के तरीकों के समानीकरण हेतु भारत, ब्राजिल और दक्षिण अफ्रिका कार्यक्रम:

भारत, ब्राजील और दक्षिण अफ्रीका के अपने स्वयं के आयात विनियामक मानदंड हैं और कीट जोखिम विश्लेषण (पीआरए) करने के लिए केंद्रीय रूप से लागू है। एनआईपीएचएम द्वारा 6 से 8 जून, 2013 के दौरान इब्सा कार्यशाला का आयोजन किया गया। कार्यशाला का आयोजन डॉ. के सत्यगोपाल, आई ए एस, महानिदेशक की अध्यक्षता में हुआ, जिसमें कुल 09 प्रतिभागियों ने भाग लिया।

❖ अफगानिस्तान के अधिकारियों के लिए प्रशिक्षण कार्यक्रम:

भारत और अफगानिस्तान सरकारों के बीच दोहरे सहमति पत्र पर पादप संगरोध एवं पादप उपायों और कीटनाशक पंजीकरण प्रक्रियाओं, बाजार में कीटनाशकों के निरीक्षण, कृषि, सिंचाई और पशुधन पर अफगानिस्तान मंत्रालय के अधिकारियों के लिए प्रशिक्षण कार्यक्रम आयोजित किए गए और 41 अधिकारियों को प्रशिक्षित किया गया।



- **पाद्प संगरोध और पादप सुरक्षा उपायों पर प्रशिक्षण कार्यक्रम**

  पादप संगरोध और पादप उपचार के क्षेत्रों में क्षमता निर्माण में अंतराष्ट्रीय संबंधों और नेतृत्व के लिए अपनी दृष्टि के साथ एनआईपीएचएम में 16 से 25 सितम्बर, 2013 के दौरान अफगानिस्तान के अधिकारियों के लिए एक प्रशिक्षण कार्यक्रम का आयोजन किया, जिसमें 20 अधिकारियों को पाद्प संगरोध के लिए मानकों के विभिन्न पहलुओं पर प्रशिक्षण दिया गया।

- **कीटनाशक पंजीकरण प्रक्रिया और कीटनाशकों के बाजार में निरीक्षण प्रशिक्षण कार्यक्रम**

  कृषि विभाग, अफगानिस्तान के 21 प्रतिभागियों के लिए एक विशेष कार्यक्रम के तहत कीटनाशक पंजीकरण, निरीक्षण प्रक्रियाओं (पंजीकरण सत्यापन) पर 10 दिवसीय कार्यक्रम का आयोजन किया गया। प्रतिभागियों को अन्तर्राष्ट्रिय निर्देशानुसार हमारे देश के कीटनाशक अधिनियम 1968 और नियम 1971, बाजारों और अभियोजन पक्ष में कानून, पंजीकरण (डेटा आवश्यकताओं), सैम्पलिंग आदि पहलुओं पर प्रशिक्षण प्रदान किया गया।

❖ अन्य अंतर्राष्ट्रीय भागीदारों/प्रशिक्षुओं का दौरा

लाइबेरिया, केन्या, और मलावी के तीस प्रतिभागियों ने 03.12.2013 को एनआईपीएचएम का दौरा किया। उन्हें पादप स्वास्थ्य प्रबंधन, पादप जैव सुरक्षा, कीटनाशक प्रबंधन, कृंतक कीट प्रबंधन और कीटनाशक के इस्तेमाल संबंधी तकनीकों को लोगों तक पहुंचाने की जानकारी दी गई। SAMETI द्वारा आयोजित "कपास में तकनीकी सहायता कार्यक्रम' के तहत युगांडा, नाइजीरिया, बेनिन, बुर्किना फासो, मलावी और चाड जैसे अफ्रीकी देशों से अठारह प्रतिभागियों ने एनआईपीएचएम में 12 से 14 अक्टूबर 2013 तक प्रशिक्षण लिया। इन्हें कृषि पारिस्थितिकी तंत्र विश्लेषण और पादप स्वास्थ्य प्रबंधन के लिए पारिस्थितिक इंजीनियरिंग, जैवकीटनाशकों और कीटनाशक इस्तेमाल संबंधी तकनीक आदि के लिए उत्पादन प्रोटोकॉल से अवगत कराया गया।

- **एम्ब्रोसिआ साइलोस्टेकिया खरपतवार उन्मूलन कार्यक्रम**

  कर्नाटक के तुमकुर जिले में एक अप्रिय खरपतवार होने की सूचना मिली जिसकी पहचान एम्ब्रोसिआ साइलोस्टेकिया डीसी, मैक्सिकन और उत्तरी अमेरिकी मूल के एक आक्रामक खरपतवार के रूप में हुई। इस खरपतवार का भारत में संगरोध महत्व है और पादप संगरोध आदेश, 2003 की सातवीं अनुसूची के तहत संगरोध खरपतवार के रूप में विनियमित है। जैव विविधता और पारिस्थितिकी तंत्र के लिए यह एक विदेशी आक्रमक खरपतवार है, जो भारत के लिए गंभीर चिंता का विषय है। डीएसी ने एनआईपीएचएम को एम्ब्रोसिआ साइलोस्टेकिया की रोकथाम और इसके उन्मूलन से संबंधित काम सौंपा है, जिसके उन्मूलन से संबंधित कार्य प्रगति पर है।




पादप संरक्षण, संगरोध और संग्रह निदेशालय, फरीदाबाद के अधिकारियों के लिए विशेष प्रशिक्षण कार्यक्रम

एनआईपीएचएम को निदेशालय के अधिकारियों के प्रशिक्षण के लिए एक राष्ट्रीय अकादमी के रूप में कार्य करने के लिए नामित किया गया है। वर्ष के दौरान निम्नलिखित विशेष कार्यक्रमों का आयोजन किया गया –

- **नवनियुक्त भर्ती अधिकारियों के लिए इंडक्शन प्रशिक्षण कार्यक्रम**

  डीपीपीक्यु एंड एस के 21 नए भर्ती अधिकारियों के लिए इंडक्शन प्रशिक्षण कार्यक्रम का चौथा बैच 3 जून से 31 अगस्त, 2013 तक आयोजित किया गया। प्रशिक्षण के दौरान पादप जैव सुरक्षा, पादप स्वास्थ्य प्रबंधन, टिड्डी प्रबंधन, कीटनाशक प्रबंधन, वित्तीय और प्रशासनिक प्रबंधन के विभिन्न पहलुओं पर बल दिया गया।

- **पादप जैव सुरक्षा पर स्थानांन्तरित अधिकारियों के लिए प्रेरण प्रशिक्षण कार्यक्रम**

  यह कोर्स पाद्प संगरोध डिवीजन में स्थानांतरित, डीपीपीक्यु एंड एस के सेवारत अधिकारियों की क्षमता का निर्माण और कौशल बढ़ाने के लिए विकसित किया गया है। इस कार्यक्रम का मुख्य उद्देश्य संबद्ध क्षेत्रों से संबंधित बुनियादी अवधारणाओं पर अधिकारियों को उन्मुख करने के लिए था। कुल 17 अधिकारियों को प्रशिक्षण दिया गया।

- **वनस्पति स्वास्थ्य प्रबंधन पर प्रेरण प्रशिक्षण कार्यक्रम**

  वनस्पति स्वास्थ्य प्रबंधन विषय पर एक पुनश्चर्या प्रशिक्षण पाठ्यक्रम का आयोजन किया गया। कार्यक्रम में निदेशालय के 18 व एनआईपीएचएम के 03 अधिकारियों ने भाग लिया।

नाशीजीव







नीति समर्थन

भारत सरकार को पादप जैव सुरक्षा पर नीति निर्माण में समर्थन देना एनआईपीएएम के कार्यों मे से एक है। वर्ष के दौरान निम्नलिखित गतिविधियां की गई -

- **पादप संगरोध आदेश की समीक्षा:**
  वर्तमान में भारत मे पादप और पादप सामग्री के आयात के लिए पाद्प संगरोध आदेश, 2003 लागू है। इस संदर्भ में एनआईपीएचएम को डीएसी द्वारा पादप संगरोध आदेश की समीक्षा करने हेतु चुना गया। रिपोर्ट के अनुसार 46 सामग्रियों की समीक्षा की जा चुकी है।

- **एकीकृत नाशीजीव प्रबंधन (आईपीएम) पद्धति में संशोधन:**
  पौध संरक्षण संगरोध एवं भंडारण निदेशालय द्वारा वर्ष 2001 में विकसित एकीकृत कीट प्रबंधन (आईपीएम) पद्धति में संशोधन का कार्यभार एनआईपीएचएम को सौंपा गया है। संस्थान द्वारा कुल 73 फसलों की आईपीएम पद्धति, कृषि पारिस्थितिकी तंत्र विश्लेषण (एसएइए) और पर्यावरण अभियांत्रिकी, कीट प्रबंधन अवधारणाओं के समावेशन के साथ-साथ आईपीएम प्रथाओं पर नवीनतम जानकारी के साथ संशोधित किया जा रहा है। वर्ष के दौरान कुकुर्बिट्स टमाटर, भिंडी, क्रुसिफेरोस सब्जियों, ड्रमस्टिक, करी पत्ता, बैंगन और मिर्च फसलों की आईपीएम पुस्तिकाएं प्रकाशित करने का कार्य पूरा किया गया। इसके अलावा एन सी आई पी एम द्वारा विकसित छह फसलों यथा चावल, मक्का, मूंगफली, सोयाबीन, कपास और चना के पेकेजों में भी एनआईपीएचएम द्वारा कीट प्रबंधन के लिए पारिस्थितिक अभियांत्रिकी के साथ संयोजन के रूप में कृषि पारिस्थितिकी तंत्र विश्लेषण (एइएसए) आधारित आईपीएम पर विस्तृत दिशानिर्देश, एकीकृत कृंतक कीट प्रबंधन (आई आर पी एम) प्रणाली, उपयुक्त कीटनाशक इस्तेमाल हेतु तकनीक आदि घटकों को ध्यान में रखकर संशोधन किया गया।

- **कीटनाशक लेबल और पत्रक:**
  कीटनाशक कंटेनरों पर लेबल और पत्रक प्रभावी ढंग से लगाने के क्रम में, NIPHM को मौजूदा नियमों और दिशानिर्देशों की समीक्षा करने की जिम्मेदारी सौंपी गई थी। डॉ. के. सत्यगोपाल, महानिदेशक, NIPHM की अध्यक्षता में एक समिति ने हितधारकों, कीटनाशक उद्योग संघ के विशेष प्रतिनिधियों के साथ परामर्श कर मुद्दों की जांच कीं। विस्तृत विचार विमर्श के बाद NIPHM ने कीटनाशकों का लेबल और पत्रक को शासित करने वाली मौजूदा नीति को संशोधित करने के लिए DAC को विस्तृत प्रस्ताव प्रस्तुत किया है। NIPHM द्वारा दिए गए सुझावों को ध्यान में लेते हुए DAC ने दिनांक 3.5.2014 को मौजूदा नियमों में संशोधन के लिए मसौदा अधिसूचना सं जीएसआर 151 (ई) प्रकाशित की है।

- **नीतिगत सुझाव:**
  वर्ष 2013-14 के दौरान कई नीतिगत सुझाव डीएसी को भेजे गये जैसे - (i) पी आर ए विश्लेषण के लिये रेगुलेट्री एजेंसियों से गठबंधन (ii) पादप प्रमाणन प्रणाली को भारत में मजबूत बनाना (iii) कीट निदान के लिये प्रयोगशाला का निर्माण इत्यादि।

प्रशासन

महापरिषद् और कार्यकारी परिषद् की बैठकें

वर्ष 2013-14 के दौरान महापरिषद् की दो बैठकें अर्थात् छठीं और सातवीं बैठक क्रमश: दिनांक 25-10-2013 और 28-01-2014 को आयोजित की गईं। दोनों बैठकें, श्री आशीष बहुगुना भा.प्र.से., सचिव, भारत सरकार, कृषि एवं सहकारिता विभाग की अध्यक्षता में आयोजित की गईं। वर्ष के दौरान कार्यकारी परिषद् की बैठकें भी दो बार अर्थात् तेरहवीं और चौदहवीं बैठक क्रमश: दिनांक 21-10-2013 और 28-01-2014 को आयोजित की गईं। दोनों बैठकें श्री अविनाश कुमार श्रीवास्तव, भा.प्र.से., अपर सचिव (पीपी), भारत सरकार, कृषि एवं सहकारिता विभाग की अध्यक्षता में आयोजित की गई।

रा.व.स्वा.प्र.सं के महापरिषद की संरचना: संस्थान के अनुमोदित उपनियमों के अनुसार, महापरिषद् के निम्नलिखित सदस्य हैं:

1.	अध्यक्ष	सचिव, कृषि एवं सहकारिता विभाग, कृषि मंत्रालय, भारत सरकार
2.	दो उपाध्यक्ष	i) अतिरिक्त सचिव, कृषि एवं सहकारिता विभाग, कृषि मंत्रालय ii) अतिरिक्त सचिव एवं वित्त सलाहकार, कृषि एवं सहकारिता विभाग, कृषि मंत्रालय
3.	भारत में वनस्पति संरक्षण और संबद्ध क्षेत्रों में कार्यरत ग़ैर-सरकारी संस्थानों के दो सदस्य	i) श्री कपिल शाह, ii) रिक्त
4.	पांच प्रख्यात सदस्य, जिन्होंने वनस्पति संरक्षण और संबद्ध क्षेत्रों में उल्लेखनीय योगदान दिया है।	i) डॉ. जी.के. वीरेश, सेवानिवृत्त कुलपति, यूएएस, बेंगलूरु, ii) डॉ. अनुपम वर्मा, सेवानिवृत्त डीन, आईएआरआई, नई दिल्ली, iii) डॉ. वी. रघुनाथन, सेवानिवृत्त वनस्पति संरक्षण सलाहकार, भारत सरकार, iv) डॉ. एम.एस.चारी, सेवानिवृत्त निदेशक, सीटीआरआई v) रिक्त

5.	पदेन सदस्य	कृषि आयुक्त, कृषि एवं सहकारिता विभाग, कृषि मंत्रालय, भारत सरकार
6.	पदेन सदस्य	संयुक्त सचिव (वनस्पति संरक्षण), कृषि एवं सहकारिता विभाग, कृषि मंत्रालय, भारत सरकार
7.	पदेन सदस्य	वनस्पति संरक्षण सलाहकार, भारत सरकार, व.सं.सं व भंडारण निदेशालय
8.	पदेन सदस्य	सहायक महानिदेशक (व.सं.), आईसीएआर, नई दिल्ली
9.	पदेन सदस्य	सचिव (योजना आयोग) अथवा नामित पदाधिकारी, जो संयुक्त सचिव, भारत सरकार के पद से नीचे का न हो
10.	पदेन सदस्य	i) सचिव (कृषि), मध्य प्रदेश सरकार, ii) सचिव (कृषि), राजस्थान सरकार iii) सचिव (कृषि), तमिलनाडु सरकार, iv) सचिव (कृषि), उत्तराखंड सरकार v) सचिव (कृषि), पश्चिम बंगाल सरकार
11.	पदेन सदस्य	i) आयुक्त / निदेशक (कृषि), आंध्र प्रदेश सरकार, ii) आयुक्त / निदेशक (कृषि), बिहार सरकार iii) आयुक्त / निदेशक (कृषि), पंजाब सरकार, iv) आयुक्त / निदेशक (कृषि), महाराष्ट्र सरकार
12.	पदेन सदस्य एवं सदस्य सचिव	महानिदेशक, रा.व.स्वा.प्र.सं.,
13.	पदेन सदस्य	सामान्य विश्वविद्यालयों से एक कुलपति या आईआईटी/आईआईएम संस्थानों के प्रमुख अथवा उनके द्वारा नामित कोई पदाधिकारी, जो निदेशक के पद से नीचे का न हो

बैठक में उपस्थित महापरिषद् के सात सदस्य कोरम का गठन करेंगे।

रा.व.स्वा.प्र.सं. की कार्यकारी परिषद् की संरचना : रा.व.स्वा.प्र.सं. की कार्यकारी परिषद् के निम्नलिखित सदस्य हैं:

1.	अतिरिक्त सचिव, भारत सरकार, कृषि एवं सहकारिता विभाग, कृषि मंत्रालय, भारत सरकार में प्रभारी (वनस्पति संरक्षण), रा.व.स्वा.प्र.सं. की महापरिषद् के उपाध्यक्ष	अध्यक्ष
2.	संयुक्त सचिव (वनस्पति संरक्षण), भारत सरकार	उपाध्यक्ष
3.	महानिदेशक, रा.व.स्वा.प्र.सं.	सदस्य सचिव
4. 5.	निदेशक, वनस्पति संरक्षण प्रभारी कृषि एवं सहकारिता विभाग, कृषि मंत्रालय, भारत सरकार NIPHM कार्य से संबद्ध, निदेशक (वित्त), कृषि एवं सहकारिता विभाग, भारत सरकार	सदस्य (2)
6.	दो प्रख्यात व्यक्ति, जिन्होंने वनस्पति संरक्षण/संबद्ध क्षेत्रों में उल्लेखनीय योगदान दिया हो; भारत सरकार द्वारा संस्थान की महापरिषद् के सदस्यों में से नामित किया जाना है।	1. डॉ. वी. रघुनाथन, सेवानिवृत्त पीपीए और एफएओ परामर्शदाता 2. रिक्त
7.	वनस्पति संरक्षण सलाहकार, भारत सरकार, व.सं.सं व भंडारण निदेशालय	सदस्य
8.	सहायक महानिदेशक (वनस्पति संरक्षण), आईसीएआर	सदस्य

कार्यकारी परिषद् की बैठक में उपस्थित चार सदस्य कोरम का गठन करेंगे।

नाशीजीव

शैक्षणिक परिषद् की बैठकें

NIPHM की शैक्षणिक समिति में 19 सदस्य शामिल हैं और बैठक में उपस्थित शैक्षणिक समिति के 5 सदस्य कोरम का गठन करते हैं। वर्ष के दौरान रा.व.स्वा.प्र.सं. की आठवीं बैठक दिनांक 25.10.2013 को डॉ.के.सत्यगोपाल, भा.प्र.से., महानिदेशक, रा.व.स्वा.प्र.सं. की अध्यक्षता में आयोजित की गई। बैठक के दौरान शैक्षणिक समिति ने 2013-14 के दौरान अनुसंधान कार्यक्रम अनुकूलित करने और कृषि विभाग केरल के सेवारत कर्मियों के लिए PGDPHM की पेशकश के साथ PGDPHM कोर्स, डिप्लोमा कार्यक्रम और सर्टिफिकेट पाठ्यक्रमों की पेशकश करने का संकल्प लिया गया है।

महत्वपूर्ण गणमान्य व्यक्तियों का दौरा

वर्ष के दौरान राष्ट्रीय व अंतर्राष्ट्रीय संस्थानों के गणमान्य व्यक्तियों तथा सरकार के वरिष्ठ अधिकारियों ने संस्थान का दौरा किया है।

- डॉ इयान नुमैंन, डीएएफएफ, ऑस्ट्रेलिया एवं डॉ. जमीर हुसैन, डीएएफएफ ने 20.05.3102 को दौरा किया।
- एफएओ के प्रतिनिधि डॉ. पीटर केनमोरे ने दिनांक 15-05-2013 को एनआईपीएचएम के प्रयोगशालाओं तथा अन्य क्षमता निर्माण सुविधाओं का दौरा किया।
- यूएसडीए अधिकारियों डॉ स्टेफ़नी ब्लोएम और डॉ. एलिसन नीली ने 02-06 सितंबर, 2013 के दौरान संस्थान के जैविक नियंत्रण केंद्र का दौरा किया।
- डॉ. के. गोपाल, आईएएस, अध्यक्ष तंबाकू बोर्ड 25 मई, 2013 को NIPHM का दौरा किया।
- श्रीमती रानी कुमुदिनी, आईएएस, संयुक्त सचिव (व्यापार) कृषि एवं सहकारिता विभाग, भारत सरकार ने 03 जून, 2013 को NIPHM का दौरा किया।

राजभाषा-संबंधी महत्वपूर्ण गतिविधियां

संस्थान में हिंदी के प्रगामी प्रयोग-प्रसार की स्थिति की समीक्षा के लिए नियमित रूप से त्रैमासिक बैठकें आयोजित की गईं। वर्ष 2013-14 के दौरान, राजभाषा कार्यान्वयन समिति की चार बैठकें डॉ.के.सत्यगोपाल, भा.प्र.से., महानिदेशक, रा.व.स्वा.प्र.सं. की अध्यक्षता में आयोजित की गईं, ताकि संस्थान में राजभाषा हिंदी का प्रभावी कार्यान्वयन हो सके। एक दिवसीय हिन्दी कार्यशाला "कंप्यूटर पर हिंदी का काम" विषय पर दिनांक 29.10.2013 को आयोजित की गई। धारा 3 (3) के अनूदित दस्तावेज़ भविष्य में संदर्भ और सरकारी रिकॉर्ड के उद्देश्य के लिए एक बॉक्स फ़ाइल में रखा जा रहा है। वर्ष के दौरान गृह मंत्रालय द्वारा अनुमोदित 22 हिंदी किताबें तथा 20 हिंदी-अंग्रेजी प्रशासनिक शब्दावलियां वैज्ञानिक तथा तकनीकी शब्दावली आयोग नई दिल्ली से खरीद कर संस्थान के पुस्तकालय में रखा गया। वर्ष के दौरान हिंदी दिवस समारोह व हिंदी प्रतियोगिताओ का आयोजन किया गया।

सतर्कता जागरूकता सप्ताह

एनआईपीएच द्वारा दिनांक 28.10.2013 से 02.11.2013 तक सतर्कता जागरूकता सप्ताह मनाया गया। उक्त सप्ताह के दौरान महानिदेशक, एनआईपीएचएम ने सभी पदाधिकारियों एवं अधिकारियों को शपथ दिलायी तथा नारा-लेखन, निबंध लेखन एवं तर्क-वितर्क जैसी प्रतियोगिताओं का आयोजन किया गया। 'सुशासन को बढ़ावा देने-सतर्कता का सकारात्मक योगदान' विषय पर व्याख्यान आयोजित किया गया था।

भर्ती नीति: भारत सरकार द्वारा कमजोर वर्गों के लिए बनाई गई आरक्षण नीति का इस संस्थान में कार्यान्वयन किया जा रहा है एवं इससे संबंधित रिपोर्ट कृषि मंत्रालय, डीएसी को भेजी जाती है। समाज के कमजोर वर्ग के छात्रों को लाभ देने के उद्देश्य से शैक्षिक कार्यक्रमों में छात्रवृति प्रदान की जाती है।

राष्ट्रीय पर्व: डॉ. के. सत्यगोपाल, आईएएस, महानिदेशक की अध्यक्षता में 15 अगस्त, 2013 को स्वतंत्रता दिवस एवं 26 जनवरी, 2014 को गणतंत्र दिवस एनआईपीएच परिसर में मनाया गया।

एनआईपीएचएम का प्रदर्शनी में हिस्सा: संस्थान ने एनआईआरडी, हैदराबाद द्वारा 8 नवंबर से 13 नवबंर, 2013 तक आयोजित ग्रामीण प्रौद्योगिकी मेला में भाग लिया एवं संस्थान को अपनी प्रदर्शनी के लिए बेस्ट स्टाल पुरस्कार भी मिला। इसके अलावा कपास अनुसंधान संस्थान, नागपुर एवं अन्य संस्थानों द्वारा आयोजित प्रदर्शनियों में भी भाग लिया।

मुख्य गतिविधियां: एक नजर में / Core Activities at a Glance

पीड़कनाशी प्रबंधन प्रभाग / Pesticide Management Division

क.सं./ Sl.No.	प्रशिक्षण कार्यक्रम का नाम Name of the Training Programme	अवधि Duration	पाठ्यक्रम निदेशक / Name of the Course Director	प्रतिभागी सं /No. of Participants
1	पीड़कनाशी अवशेष विश्लेषण / Pesticide Residue Analysis	01.04.13 - 30.04.13	डॉ. ए.यू. एकबोटे Dr. Abhay Ekbote	5
		02.07.13 - 31.07.13		5
		18.11.13 - 17.12.13		4
2	पीड़कनाशी प्रबंधन के सिद्धांत / Principles of Pesticide Management	18.06.13 - 08.07.13	श्री सी.वी. राव Sh. C.V. Rao	2
3	पीड़कनाशी सूत्रीकरण विश्लेषण / Pesticide Formulation Analysis	18.06.13 - 22.08.13	डॉ. ए.यू. एकबोटे Dr. Abhay Ekbote	27
		26.08.13 - 31.10.13		23
		17.02.14 - 22.04.14		24
4	आईएसओ-17025:2005 के आधार पर प्रयोगशाला गुणवत्ता प्रणाली प्रबंधन और आंतरिक लेखापरीक्षा / Laboratory Quality System Management & Internal Audit as per ISO-17025:2005	12.08.13 - 16.08.13	डॉ. ए.यू. एकबोटे Dr. Abhay Ekbote	4
		01.10.13 - 07.10.13		23
		26.10.13 - 31.10.13		15
		18.12.13 - 23.12.13		11
		14.03.14 - 19.03.14		4
5	सुरक्षा के संदर्भ में पीड़कनाशी प्रबंधन और पीड़कनाशी जीवनचक्र प्रबंधन पर अंतर्राष्ट्रीय आचार संहिता / International Code of Conduct on Pesticide Management and Pesticide Lifecycle Management with reference to safety	26.08.13 - 02.09.13	श्री सी.वी. राव Sh. C.V. Rao	1
6	कांच के सामान और प्रयोगशाला उपकरण पीड़कनाशी सूत्रीकरण विश्लेषण एवं गुणवत्ता नियंत्रण संबंधी जांच / Calibration of Glassware and Laboratory Equipment Pesticide Formulation Analysis & Quality Control	10.09.13 - 17.09.13	श्री सी.वी. राव Sh. C.V. Rao	8
7	कीटनाशी अधिनियम-1968 के अंतर्गत निरीक्षण, नमूना चयन और अभियोजन कार्यप्रणाली / Inspection, Sampling & Prosecution Procedure under Insecticide Act-1968	23.09.13 - 28.09.13	श्री सी.वी. राव Sh. C.V. Rao	22
		21.10.13 - 26.10.13		11
		10.02.14 - 15.02.14		24
8	पीड़कनाशी अवशेष विश्लेषण में प्रक्रिया-मान्यकरण और अनिश्चितता का मापन / Method validation in Pesticide Residue Analysis and Measurement of Uncertainty	06.11.13 - 11.11.13	डॉ. निर्माली शैकिया Dr. Nirmali Saikia	8
9	पीड़कनाशी अवशेष विश्लेषण के लिए फलों, सब्जियों और अन्य सामग्रियों का नमूना चयन (प्रदत्त) / Sampling of Fruits, Vegetables and Other Items for Pesticide residue Analysis (Paid)	19.12.13 - 20.12.13	डॉ. निर्माली शैकिया Dr. Nirmali Saikia	3
10	पीड़कनाशी अवशेष विश्लेषण के लिए फलों, सब्जियों और अन्य सामग्रियों का नमूना चयन / Sampling of Fruits, Vegetables and Other Items for Pesticide residue Analysis	10.02.14 - 11.02.14	डॉ. निर्माली शैकिया Dr. Nirmali Saikia	3
11	नए अणुओं का विश्लेषणण / Analysis of New Molecules	02.01.14 - 11.01.14	श्री सी.वी. राव Sh. C.V. Rao	9
12	पीड़कनाशी डीलर (भुगतान) / Pesticide Dealers (Payment)	19.03.14 - 21.03.14	डॉ. ए.यू. एकबोटे Dr. Abhay Ekbote	42
कुल/Total				278

पादप जैवसुरक्षा प्रभाग / Plant Biosecurity Division

क.सं./ Sl.No.	प्रशिक्षण कार्यक्रम का नाम Name of the Training Programme	अवधि Duration	पाठ्यक्रम निदेशक / Name of the Course Director	प्रतिभागी सं /No. of Participants
1	फोर्सड् हॉट एयर उपचार / Forced Hot Air Treatment (FHAT)	01.04.13 - 05.04.13	डॉ. एन.वी. कुलकर्णी Dr. N.V. Kulkarni	19
		19.08.13 - 23.08.13		07
		10.02.14 - 14.02.14		14
2	पश्च प्रविष्टि संगरोध निरीक्षण प्राधिकारियों हेतु अभिविन्यास / Orientation for PEQ inspection authorities	22.07.13 - 27.07.13	डॉ. एन. सत्यनारायण Dr. N. Sathyanarayana	12
3	पीड़क निगरानी /Pest Surveillance	12.08.13 - 19.08.13	डॉ. एन.वी. कुलकर्णी Dr. N.V. Kulkarni	25
		03.10.13 - 10.10.13		48
		03.01.14 - 10.01.14		29
4	पादप स्वच्छता प्रमाणपत्र जारी करनेवाले प्राधिकारियों के लिए अभिविन्यास प्रशिक्षण / Orientation for PSC issuing authorities	26.08.13 - 31.08.13	डॉ. ए.जी. गिरीश Dr. A.G. Girish	14
5	पीड़क जोखिम विश्लेषण / Pest Risk Analysis (International)	02.09.13 - 06.09.13	डॉ. एन. सत्यनारायण Dr. N. Sathyanarayana	27
6	पीड़क जोखिम विश्लेषण / Pest Risk Analysis	17.02.14 - 22.02.14	डॉ. एन. सत्यनारायण Dr. N. Sathyanarayana	17
7	वनस्पति संगरोध राष्ट्रीय नियम और प्रक्रियाएं / Plant Quarantine National Regulations & Procedures	11.09.13 - 16.09.13	डॉ. एन. सत्यनारायण Dr. N. Sathyanarayana	06
		04.12.13 - 09.12.13		17
8	वनस्पति संगरोध एवं पादप स्वच्छता उपाय संबंधी (अफगानिस्तान के अधिकारियों हेतु) / Plant Quarantine and Phytosanitary measures. (for Afghanistan Officials)	16.09.13 - 25.09.13	डॉ. एन. सत्यनारायण Dr. N. Sathyanarayana	20
9	संगरोध कीट - जांच और पहचान / Quarantine Insects – Detection and Identification	25.09.13 - 01.10.13	डॉ. एन.वी. कुलकर्णी Dr. N.V. Kulkarni	22
10	एफसीआई और सीडब्ल्यूसी के लिए संग्रहित अनाज पीड़क प्रबंधन / Stored Grain Pest Management (FCI &CWC)	25.10.13 - 30.10.13	डॉ. एन.वी. कुलकर्णी Dr. N.V. Kulkarni	41
11	संग्रहित अनाज पीड़क-जांच और पहचान / Stored Grain Pests – Detection & Identification	11.11.13 - 15.11.13	डॉ. एन.वी. कुलकर्णी Dr. N.V. Kulkarni	07
12	संग्रहित अनाज पीड़क-जांच और पहचान और पादपस्वच्छता उपचार/ Stored Grain Pests Detection & Identification &Phytosanitary Treatments (MBr& ALP)	11.11.13 - 02.12.13	डॉ. ए.जी. गिरीश Dr. A.G. Girish	07
13	पादपस्वच्छता उपचार (MBr/ Alp) / Phytosanitary Treatments – Methyl Bromide & Phosphine Fumigation	18.11.13 - 02.12.13	डॉ. ए.जी. गिरीश Dr. A.G. Girish	13
		09.01.14 - 23.01.14		14
14	वनस्पति जैवसुरक्षा और आक्रमण प्रबंधन / Biosecurity and Incursion Management	10.12.13 - 30.12.13	डॉ. एन. सत्यनारायण Dr. N. Sathyanarayana	09
15	आयात और निर्यात के लिए वनस्पति संगरोध प्रक्रियाएं / Plant Quarantine Procedures for Imports and Exports	20.01.14 - 25.01.14	डॉ. एन. सत्यनारायण Dr. N. Sathyanarayana	02
		24.02.14 - 28.02.14		12
16	सजावटी पौधों के निर्यात के लिए पादप स्वच्छता आवश्यकताओं पर नर्सरीमेन के लिए कार्यशाला / Phytosanitary requirements for the Export of ornamental plants (for Nurserymen of Kadiyam)	19.03.14 - 21.03.14	डॉ. एन. सत्यनारायण Dr. N. Sathyanarayana	19
कुल/Total				401

कार्यशालाएं / Workshops

क.सं./ Sl.No.	प्रशिक्षण कार्यक्रम का नाम Name of the Training Programme	अवधि Duration	पाठ्यक्रम निदेशक / Name of the Course Director	प्रतिभागी सं /No. of Participants
1	स्वच्छता एवं पादप स्वच्छता संबंधी जागरूकता कार्यशाला-दिल्ली / Sanitary and Phytosanitary awareness workshop at New Delhi	13.05.13 - 17.05.13		23
2	आईबीएसए पीआरए कार्यशाला / IBSA PRA workshop	06.06.13 - 08.06.13		09
3	श्रीलंका में स्वच्छता एवं पादप स्वच्छता संबंधी जागरूकता कार्यशाला / Sanitary and Phytosanitary awareness workshop at Sri Lanka	11.03.14 - 13.03.14		22
4	एम्ब्रोसिया के उन्मूलन हेतु स्टेकहोल्डरों के लिए कार्यशाला / Stakeholders workshop on eradication of ambrosia weed	01.06.2013		11
	कुल/Total			65

वनस्पति स्वास्थ्य प्रबंधन प्रभाग / Plant Health Management Division

क.सं./ Sl.No.	प्रशिक्षण कार्यक्रम का नाम Name of the Training Programme	अवधि Duration	पाठ्यक्रम निदेशक / Name of the Course Director	प्रतिभागी सं /No. of Participants
1	बॉयोएजेंट्स एवं बायोकीटनाशी हेतु प्रोटोकॉल प्रोडक्शन एवं माइक्रोबियल बायोकीटनाशी हेतु गुणवत्ता विश्लेषण एवं प्रबंधन / Production protocol for bioagents and biopesticides and quality analysis and quality management of microbial biopesticides	24.05.13 - 13.06.13	डॉ. पी. जयकुमार Dr. P. Jeykumar	16
		02.07.13 - 22.07.13		07
2	बॉयोएजेंट्स एवं बायोकीटनाशी हेतु प्रोटोकॉल उत्पादन / Production protocol for bioagents and biopesticides	24.05.13 - 03.06.13	डॉ. सतीश कुमार सेन Dr. Satish Kumar Sain	02
		18.06.13 - 24.06.13		01
	बॉयोएजेंट्स एवं बायोकीटनाशी हेतु प्रोटोकॉल उत्पादन (रायचूर छात्रों हेतु) / Production Protocol for bioagents and biopesticides (Raichur Students)	03.02.14 - 08.02.14	डॉ. सतीश कुमार सेन Dr. Satish Kumar Sain	27
	बॉयोएजेंट्स एवं बायोकीटनाशी हेतु प्रोटोकॉल उत्पादन (एमकेवी, प्रभानी सीपीजीडीचीएचएम छात्रों हेतु) / Production protocol for bioagents and biopesticides (MKV, Parbhani CPGDPHM students)	02.01.14 - 22.01.14	डॉ. पी. जयकुमार Dr. P. Jeykumar	17
3	माइक्रोबियल बायोकीटनाशी हेतु गुणवत्ता विश्लेषण एवं गुणवत्ता प्रबंधन / Quality analysis and quality management of microbial biopesticides	04.06.13 - 13.06.13	डॉ. सतीश कुमार सेन Dr. Satish Kumar Sain	03
4	तंबाकू बोर्ड अधिकारियों के लिए बायोइंटेंसिव पीएचएम एवं एफएफएस प्रणाली / Biointensive PHM and FFS methodology for Tobacco Board Officers	22.07.13 - 27.07.13	डॉ. धनराज बोईना Dr. Dhana Raj Boina	25
		02.12.13 - 07.12.13		25
5	पीड़क प्रबंधन हेतु कृषि-परिस्थिति विश्लेषण एवं पारिस्थितिकीय इंजीनियरिंग / Agro-Eco Sytem Analysis & Ecological Engineering for Pest Management	25.07.13 - 14.08.13	डॉ. पी. जयकुमार Dr. P. Jeykumar	01
6	एकीकृत मृदा पोषक तत्व एवं खरपतवार प्रबंधन / Integrated Soil Nutrient and Weed Management	25.07.13 - 31.07.13	डॉ. ओ.पी. शर्मा Dr. O.P. Sharma	01
		04.09.13 - 10.09.13		05
		04.12.13 - 10.12.13		08
		12.02.14 - 18.02.14		13
7	क्रॉपसेप परियोजना के अंतर्गत महाराष्ट्र राज्य कृषि विभाग के पदाधिकारियों के लिए व.स्वा.प्र. के लिए एईएसए और ईई के सिद्धांत / Principles of AESA and EE for PHM for the Officials of Maharashtra State Department of Agriculture under CROPSAP project	29.08.13 - 31.08.13	डॉ. ओ.पी. शर्मा Dr. O.P. Sharma	34
		03.10.13 - 05.10.13		33
		17.10.13 - 19.10.13	डॉ. सतीश कुमार सेन Dr. Satish Kumar Sain	29
		21.10.13 - 23.10.13		32

क.सं./ Sl.No.	प्रशिक्षण कार्यक्रम का नाम Name of the Training Programme	अवधि Duration	पाठ्यक्रम निदेशक / Name of the Course Director	प्रतिभागी सं /No. of Participants
		28.10.13 - 30.10.13	डॉ. धनराज बोईना Dr. Dhana Raj Boina	28
		11.11.13 - 13.11.13		27
		18.11.13 - 20.11.13		27
8	सब्जियों/कपास/दालें/तिलहन में पीड़क प्रबंधन के लिए फसल निर्दिष्ट एईएसए और पारिस्थितिकी अभियांत्रिकी / Crop Specific AESA & Ecological Engineering for Pest Management in Vegetables/Cotton/Pulses/Oilseeds	04.09.13 - 03.10.13	डॉ. पी. जयकुमार Dr. P. Jeykumar	18
9	हेलिकोवेर्पा और स्पोडोटिरा और जैवनियंत्रण अभिकर्ता उत्पादन के विशेष संदर्भ में पॉलिफैगस पीड़कों का प्रबंधन / Management of Polephagous pests with special reference to Helicoverpa and Spodotera	25.09.13 - 30.09.13	डॉ. धनराज बोईना Dr. Dhana Raj Boina	01
10	हेलिकोवेर्पा और स्पोडोटिरा और जैवनियंत्रण अभिकर्ता उत्पादन के विशेष संदर्भ में पॉलिफैगस पीड़कों का प्रबंधन / Management of Polyphagous pests with special reference to Helicoverpa and Spodotera including biocontrol agent production	25.09.13 - 10.10.13	डॉ. धनराज बोईना Dr. Dhana Raj Boina	01
11	कृषक खेत पाठशाला पद्धति / Farmers Field School Methodology	04.10.13 - 11.10.13	डॉ. ओ.पी. शर्मा Dr. O.P. Sharma	02
12	चावल सघनता प्रणाली/System of Rice Intensification (SRI)	14.10.13 - 19.10.13	डॉ. धनराज बोईना Dr. Dhana Raj Boina	02
13	सीआईपीएमसी के अधिकारियों को जागरूक करने संबंधी एईएसए एवं ईई आधारित पादप स्वास्थ्य प्रबंधन कार्यक्रम / Sensitization of CIPMC officials in AESA & EE based PHM	23.10.13 - 26.10.13	डॉ. सतीश कुमार सेन Dr. Satish Kumar Sain	01
14	एकीकृत मृदा पोषक तत्व एवं खरपतवार प्रबंधन तथा राईजोस्फियर इंजीनियरिंग / Integrated Soil Nutrient and Weed Management &Rhizosphere Engineering	04.12.13 - 16.12.13	डॉ. ओ.पी. शर्मा Dr. O.P. Sharma	02
		12.02.14 - 24.02.14		03
15	राईजोस्फियर इंजीनियरिंग / Rhizosphere Engineering	11.12.13 - 16.12.13	डॉ. ओ.पी. शर्मा Dr. O.P. Sharma	05
		19.02.14 - 24.02.14		13
16	पीड़क प्रबंधन हेतु एईएसए एवं ईई / AESA &EE for pest Management	04.12.13 - 24.12.13	डॉ. पी. जयकुमार Dr. P. Jeykumar	02
17	चावल फसल विशिष्ट एईएसए एवं ईई हेतु पीड़क प्रबंधन / Crop Specific AESA & Ecological Engineering for Pest Management in Rice	04.12.13 - 03.03.14	डॉ. पी. जयकुमार Dr. P. Jeykumar	26
18	चावल में बायोइंटेंसिव आईपीएम / Biointensive IPM in rice	26.12.13 - 31.12.13	डॉ. धनराज बोईना Dr. Dhana Raj Boina	01
19	एसआरआई सहित चावल संबंधी बायोइंटेंसिव आईपीएम / Biointensive IPM inrice including SRI	26.12.13 - 09.01.14	डॉ. धनराज बोईना Dr. Dhana Raj Boina	09
20	पादप स्वास्थ्य चिकित्सकों हेतु पादप स्वास्थ्य प्रबंधन की मौलिकताएं / Fundamentals of Plant Health Management for Plant Health Doctors	17.01.14 - 06.02.14	डॉ. पी. जयकुमार Dr. P. Jeykumar	20
21	पीएचएम में रिफ्रेशर प्रशिक्षण / Refresher training on PHM	22.01.14 - 28.01.14	डॉ. पी. जयकुमार Dr. P. Jeykumar	01
22	कृषकों हेतु ईपीएन के व्यापक उत्पादन पर प्रशिक्षण कार्यक्रम / Training programme on mass production of EPN for Farmers	17.02.14 - 19.02.14	डॉ. बी.एस. सुनंदा Dr. B.S. Sunanda	29
कुल/Total				497

शैक्षणिक कार्यक्रम / Educational Programmes

क.सं./ Sl.No.	प्रशिक्षण कार्यक्रम का नाम Name of the Training Programme	अवधि Duration	पाठ्यक्रम निदेशक / Name of the Course Director	प्रतिभागी सं /No. of Participants
1	वनस्पति स्वास्थ्य प्रबंधन में स्नातकोत्तर डिप्लोमा / PG Diploma in Plant Health Mangement	Aug., 13 - July, 14	इंजी. जी. शंकर Er. G. Shankar	17
2	वनस्पति स्वास्थ्य प्रबंधन डिप्लोमा / Diploma in Plant Health Management	Aug., 13 - Jan., 14	डॉ. ओ.पी. शर्मा Dr. O.P. Sharma	02
3	पीड़कनाशी प्रबंधन डिप्लोमा / Diploma in Pesticide Management	Aug., 13 - Jan., 14	डॉ. ए.यू. एकबोटे Dr.Abhay Ekbote	02
4	समवर्ती पीजीडीएचएम प्रभानी–तीसरा बैच महाराष्ट्र / Concurrent PGDPHM Parbhani 3rd batch Maharasthra	Aug., 13 onwards	डॉ. ओ.पी. शर्मा Dr. O.P. Sharma	65
5	समवर्ती पीजीडीएचएम हैदराबाद / Concurrent PGDPHM Hyderabad	Aug., 13 onwards	डॉ. सतीश कुमार सेन Dr. Satish Kumar Sain	13
6	ऑफ कैम्पस पीजीडीएचएम केरल / Off Campus PGDPHM Kerala	Dec., 13 onwards	डॉ. पी. जयकुमार Dr. P. Jeykumar	35
	कुल/Total			134

प्रेरण पाठ्यक्रम / Induction Courses for Officials of DPPQ & S

क.सं./ Sl.No.	प्रशिक्षण कार्यक्रम का नाम Name of the Training Programme	अवधि Duration	पाठ्यक्रम निदेशक / Name of the Course Director	प्रतिभागी सं /No. of Participants
1	स्थानांतरियों को व.स्वा.प्र. में इंडक्शन प्रशिक्षण / Induction training for transferees to Plant Health Management	02.04.13 - 06.05.13	डॉ. पी. जयकुमार Dr. P. Jeykumar	21
2	स्थानांतरियों को पादप संगरोध में प्रेरण प्रशिक्षण / Induction training for transferees to Plant Quarantine	02.04.13 - 06.05.13	डॉ. एन. सत्यनारायण Dr. N. Sathyanarayana	17
3	नवनियुक्त कर्मियों हेतु प्रेरण प्रशिक्षण / Induction Training for new recruits	03.06.13 - 31.08.13	डॉ. एन. सत्यनारायण Dr. N. Sathyanarayana	21
	कुल/Total			59

वनस्पति स्वास्थ्य अभियांत्रिकी प्रभाग / Plant Health Engineering Division

क.सं./ Sl.No.	प्रशिक्षण कार्यक्रम का नाम Name of the Training Programme	अवधि Duration	पाठ्यक्रम निदेशक / Name of the Course Director	प्रतिभागी सं /No. of Participants
1	कीटनाशी अनुप्रयोग प्रौद्योगिकी / Pesticide Application Technology	13.06.13 - 20.06.13	इंजी. जी. शंकर Er. G. Shankar	21
2	मेसर्स कोरोमंडल प्रा. लि. के लिए पीड़कनाशी के सुरक्षित एवं उचित तरीके से इस्तेमाल / Safe and Judicious Use of Pesticides Pvt. Programme for M/s CoramandalPvt. Ltd)	18.07.13 - 21.07.13	इंजी. जी. शंकर Er. G. Shankar	20
3	पीड़कनाशी सुरक्षित एवं उचित तरीके से इस्तेमाल / Safe and Judicious Use of Pesticides	12.08.13 - 19.08.13	इंजी. जी. शंकर Er. G. Shankar	11
		03.03.14 - 10.03.14		20
4	उपयुक्त पीड़कनाशी अनुप्रयोग तकनीकी एवं फार्म स्तरीय भंडारण संबंधी उपाय / Appropriate Pesticide Application Techniques and Farm Level Storage Practices	03.10.13 - 10.10.13	इंजी. जी. शंकर Er. G. Shankar	16
		02.01.14 - 09.01.14		24
	कुल/Total			112

कशेरूकी पीड़क प्रबंधन प्रभाग / Vertebrate Pest Management Division

क.सं./ Sl.No.	प्रशिक्षण कार्यक्रम का नाम Name of the Training Programme	अवधि Duration	पाठ्यक्रम निदेशक / Name of the Course Director	प्रतिभागी सं /No. of Participants
1	शहरी एकीकृत पीड़क प्रबंधन हेतु प्रमाणपत्र पाठ्यक्रम / Certificate course on Urban Integrated Pest Management	01.04.13 - 15.04.13	डॉ. एन. श्रीनिवासराव Dr. N. SrinivasaRao	14
		15.07.13 - 29.07.13		10
2	शहरी एकीकृत कृंतक पीड़क प्रबंधन / Urban Integrated Rodent Pest Management	16.07.13 - 20.07.13	डॉ. एन. श्रीनिवासराव Dr. N. SrinivasaRao	03
3	खाद्यान्न के भंडारण संबंधी कृंतक पीड़क प्रबंधन / Rodent Pest Management in Store Houses of Food Grains	27.11.13 - 02.12.13	डॉ. एन. श्रीनिवासराव Dr. N. SrinivasaRao	04
4	कृंतक पीड़क प्रबंधन रिफ्रेशर प्रशिक्षण / Refresher Training on Rodent Pest Management	21.01.14 - 27.01.14	डॉ. एन.श्रीनिवासराव Dr. N. SrinivasaRao	29
5	इंडिमिक क्षेत्रों में कृंतक पीड़क प्रबंधन / Rodent Pest Management in Endemic Areas	21.01.14 - 30.01.14	डॉ. एन. श्रीनिवासराव Dr. N. SrinivasaRao	01
6	एकीकृत कशेरूकी पीड़क प्रबंधन / Integrated Vertebrate Pest Management	04.02.14 - 21.02.14	डॉ. एन. श्रीनिवासराव Dr. N. SrinivasaRao	06
			कुल/Total	67

ऑफ कैम्पस / Off-Campus

क.सं./ Sl.No.	प्रशिक्षण कार्यक्रम का नाम Name of the Training Programme	अवधि Duration	पाठ्यक्रम निदेशक / Name of the Course Director	प्रतिभागी सं /No. of Participants
1	पीएयू, लुधियाना, पंजाब में कृंतक पीड़क प्रबंधन रिफ्रेशर प्रशिक्षण / Refresher Training on Rodent Pest Management at PAU, Ludhiana, Punjab	16.04.13 - 22.04.13	डॉ. एन. श्रीनिवासराव Dr. N. SrinivasaRao	20
2	एनएयू, नवसारी, गुजरात में कृंतक पीड़क प्रबंधन रिफ्रेशर प्रशिक्षण / Refresher Training on Rodent Pest Management at NAU, Navsari, Gujarat	03.07.13 - 09.07.13	डॉ. एन. श्रीनिवासराव Dr. N. SrinivasaRao	20
3	टीएनयू, तमिलनाडु में कृंतक पीड़क प्रबंधन रिफ्रेशर प्रशिक्षण / Refresher Training on Rodent Pest Management at TNAU, Tamil Nadu	02.09.13 - 08.09.13	डॉ. एन. श्रीनिवासराव Dr. N. SrinivasaRao	20
4	एसकेयूएएसटी, जम्मू एवं कश्मीर में कृंतक पीड़क प्रबंधन रिफ्रेशर प्रशिक्षण / Refresher Training on Rodent Pest Management at SKUAST, Jammu, J&K	03.03.14 - 07.03.14	डॉ. एन. श्रीनिवासराव Dr. N. SrinivasaRao	20
5	एएयू, असम में कृंतक पीड़क प्रबंधन रिफ्रेशर प्रशिक्षण / Refresher Training on Rodent Pest Management at AAU, Assam.	10.03.14 - 16.03.14	डॉ. एन. श्रीनिवासराव Dr. N. SrinivasaRao	20
			कुल/Total	100
			महायोग/Grand Total	1713

EXECUTIVE SUMMARY

NIPHM has organized different programmes during the year to build the capacity of agriculture extension officers of Central/State Governments, Scientists of ICAR institutions and State Agricultural Universities on various aspects of Plant Health Management to promote sustainable agriculture. The major programmes organized by NIPHM were Agro Ecosystem Analysis (AESA) based Plant health Management in conjunction with Ecological Engineering for Pest Management through Farmer Field Schools (FFS), Production Protocols for bio control agents and microbial biopesticides to promote biointensive strategies and reduce the reliance on chemical pesticides. Programmes were also offered in Biosecurity and Incursion Management along with special programmes to *build capacity for* SPS compliance. Specialized programmes were also offered in Pesticide Management, Vertebrate Pest Management and Pesticide Application Technology. NIPHM also organized educational programmes to benefit both fresh graduates and inservice candidates. The summary of various programmes organized is furnished below:-

Educational Programmes:

1. Post Graduate Diploma in Plant Health Management (PGDPHM)

The *PGDPHM* is one of the core programmes of the Institute, which is designed to develop committed and competent cadre of agricultural professionals to promote sustainable agriculture. The programme consisted of major components like participatory learning in classroom and laboratory, field visits for enhancing observational skills, Agro-ecosystem Analysis based Plant Health Management in conjunction with Ecological Engineering for Pest Management through Farmers Field Schools (FFS). The second batch of the PGDPHM students (20) completed successfully during June 2013. Seventeen students were enrolled in the third batch of PGDPHM course during 2013-14.

2. Concurrent Post Graduate Diploma in Plant Health Management (PGDPHM)

The Institute also offered *PGDPHM* in concurrent mode to students of State Agriculture Universities. During 2013-14, the concurrent PGDPHM was offered in Marathwada Krishi Vidyapeeth, Parbhani (Maharastra), and YSR University of Horticulture, Tadepalligudem (AP). During 2013-14, apart from 142 previous year students, 78 students were enrolled in the programme.

3. Off Campus PGDPHM for Extension Officers of Government of Kerala

NIPHM has also entered in to an agreement with Directorate of Agriculture, Government of Kerala for offering *PGDPHM* programme in off-campus mode at SAMETI, Thiruvananthapuram. This programme was inaugurated by Dr. K. Satyagopal, IAS, Director General, NIPHM on 19 December 2013 at SAMETI, Kerala. Special address was delivered by Shri KR Jyothilal, IAS, Secretary, Agriculture government of Kerala. A total of 35 participants from Department of Agriculture, Kerala joined the programme.

4. Diploma in Plant Health Management

Diploma in PHM programme of six months duration *was* offered for Agriculture Extension officers/ Horticulture Extension Officers. Two Agriculture Development officers nominated by the Department of Agriculture, Government of Madhya Pradesh have undergone the programme from August, 2013 to January, 2014. The participants learnt skills in AESA, Ecological Engineering for Pest Management, On Farm production of Biocontrol agents and biointensive strategies for pest management.

Capacity Building Programmes:

Plant Health Management Division

The concept of Agro-Ecosystem analysis based Plant Health Management evolved to meet the gaps in the earlier approach of IPM which relied on Economic Threshold Level of pests. In AESA based PHM the whole agro-ecosystem, plant health at different stages, built-in-compensation abilities of the plant, pest and defender population dynamics, soil conditions, climatic factors and farmer's past experience are also considered. In AESA informed decisions are taken by farmers after field observation, chart preparation followed by group discussion.

In addition to AESA, Ecological Engineering is emerging as a modern concept of pest management. Ecological Engineering relies on the philosophy of using cultural techniques to effect habitat manipulation and enhance biological control. NIPHM is pioneering the concept of Ecological Engineering in India and offering training programmes on AESA based PHM in conjunction with Ecological Engineering for Pest Management. NIPHM is popularizing these concepts and is committed to create a pool of master trainers who in turn are expected to popularize AESA based PHM in conjunction with EE for PM among farmers.

A) Agro-Eco System Analysis based Plant Health Management and Ecological Engineering for Pest Management:

NIPHM organized one crop specific (Rice) season long training programme on AESA based PHM in conjunction with Ecological Engineering for pest management in Rice of 90 days duration for 26 officers of AP & TN and one 30 days crop specific training on AESA in Vegetables for thirty days for18 Horticultural Officers from Department of Horticulture, Government of Tamil Nadu. This included on-farm production of bioagents. The Institute organized one 21 days programme on AESA & Ecological Engineering for Pest Management for three participants one each from Andhra Pradesh, Punjab and Karnataka.

B) Fundamentals of Plant Health Management for Plant Health Doctors:

In view of the importance of Plant Health Management, NIPHM organized 21 days Training Programme on "Fundamentals of Plant Health Management for Plant Health doctors" to create a pool of master trainers on various issues of Plant Health Management. Twenty Scientists and Extension Officials from ICAR, SAUs and state department of Agriculture and Horticulture from 11 states participated in the programme.

C) Production of Biocontrol Agents and Adoption of Biointensive Pest Management Strategies:

NIPHM organized capacity building programmes on "Production protocol for bioagents and quality assessment and quality management of microbial biopesticides" (duration 21 days) for 40 participants from 9 States, and short duration programmes such as Production Protocol for Biocontrol agents and Biopesticides (duration 11 days) for 21 officers from 2 States, and Quality Assessment and Quality Management of Microbial Biopesticides (duration10 days) for 3 participants from 2 States. A tailor made programme of 6 days duration was also organized on production of bioagents and biopesticides for 27 students from University of Agricultural Sciences Raichur. Two 6-day training programmes on SRI and two 15-days training programmes on biointensive IPM for rice including SRI were conducted in which a total of 12 trainees participated from 6 States. One programme on Management of Polyphagous Pests with special reference to Helicoverpa and Spodoptera including Biocontrol Agent Production of 15 days duration and a 8 days Farmers Field School Methodology (FFS) for imparting knowledge and skills in organizing FFS were also organized.

D) Integrated Soil, Nutrient & Weed Management(ISNWM) & Rhizosphere Engineering:

During the year, four programmes on ISNWM of 7 days duration were organized for 27 participants from 7 states. Two training courses in Rhizosphere Engineering (RE) of 6 days duration were organized for 18 officers from different States. Similarly, a training course comprising both the aspects of ISNWM and RE was also offered during the year in which 5 officers have participated.

E) Collaboration with Central, State Government Organisations & others:

- **Collaboration with Government of Maharashtra under CROPSAP Project**

Special Training Programmes of 3 days duration on "Principles of Agro-Eco System Analysis and Ecological Engineering for Plant Health Management for the Officials of Maharashtra State Department of Agriculture under CROPSAP Project" *was* organised by NIPHM during 2013-14. They were given hands on practice on farm production of biocontrol agents. 210 Officers from the State were trained in seven training programmes. Apart from a demonstration and 2 workshops in Maharashtra under CROPSAP programme, one special training programme of 3 days (Training of Farmers) was organized for 29 progressive farmers on entomopathogenic nematodes for control of root grub in sugarcane under ATMA.

- **Collaboration with Tobacco Board:** As part of agreement with Tobacco Board for promoting biointensive management of pests in tobacco crop-ecosystem, two special training programmes of seven days duration each were conducted during 2013-14 in which 50 Tobacco Board Officials from Andhra Pradesh and Karnataka States participated.
- **Collaboration with KVKs:** NIPHM has launched an initiative to collaborate with KVKs including those functioning under NGOs for organizing capacity building programmes. During the year 15 KVKs functioning under NGOs entered in to MoU with NIPHM.
- **Collaboration with CNBRCD, Bangalore:** NIPHM entered in to MoU with Centre for Natural Biological Resources and Community Development CNBRCD an NGO {recognized by Department of Scientific and Industrial Research (DSIR)} to carry out research in promotion of PHM with specific reference to microbial biofertilizers and Mycorrhiza.
- **Collaboration with VIKASA, ArakuValley:** NIPHM entered into MoU with VIKASA for promoting environmentally sustainable Plant Health Management practices among Tribal Communities located in Araku Valley, Vishakapatnam, A.P.

Vertebrate Pest Management Division

Vertebrate pests, mostly rodents are cause of concern in Agriculture, Horticulture, Commodity Storage and Public Health sectors. The crop damage caused varies from 5 to 15% affecting significantly to the productivity of cereal, pulse, oilseed and plantation crops. The loss caused by them to food grain and commodity storage is about 2.5% in the country. They also act as vectors in transmitting zoonotic diseases affecting public health and animal husbandry.

Five 7-day refresher programmes (1-on campus and 4-off campus) and one 5 days off- campus programme were organized on rodent pest management to the field extension functionaries of different States. The off campus programmes were organized at PAU Punjab, NAU Gujarat, TNAU Tamil Nadu, SKUAST J&K, and AAU Assam and 129 field extension functionaries were trained in these programmes including in on campus programme. Twenty four pest control professionals were trained in two 15-day certificate courses on UIPM. The institute has also organized training on rodent pest management in store houses (6 days), rodent management in endemic areas (10 days) for state govt. functionaries

Plant Health Engineering Division

Proper pesticide application techniques and the usage of appropriate equipment are vital to the success of pest management operations. NIPHM focused on training the stakeholders to facilitate correct selection & use of appropriate techniques of application and use of *appropriate nozzles*, while also building capacity on the safe & judicious use of pesticides.

During the year, two programmes were organized on Safe and Judicious Use of Pesticides (8 days) for 31 officers from 9 States, one Special programme on Safe and Judicious Use of Pesticides of 4 days duration was organized for 20 senior field officers of M/s. Coramandal Pvt. Ltd based on demand. Training programme on Pesticide Application Technology of 8 days duration was organized for 21 extension functionaries from 10 States, and one programme on Appropriate Pesticide Application Techniques and Farm Level Storage Practices of 8 days duration was organized for 40 officers from 10 states. The PHE Division has also developed affordable appliances viz paddy Dryer (2 T capacity), and a Solar Hybrid Dryer for other crops to facilitate quick & safe drying.

Pesticide Management Division

NIPHM is engaged in building capacity of Agricultural Scientists, Faculty of Agricultural Universities and other Plant protection functionaries, both in public and private sector, in Pesticide Management. The Insecticides Act, 1968 stipulates intensive training programme on Pesticide Formulation Analysis for Pesticide Analysts. NIPHM is one of the designated training centres to offer the training programme in Pesticide Formulation Analysis. NIPHM also offers exclusive programmes in Pesticide Residue Analysis to enhance SPS compliance.

- **Pesticide Formulation Analysis**: The Division organized Pesticide Formulation Analysis Course of 66 days duration for 50 officers from 9 States, Dte of PPQ&S and students from Maharashtra, and One Refresher Programme on Analysis of New Molecules of pesticide formulations of 10 days for 9 analysts from 2 states.
- **Programmes on Enforcement of Insecticide Act:** Programmes were also offered on Principles of Pesticide Management & Inspection, Sampling and Prosecution under Insecticide Act and Rules". Fifty Seven Insecticide Inspectors from the Departments of Agriculture of 13 State Governments & an exclusive programme for "Pesticide Dealers" of 3 days duration for 42 members sponsored by five Pesticide Industries from the States of Andhra Pradesh and Karnataka were organized.
- **Pesticide Residue Analysis**: Three programmes on Pesticide Residue Analysis of 30 days duration were conducted during the year for 20 participants from one State, five Universities, and PGDPHM students of NIPHM, two programmes of 2 days duration were conducted for 10 analysts from different States on Sampling of Vegetables, Fruits and Agricultural commodities for Pesticide Residue Analysis.
- **Laboratory Quality Management & Internal Audit**: Three on campus and one off campus programmes on Laboratory Quality Management & Internal Audit based on ISO-17025:2005 were conducted for 51 *Analysts* from different *SPTLs*.
- **NABL Consultancy:** Consultancy was offered for NABL Accreditation and Training on Laboratory Management and Internal Audit as per ISO:17025-2005 to the Pesticide Residue Laboratory, Maharashtra and their accreditation was completed. The Institute has also rendered consultancy to 7 State Pesticide Testing laboratories (SPTLs) for preparedness for securing NABL accreditation and provided training in Laboratory Management and Internal Audit as per ISO 17025-2005 during the year.
- **Proficiency Testing & International Laboratory comparison testing**: The Division conducted proficiency testing in Pesticide Formulation and Pesticide Residue Analysis for the sample matrices of Tomato and water for 21 Laboratories. NIPHM also conducted Inter Laboratory comparison tests for the analysis of pesticides for quality control (3 pesticides) and residue analysis (2 vegetables) during the year.
- **Analysis of Biopesticides:** NIPHM under took analysis of 920 samples for screening of bio-products to detect adulteration with synthetic pesticides received from different State Departments of Agriculture and the Central Insecticide Laboratory, Directorate of Plant Protection Quarantine & Storage, Faridabad during the year, of which analysis of 670 samples were completed and balance 250 samples are under process.
- **National Project on Monitoring of Pesticide Residues:** NIPHM is one of the recognized centres under the National Project on Monitoring of Pesticide Residues, 951 samples of different commodities were analysed.

Plant Biosecurity Division

Trade liberalization and advancements in transport, travel and tourism pose increased risk of introduction of exotic and invasive pests into the country. In order to strengthen Agricultural Biosecurity in the country NIPHM has been designated as the nodal centre to develop capacity of all stake holders in Biosecurity. The division has undertaken following activities.

A) Biosecurity & Incursion Management:

- **Biosecurity & Incursion Management:**

  One training programme of 21 days duration on Biosecurity and Incursion management was organized. Nine Central & State Government Officers &Scientists of SAU's were trained in Principles of Biosecurity & Incursion Management.

- **Quarantine Insects: Detection & Identification**

  NIPHM organized 21 days training programme on 'Quarantine Insects: Detection and Diagnosis' in which twenty two officials from DPPQ&s and Agriculture/Horticulture Departments were trained.

- **Pest Surveillance:** To create awareness and build expertise among stakeholders, NIPHM organized three 8 days duration programme on Pest Surveillance in which 102 participants representing State Horticulture/Agriculture Departments, State Agricultural Universities from different States participated

- **Stored Grain Pests-Detection and Identification & Phytosanitary Treatment (MBr& ALP):** NIPHM organized one 21 day duration training programme for twenty officials from CWC, Agriculture Department, DPPQ&S and private industry and trained on Pest diagnosis and detection, fumigation using Phosphine and Methyl Bromide on stored grains. An exclusive programme of 6 days duration was also organized for 41 participants from the FCI and CWCs of different States on methods of detection and identification of stored grain pests, use of pheromones and traps for monitoring and management of stored grain insect pests employing scientific fumigation practices.
- **PEQ Inspection Authorities:** An orientation programme on PEQ Inspection of 6 days duration was designed for the notified Inspection Authorities to enrich their knowledge on role and responsibilities of Inspection Authorities, protocols to be followed in establishing and certification of PEQ facilities, conducting the PEQ inspections for different types of planting materials in which 12 participants representing State Agriculture Universities & ICAR Institutes participated.

B. Sanitary and Phytosanitary (SPS) Measures:

Globalization of trade has triggered large scale movement of plant materials across the country. This increased trade in agriculture commodity has also poses a new problem of exotic pests criss-crossing the continents through the commodities traded. To ward off entry and establishment of unwanted pests, various Phytosanitary Measures are being employed to mitigate the pest risk. NIPHM organised the following programmes for building capacity in SPS.

I. Programmes for Public Sector

- **Plant Quarantine National Regulations and Procedures:** Two specialized six days course on, 'Plant Quarantine National Regulations and Procedures' was designed to update the knowledge of stakeholders in which twenty three officers from State Department of Agriculture, SAU, ICAR and DPPQ&S participated.
- **Pest Risk Analysis:** PRA is a process which helps to assess the risks of entry, establishment and spread potential of exotic pests while facilitating international trade. The WTO-SPS agreement requires the member countries to base their Phytosanitary regulations on scientific evidence by carrying out PRA. To create the expertise in conducting the Pest Risk Analysis, a six days training programme was organized for 17 participants.
- **Orientation for PSC Issuing Authorities:** NIPHM organized a 6 days training programme on 'Orientation for Phytosanitary Certificate Issuing Authorities'. The participants were exposed to standard operating procedures for Phytosanitary certification and to minimize the report of non-compliance in export consignments. Fourteen participants participated in the programme.

II. Programmes for Private Sector:

- **Plant Quarantine Procedures for Imports and Exports:** Liberalization of trade has opened up new avenues for international trade in agricultural commodities. Further, proper understanding and following the procedures reduces the chances of consignment rejections, penalties and non-compliances which are of major trade concerns due to their economic impact. Two five days training programme on plant quarantine procedures was organized for 14 participants from Indian seed industry on related issues.
- **Phytosanitary Treatments**

  a) Fumigation (MBr & ALP): Among the phytosanitary treatments, Fumigation is most accepted treatment. Fumigation treatment providers play an important and indispensable role in import/ export of agricultural commodities. Knowledge and skill sets possessed by them can make a great difference in the success of phytosanitary treatments. NIPHM being one of the notified Institutes under Insecticides Rules 1971 Chapter III - 10, (3 a) (iii) for imparting training for commercial pest control operators on fumigation using Methyl bromide and Phosphine organized two training programmes of 15 days duration for 27 fumigation operators from private industries and 5 students of

PGDPHM covering various aspects of fumigation using Phosphine and Methyl bromide, and procedures to be followed for accreditation of fumigation operators by the Directorate of PPQ&S.

b) Forced Hot Air Treatment (FHAT): NIPHM is the only Institute to offer a specialized training programme on FHAT for industry stakeholders. Three five days programmes were conducted in which 34 participants and 5 students of PGDPHM were trained on establishing FHAT facilities and conducting treatments in accordance with ISPM - 15 and NSPM - 9.

c) Phytosanitary Requirement for Export of Ornamental Plants: In order to promote export of ornamental plants, one 3 days training programme on "Phytosanitary requirement for the export of ornamental plants" was organized for Nurserymen of Kadiyam in AP in collaboration with Confederation of Indian Industries (CII), Hyderabad.

Exclusive Training Programmes for the Officers of Directorate of Plant Protection Quarantine &Storage:

DAC has entrusted the responsibility to NIPHM to function as an Academy for building capacity of the Officers of DPPQ&S. The fourth batch of Induction Training Programme for 21 newly recruited 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 and financial management aspects.

A total of 17-inservice officials were also trained in the Induction Training Programme for Transferees of DPPQ&S in PQ stream from 22nd April to 6th May 2013. Further, induction training course for DPPQS officials who are transferees to the IPM stream (CIPMCs/ RPTLs) was organized to train them in Plant Health Management. The programme was conducted from 2nd April to 6th May 2013 for 35 days which was attended by 21 participants comprising 18 officers of DPPQS and 3 newly recruited Assistant Scientific Officers of NIPHM.

International Capacity Building Programmes:

NIPHM has strengthened its infrastructure facilities and reoriented the training programmes to address the capacity building requirements in South Asia and other developing Countries. Capacity building programmes were organized for Officers of South Asia in areas relating to Plant Health Management, Biosecurity & Pesticide Management under different bilateral & multilateral agreements.

❖ Collaboration with USDA

To strengthen the capacity in training, research and policy issues in the area of Plant Health Management and Plant Biosecurity, NIPHM has entered into collaboration with USAID/USDA. The activities under work plan envisaged organizing joint training programmes at NIPHM through participation of USDA technical experts, faculty exchange programmes, US based training programmes for NIPHM faculty, developing distance learning modules, methods developments & applied research and developing Regional Plant Health Systems Analysis. During the year, the following activities were undertaken:

US based Training Programmes for NIPHM Officials:

- Two officials of NIPHM attended the "Plant Health Systems Analysis (PHSA)" training programme at CPHST, USA during 17th to 28th June, 2013;
- Two officials attended the Risk Analysis Mentoring Programme (RAMP) during 10-28 March 2014 at PERAL, CPHST USDA.

a) Visit of Senior Officials of NIPHM to USA: Dr. K. Satyagopal, IAS, Director General, NIPHM and Dr. N. Sathyanarayana, Director (Plant Biosecurity) visited USA during 9-23 November2013 in order to develop a detailed plan of action and formalize the arrangements with heads of the concerned Institutes/ Universities in USA.

b) Joint International Training Programmes organized at NIPHM: As per the work plan under NIPHM-USDA Collaboration a joint international training programme on Pest Risk Analysis was conducted from 2nd to 6th September 2013 involving two experts viz. Dr. Stephanie Bloem and Ms. Neely Alison from USDA-APHIS. A total of 27 participants out of which 13 international participants representing Bangladesh, Sri Lanka, Ghana, Kenya, Malawi & Mozambique and 14 National Participants from ICAR Institutes, DPPQ&S and NIPHM participated in the training programme. The programme provided competency to conduct Risk Analysis in line with ISPMs to facilitate safe import and export.

❖ Collaboration with DAFF, Australia

The MOU signed between Ministry of Agriculture, Government of India & DAFF, Australia, identified broad areas of cooperation and collaboration. National institute of Plant Health Management in India and Cooperative Research Centre for National Plant Biosecurity, Australia are the Institutes identified for collaboration in strengthening capacity building in different areas viz., Biosecurity, Pest Risk Analysis and Plant Health Management etc.

a) Sanitary and Phytosanitary (SPS) Awareness Workshop for South Asia: NIPHM in collaboration with DAFF Australia organized the workshop on SPS Awareness for the Officials from India, Nepal, Bhutan, Bangladesh, Pakistan, Afghanistan, Maldives & Sri Lanka from 13th to 17th May 2013 at New Delhi.

b) Sanitary and Phytosanitary (SPS) Awareness Workshop for the Officials of Sri Lanka: As a follow up to the programme held in New Delhi during May, 2013and as requested by DAFF, Australia NIPHM collaborated in organizing SPS Awareness Workshop at Colombo, Sri Lanka during 11th to 13th March, 2014. Twenty two Officials participated in the workshop, which focused on Plant health, Animal health and Food Safety in Global Trading Environment, Risk Management options along the Biosecurity Continuum, Sampling, Systems Approach in pest management and Phytosanitary Treatments.

❖ IBSA Workshop on Harmonization of PRA Methodologies

Market liberalization and globalization have led to significant changes in agriculture and agricultural commodities especially food grain markets in all developing countries. A workshop on Harmonization of Methodologies on Pest Risk Analysis (PRA) for IBSA Countries' was organized by NIPHM from 6th -8th June 2013, with the aim to prepare a trilateral agreement draft methodology for common PRA process to be adopted for market access among the IBSA countries. Nine officers participated in the Workshop.

❖ Training Programme for the Officials of Afghanistan

Under the twinning MoU between the Governments of India and Afghanistan, a 10 days training programme on Plant Quarantine & Phytosanitary measures for 20 officials, and a 10 days programme on Pesticide Registration procedures, Pesticides Inspection were organized for 21 officials of Ministry of Agriculture, Irrigation & Live Stock, Afghanistan.

❖ Other International Participant's/Trainees Visits

Thirty participants from Liberia, Kenya, and Malawi visited NIPHM on 3rd December, 2013 under US-INDIA-AFRICA Triangular International Training programme on New Dimensions in Agricultural Extension Management". Eighteen participants from African Countries like Uganda, Nigeria, Benin, Burkina Faso, Malawian and Chad under "Technical Assistance Programme in Cotton" (23rd September to 6th November, 2013) organized by SAMETI underwent training for two days on 12th & 14th October 2013 at NIPHM.

During the year 2013-14, the institute has organized a total of 109 programmes and trained 1583 participants.

Policy Support

a. Review of Plant Quarantine Order (2003): DAC has assigned the responsibility of reviewing the PQ order to NIPHM, which is the current regulation for import of plant and plant products into India. During the year the import regulations for import of 46 commodities were reviewed and modification of certain provision and inclusions of additional pests under the list Regulated Quarantine pests was submitted to DAC.

b. Revision of IPM Packages: The revision of integrated pest management (IPM) packages developed by the DPPQ&S in 2001 has been entrusted to the NIPHM. IPM packages of 73 crops are being revised by NIPHM with latest information on IPM practices along with inclusion of Agro-ecosystem analysis (AESA) and Ecological Engineering (EE) Pest Management concepts. During the year IPM packages for 9 crops were completed. NIPHM has also modified the IPM packages developed by NCIPM for six crops.

c. Review of Pesticide Label and Leaflets: In order to ensure that the label and leaflet on pesticide containers conveys vital information to stakeholders effectively, NIPHM was entrusted with the responsibility of reviewing the existing Rules and Guidelines. After detailed discussions NIPHM has submitted detailed proposals to DAC to revise the existing policy governing label & leaflet of pesticides based on which DAC has published draft notification for amending the existing Rules, incorporating the suggestions made by NIPHM.

d. Suggestions for Strengthening Agricultural Biosecurity: During the year the policy proposals on (i) Need for delinking the assessment component of PRA activity from regulatory agency (ii) Strengthening of Phytosanitary Certification System in India (iii) Need for establishing Pest Diagnostic Laboratories (iv) Need for establishing National Pest Diagnostic Network (NPDN) (v) Need to establish South Asian Plant Protection Organization (SAPPO) (vi) Incident Command System were submitted to DAC for consideration.

Inauguration of Mahatma Gandhi Block – Faculty cum Training Block at NIPHM:

The Department of Agriculture & Cooperation, Government of India sanctioned an amount of Rs 9.76 crores towards construction of a *New Faculty Building cum Training Block* for strengthening the infrastructural facilities at the Institute**. Shri Sharad Pawar, the Honourable Union Minister of Agriculture, Government of India inaugurated the New Faculty Building and Training Block of the National Institute of Plant Health Management (NIPHM) in its campus at Rajendranagar, Hyderabad on 21.4.2013.**

THE INSTITUTE

The National Institute of Plant Health Management (NIPHM) is a premier autonomous Institution under the Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India with the mandate to promote: environmentally sustainable Plant Health Management practices in diverse and changing agro-climatic conditions; Pesticide Management and Biosecurity & Incursion Management through capacity building programmes; and extend policy support to Central and State Governments. The main focus of Plant Health Management programmes of the NIPHM is to promote agro-ecosystem analysis (AESA) based Plant Health Management in conjunction with Ecological Engineering (EE) through Farmer Field Schools (FFS), which takes into account the intricate interdependence among various components of an ecosystem, to promote biointensive approaches.

NIPHM offers training programmes in Biosecurity Management, Plant Quarantine, Sanitary and Phytosanitary issues to effectively tackle the challenges arising out of the globalization of trade in Agriculture; specialized programmes are offered in Pesticide Management, Rodent/Vertebrate Pest Management, Production of Biocontrol Agents and Integrated Nutrient and Weed Management. In order to promote safe and judicious use of pesticides, special programmes are offered in Pesticide Application Technology. NIPHM also plays an important role in capacity building of agricultural extension officers in South Asia, Africa & other developing countries. NIPHM in collaboration with USDA organized international programmes at NIPHM and building capacity of NIPHM faculty through USA based programmes. NIPHM was also involved in building SPS capacity in South Asia in collaboration with Dept. of Agriculture, Australia.

HISTORICAL BACKGROUND

The Central Plant Protection Institute (CPPTI) was established in 1966 under the Directorate of Plant Protection, Quarantine and Storage to create qualified pest management personnel in Central and State Governments. The Institute was recognized as a Regional Training Centre for Plant Protection by the Food and Agriculture Organization (FAO) and also as a Centre of Excellence for Training in Plant Protection Technology under the World Bank aided National Agricultural Extension Project-III. The Institute was rechristened subsequently as National Plant Protection Training Institute (NPPTI).

The National Plant Protection Training Institute (NPPTI) was reconstituted into an autonomous body, viz, National Institute of Plant Health Management (NIPHM) and was registered (No.1444 of 2008) under the Andhra Pradesh Societies Registration Act, 2001 (Act No.35 of 2001) with effect from 24th October, 2008 and functions under the control of the Department of Agriculture & Cooperation, Ministry of Agriculture, Govt. of India, with enhanced mandate and to play a vital role in capacity building in the South Asian Region. The Vision, Mission and Aims of NIPHM listed below focus on promotion of sustainable agriculture.

VISION

To emerge as an internationally acclaimed Centre of Excellence for promoting environmentally sustainable Plant Health Management practices in diverse and changing agro-climatic conditions and to provide Policy Support with focus on Sanitary and Phyto-Sanitary (SPS) issues and emerging Biosecurity Challenges.

MISSION

To play a crucial role in enhancing agricultural production addressing the emerging challenges in the field of Plant Health Management by assisting the Government of India, States, and other stakeholders through the core role of Teaching, Training, Research, Certification & Accreditation and Policy Support on SPS issues and Bio-security challenges within national and international contexts.

Pests

Aims and Objectives of NIPHM are:

a) Human Resource development, both in public and private sector, covering areas inter alia, of plant protection technology, plant quarantine and bio-security, crop oriented Integrated Pest Management approaches, quality testing of pesticides and monitoring of pesticide residues for monitoring the quality status of pesticides.

b) Develop systematic linkages between state, regional, national and international institutions of outstanding accomplishments in the field of plant protection technology.

c) Function as a nodal agency/forum for exchange of latest information on plant protection technology.

d) Collect and collate information on plant protection technology for dissemination among the state extension functionaries and farmers.

e) Gain overall insight into plant protection systems and policies together with operational problems and constraints at each step and stage.

f) Identify, appreciate and develop modern management tools, techniques in problem-solving approaches and utilizing the mechanism of personnel management, resource management, input management and finally conflict management at the organizational level.

g) Develop need-based field programmes for training and retraining of senior and middle level functionaries for executing plant protection programmes and using training of trainer approaches to ensure maximum reach of programmes.

h) Provide feedback to training programmes, conduct programme-oriented research in the area of plant protection, Integrated Pest Management, pesticide management, plant quarantine and pesticide delivery systems and residues.

i) Serve as repository of ideas and develop communication and documentation services at national, regional and international level, in regard to the subject of plant protection management.

j) Forge linkages with national and international institutions and create networks of knowledge sharing through a programme of institutional collaboration and employment of consultants.

k) Provide policy support to the Central Government in various sectors of plant protection including IPM, pesticide management, plant quarantine, bio-security, SPS and market access issues.

Organization and Management

The General Council of NIPHM exercises general control and issues directions as may be necessary for the efficient management and administration of the affairs of NIPHM. General Council is headed by the Secretary to Government of India, Department of Agriculture and Cooperation (DAC) and members are drawn from among the Senior Officers of DAC and eminent scientists in the field of Plant Protection. The Executive Council of NIPHM is responsible for the management and administration of the affairs of NIPHM. The Executive Council is headed by Additional Secretary, DAC, Government of India and members are drawn from Officers of the DAC and senior scientists in the field of Plant Protection. Director General (DG), who heads the Institute, is responsible for proper administration of the affairs of the Institute. The DG is the Chairman of the Standing Committees viz. Selection Committee and Academic Committee.

Activity Profile

NIPHM activities revolve around six areas namely Capacity Building, Adaptive Research, Consultancy, Policy Development, Education and Projects.

INFRASTRUCTURE

Inauguration of Mahatma Gandhi Block – Faculty cum Training Block at NIPHM

The Department of Agriculture & Cooperation, Government of India sanctioned an amount of Rs. 9.76 crores towards construction of a *New Faculty Building cum Training Block* for strengthening the infrastructural facilities at the Institute. **Shri Sharad Pawar, the Honourable Union Minister of Agriculture, Government of India inaugurated the New Faculty Building and Training Block of the National Institute of Plant Health Management (NIPHM) in its campus at Rajendranagar, Hyderabad on 21.4.2013.**

The New Faculty Building cum Training Block, which is *wi fi* enabled is provided with five lecture halls, mini auditorium, video conference hall & three conference halls which are air conditioned. The building also has 34 rooms for senior officers, three syndicate rooms and 2 computer rooms. The new facility will enable NIPHM to organize training programmes for national and international participants including for senior level Officers.

Shri. T. Prakash Goud, Hon'ble M.L.A, Rajendranagar, took part in the Inaugural function. Shri Ashish Bahuguna, IAS, Secretary to GOI, Department of Agriculture & Cooperation (DAC), Shri Siraj Hussain, IAS, Spl. Secretary to GOI, DAC, Shri Raghav Chandra IAS, AS & FA, GOI, DAC, Shri Utpal Kumar Singh IAS, Joint Secretary (PP) to GOI, DAC, Dr. K. Satyagopal, IAS, Director General, NIPHM, Shri. Shailendra Sarma Chief Engineer (SZ-II), CPWD, Senior Officers, other staff and trainees participated in the inaugural function.









New Hostel for International Participants

As part of the efforts to strengthen the infrastructure facilities, construction of a New Hostel Building at a cost of Rs. 593.31 lakhs for International Participants was entrusted to the CPWD. The construction of the extended portion of the 1st floor, to provide additional accommodation to participants, is under progress and the overall construction work is nearing completion.

Laboratories

The Institute has laboratories equipped with modern equipments and facilities for organizing various training programmes:

- Rich collection of specimens of insect pests and natural enemies.
- Vast collection of rodent specimens and rodent management appliances.
- Molecular diagnostics laboratory with modern equipments.
- Biological control laboratory for training in production protocol of bioagents and for analyzing the quality of microbial biopesticides.
- Laboratory facilities viz. microscopes (phase contrast and observation), inoculation chambers, autoclaves, B.O.D incubators etc.
- Sophisticated analytical equipments such as Spectrophotometers (UV-VIS & FTIR), GLC, HPLC, GC-MS-MS, LC-MS-MS etc.



WORKSHOP

Plant Health Engineering Division has a workshop with facilities to conduct research and training to promote appropriate pesticide application technologies.

Agricultural Farm

The Institute has 9.26 ha farm, in which demonstration trials are undertaken for demonstration of AESA & Ecological Engineering for Pest Management.



Establishment of Computer Laboratory

The Computer Laboratory is well equipped with 20 Desktop Computers with high speed internet connectivity and Wi-Fi enabled services. Besides, all the faculty, Officers and staff are provided with Desktop Computers, Laptops and related support systems which are maintained by ICT Division for smooth functioning of the activities. The Institute has a Server Laboratory with HP-Proliant DL580 with high end server configuration to support the various network applications. The services like Proxy Server, Dynamic Host Configuration Protocol (DHCP) Server, and Internet based services like Wi-Fi, Internet, intranet, telnet and FTP services are also provided through the Server Lab.

Library and Documentation

NIPHM Library plays an important role in providing information services for trainees, researchers and faculty in the field of Plant Health Management, Plant Biosecurity, Pesticide Management and Plant Health Engineering. The Library has been completely renovated & air-conditioned. The Library has rich collection of books and reputed journals on plant protection, plant health management and allied fields. The Library has more than 9,124 technical books in English and 1,249 books in Hindi. The Institute's Library subscribes to around 33 journals, both National and International. The Library services have been made available to outsiders on payment basis.

Post Graduate Diploma in Plant Health Management (PGDPHM)

PGDPHM is designed for capacity building in the areas of Plant Health Management, Plant Biosecurity and Pesticide Management. The 12 month duration programme is spread over two semesters and open to In-service personnel of State Departments of Agriculture/Horticulture and fresh Graduates in Agriculture/ Horticulture and Post Graduates in life sciences.

On completion of the PGDPHM, participants, depending upon the specialization, acquired:

- Skills to organize FFS effectively to empower the farmers to take informed decisions by adopting discovery based learning.
- Competency in AESA which relies on experiential learning so as to promote environmentally sustainable plant health management.
- Skills in Ecological Engineering and Rhizosphere Engineering for pest management.
- Expertise in laboratory and on-farm production of Bio control agents and Quality analysis and Quality Management of microbial biopesticides.
- Knowledge to promote safe and judicious use of pesticides through adoption of appropriate application techniques, besides expertise in pesticide formulation / residue analysis.
- Expertise in situation analysis of vertebrate pest problem, with focus on rodents, in agricultural fields & commodity storage and adoption of ecological based management.
- Understanding of the issues involved in biosecurity and incursion management in the context of globalization, with exposure to SPS issues.
- Skills in pest surveillance and pest diagnostics and Phytosanitary treatments.

  The programme consisted of four major components

  1. Participatory learning in classroom and laboratory. Field visits for enhancing observational skills. Agro-ecosystem analysis through FFS
  2. Specialization in one of the following selected areas: (a) Bio security and Incursion management, (b) Pesticide Management, (c) Biocontrol Input Production Management, (d) Vertebrate and Structural Pest Management, (e) Plant Health Engineering

The students of 2nd PGDPHM (2012-2013) undertook projects in plant health management (4students) Plant biosecurity (6), vertebrate pest management (4) and pesticide management (6) and submitted their projects reports. The third PGDPHM (2013-14) programme commenced from August, 2013. Out of 17 participants, nine in-service participants belong to State Dept. of Agriculture, Andhra Pradesh (6), Madhya Pradesh (1), Tamil Nadu(1) and DPPQ & S (1) and eight are fresh graduate participants viz., Andhra Pradesh (1), Maharashtra (6) and Rajasthan(1).

In the first semester, participants were exposed to (i) Principles of PHM; (ii) AESA - Experiential learning, (iii) Structural Pests and Post Harvest Management; (iv) Ecological Engineering for Pest Management/ Principles of Pesticide Management; (v) Agricultural Input Management /Safe &Judicious Use of Pesticide and Application Technology (3 credits for each course). Second semester consisted of one specialization (6 credits), two mandatory subjects and project work (3 credits for each course). Specializations' opted by the participants are mentioned below: 3 students specialized in Pesticide Management, 2 in Biosecurity

and Incursion Management, 1 in Vertebrate and Structural Pest Management and 11 in Bio-control Input Production Management.



The students of 2nd Post Graduate Diploma Course in Plant Health Management (2012- 13) have undertaken the following projects during their second semester.

S. No.	Name of the Participant & Guide	Division	Title of Project Work
1	Anil Kumar, B. Guide: Dr. Satish Sain	Plant Health Management	Evaluation of different low cost biodegradable raw materials for multiplication of fungi antagonists.
2	Apurba Hajong Guide: Mrs. N. Lavanya	--do--	Efficacy of different chemicals and biopesticides on the parasitizing ability of *Trichogramma chelonis* on *Corcyra* eggs.
3	Hilberth Ch.Marak Guide: Mrs. N. Lavanya	--do--	Estimation of production potential of host insect *Corcyra cephalonica* on different raw materials.
4	NirmalaKumari Guide: Dr. Satish Sain	--do--	Evaluation of different low cost biodegradable raw materials for multiplication of bacterial antagonists.
5	Ashok Kumar H.P. Guide: Smt. S. Latha	Plant Biosecurity	Review of Pest Risk Analysis for cereal crops (Barley, Maize & Oats)
6	D.K. Borah Guide: Dr. A.G. Girish	--do--	Market access for Pineapple and Orchids from North – East region of India.
7	PriyabrataMohanta Guide: Smt. S. Latha	--do--	Review of Pest Risk Analysis for import of Palm commodity into India.
8	Priyanka Singh Guide: Dr. N.V. Kulkarni	--do--	Review of Pest Risk Analysis for import of Citrus and Grapes into India through fresh fruit for consumption pathway.
9	Santosh Guide: Dr. C.S. Gupta	--do--	Market access analysis of Litchi –the SWOT Matrix approach.
10	Shaiffi Kukkar Guide: Dr. K. Susheela	--do--	Review of Pest Risk Analysis for import of Pulses.
11 & 12	Archana C. Jadhav Poonam P. Hengane Guide: Dr. Nirmali Saikia	Pesticide Management	Aflatoxin analysis in Peanuts be using LC-MS/MS.
13 & 14	Nagaveni, D Swapna, P. Guide: Dr. Nirmali Saikia	--do--	Pesticide Residue Analysis in Curry leaves by using LC-MS/MS and GC-MS/MS.

15 & 16	Raju, A. Swapnil A. Guduskar Guide: Dr. Nirmali Saikia	--do--	Ochratoxin analysis in maize by LCMS method.
17	Bhanu Kumar Chettri Guide: Dr. N. Srinivasa Rao	Vertebrate Pest Management	Studies on efficacy of castor based botanical repellent against wild boar in Sikkim.
18	MailenaDewan Guide: Dr. N. Srinivasa Rao	--do--	Studies on efficacy of castor based botanical repellent against rodent pests in Sikkim.
19	Mallikarjunaiah, G. Guide: Dr. N. Srinivasa Rao	--do--	Studies on rodent pest management in software Industries.
20	Padmavati Devi, V. Guide: Dr. N. SrinivasaRao	--do--	Studies on food preferences by cockroaches.









Diploma in Plant Health Management

The Diploma comprises of courses (i) Principles of PHM; (ii) Agro eco system analysis - Experiential learning, (iii) Ecological Engineering for Pest Management (iv) Agricultural Input Management (V) Project Work (3 credits for each course). Two Agriculture Development officers nominated by the Department of Agriculture, Government of Madhya Pradesh have undergone the programme from August, 2013 to January, 2014. They have completed their Project Work on "On farm production of *Bracon, Trichogramma, Trichoderma* and VAM" as part of course curriculum.

Concurrent Post Graduate Diploma Course in Plant Health Management (CPGDPHM)

The PGDPHM course was offered as a Concurrent Programme to the Graduation/Post Graduation/Ph.D. students of State Agriculture/Horticulture Universities. The CPGDPHM was organized in Marathwada Krishi Vidyapeeth, Parbhani (65 students) and College of Horticulture, YSR University of Horticulture, campus Hyderabad (13 students) The programme is spread over four semesters and most of the theory and practical classes are organized in the respective Universities and at the end of each year the students attend exclusive sessions in the area of specialization at NIPHM. The course is designed to encourage participatory learning in the class room, hands on practice in laboratory and enhance observational skills through Field visits. The programme aims to develop highly committed and competent cadre of Agricultural professionals to promote environmentally sustainable Plant Health and Biosecurity Management.

Off-Campus PGDPHM for Agricultural Officers of Kerala

NIPHM has entered in to an agreement with Directorate of Agriculture, Government of Kerala for offering PGDPHM programme in off-campus mode at SAMETI, Thiruvananthapuram. This programme was inaugurated by Dr. K. Satyagopal, IAS, Director General, NIPHM on 19th December, 2013 at SAMETI, Kerala. Special address was delivered by Shri KR Jyothilal, IAS, Secretary, Agriculture government of Kerala. A total of 35 participants from Department of Agriculture, Kerala have joined the programme. This course is being offered in off-campus mode in four semesters over a period of two years. The main objectives of the course are:

- To develop a highly committed and competent cadre of agricultural professionals to promote environmentally sustainable Plant Health and Biosecurity Management.
- To develop competence in AESA based plant health management in conjunction with Ecological engineering for pest management.
- To develop skills to organize Farmer Field Schools effectively.
- To improve knowledge to promote safe and judicious use of pesticides through adoption of appropriate application techniques.
- To develop skills in pest surveillance and disease diagnosis.

PLANT HEALTH MANAGEMENT DIVISION

Agriculture is influenced by an array of biotic and abiotic stresses, which have to be managed through multipronged strategies. A strategic science based approach is needed to address the plant health risks and issues that affect productivity. The looming threat of climate change may further exacerbate the crop losses due to pests. The integrity of agro-ecosystem is vital for sustainable agriculture. Intensive use of ecosystems to enhance productivity can affect agro-ecosystems through soil erosion, water depletion/contamination, biodiversity loss and disruption in flow of ecosystem services, which will have a bearing on plant health and biosecurity.

The indiscriminate use of chemical pesticides has been causing wide spread environmental pollution, resistance, resurgence of insect pests and is impacting food safety. Plant Health Management is vital for the sustainable agriculture, food security, food safety, agro based industries and economy of a country.

To enhance the knowledge of the farmers on Plant Health Management, NIPHM is creating a pool of master trainers by training them on various aspects of PHM strategies. There is a need to train the Agriculture Extension Officers in AESA based PHM in conjunction with EE for PM to promote environmentally sustainable plant health management practices to reduce excessive reliance on chemical pesticides. Incorporation of biofertilizers, particularly mycorrhizae in agricultural practices play a vital role in promotion of soil health and uptake of important macro and micro nutrients by the crops. Biological control through parasitoids, predators and microbials constitutes a significant component in holistic management of insect pests and diseases as well as abiotic stresses. In view of complementarity and likely synergistic benefits of AESA based PHM implemented in conjunction with EE for PM, NIPHM is popularizing these concepts and is committed to create a pool of master trainers who in turn are expected to popularize AESA based PHM in conjunction with EE for PM among farmers.

The capacity building programmes offered during the year were:

A. Agro-EcoSystem Analysis based Plant Health Management and Ecological Engineering for Pest Management

Agro-EcoSystem Analysis (AESA) is based on experiential learning of farmers about the intricate and interdependent relationship of abiotic and biotic components of an ecosystem and decision making by the farmers. Keeping in view the importance of sustainable pest management in rice crop, NIPHM organized crop specific, season long training programme on AESA based PHM in conjunction with Ecological Engineering for pest management in Rice & vegetables were organised

- **Crop specific AESA - Rice**

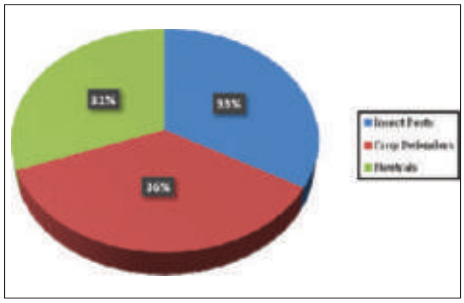
In this programme the participants gained hands on experience by raising rice crop with different management practices with ecological approaches, System of Rice Intensification (SRI), Modified SRI, using Drumseeder for sowing, etc. Participants were also equipped with skills in On-Farm Production of Biocontrol agents viz., *Braconspp*, Spiders, Reduviid bug, *Trichogrammas* pp, *Trichoderma* Spp., *Psuedomonas*spp., Entomopathogenic fungi, Entomopathogenic nematode(EPN),etc. FFS methodology Integrated Soil Nutrient and Weed Management, Rhizosphere Engineering & Ecological Engineering for Pest Management were learnt by the participants.



The participants conducted various short term experiments to study compensation ability, Pest and Defender (P: D) ratio, biodiversity of insects and mode of action of systemic insecticides. In NIPHM rice field the P: D ratio was found to be 1:1.07. The abundance of Ladybird beetles, Spiders, Wasps, Syrphid flies, etc. is due to presence of sunflower, cowpea, okra, onion, maize and marigold on the bunds due to ecological engineering for pest management. They also observed advantages of SRI and MSRI over drum seeder and existing practices. Twenty three officers from TN and three from AP were trained.

Pest-Defender Dynamics in Ecologically Engineered Rice Field for Pest Management

Insect Pests (52): Jassids (12), White stemborer (3), Yellow stemborer (4), Grass hopper (2), BPH (3), Rice Butterfly (2), Stink bug (2), Leaf folder (3), Rice skipper (2), Case worm (2), Aphid colonies on cowpea (Rice field bund) (12), ear head bug (2), Thrips (3).



Crop Defenders (56): Damsel fly (5), Rober fly (4), Dragon fly (5), Carabid beetle (6), Spiders (9), Water spiders (3), Lady beetles (9), L.H gross hopper (1), Jewel beetle (1), Geocoris sp. (2), Reduviid (2), Syrphid flies (2),Preying mantis(3), Earwings (1),Ground beetle(2),Wasp (1).

Neutrals (48): Mosquitoes (30), Flies (15), Beetles (3).

- **Crop specific AESA –Vegetables**

  Thirty days training programme on "Crop specific AESA in Vegetables" was organized, in which participants were given hands on practices on on-farm production of biocontrol agents and microbial biopesticides. During first 7 days module the participants were exposed to the principles of AESA, Ecological Engineering, Living Soil Concept, Rhizosphere Engineering, INM, IWM in different crops, expertise on weed management equipment, safe use of herbicides. Participants were also exposed to biological control, biointensive IPM, recognition of insect pests and defenders in different agricultural/horticultural crop ecosystems, Integrated Rodent Pest Management, FFS methodology, and principles of pesticide application technology. Participants visited farmers' fields who adopted the concept of AESA and Ecological Engineering for Pest Management. Eighteen Horticultural Officers from Department of Horticulture, Government of Tamil Nadu participated in this programme.



- **Demonstration of AESA based PHM in Conjunction with Ecological Engineering for Pest Management in Cabbage to reduce reliance on Chemical Pesticides**

  Cabbage crop was grown adopting AESA based Plant Health Management (PHM) in conjunction with Ecological Engineering for Pest Management. As part of ecological engineering for pest management strategies, floral plants and companion plants were planted along with main cabbage crop. Floral plants such as mustard (trap crop for diamondback moth, leaf webber, head borer, aphids and mustard saw fly), marigold, Chrysanthemum, gingelly/sesamum, maize, carrot and sunflower (attractant crops for natural enemies), castor (trap crop for tobacco caterpillar), French bean (trap crop for aphids) were planted along the field boundary 15-20 days prior to transplanting cabbage seedlings in the main field. Ocimum and onion which are repellent plants were planted in between cabbage seedlings as intercrops.



In addition to the above strategies, crop rotation, usage of organic fertilizers and application of inorganic fertilizers based on soil test report were adopted. Healthy cabbage seeds were bioprimed with microbial biopesticides such as Trichoderma harzianum and Pseudomonas fluorescens before sowing the seed in the nursery. For pest management, it was decided to adopt AESA and accordingly weekly observations were recorded on crop health, climatic conditions, Pest: Defender ratio (P: D ratio) etc. During the growing season, it was noticed that mustard plants acted as an effective trap crop for leaf webber and castor attracted tobacco caterpillar and most of the weeks the P: D ratio was favourable. However, during the weeks of 9, 10, and 12, the P: D ratio was found to be unfavourable (>2: 1) based on which inoculative releases of Bracon, reduviid bugs, and Chrysoperla and spraying of EPN in one block and neem oil in another block were resorted too. Both the practices effectively controlled the pests and good head yield was harvested without the application of chemical pesticides.

- **Agro-ecosystem Analysis (AESA) and Ecological Engineering (EE) for Pest Management**

  Participants learnt principles of AESA based PHM in conjunction with EE for PM. Ecological Engineering for Pest Management relies on cultural techniques for manipulation of the habitat to enhance biological control. Participants were also trained in on-farm production of biocontrol agents. Three participants one each from A.P., Punjab and Karnataka attended the programme.

- **Fundamentals of Plant Health Management for Plant Health Doctors**

  To become a successful extension officer or facilitator it is essential to know the basic principles of plant health management and skills for promoting sustainable practices. In view of the importance of Plant Health Management, NIPHM organized 21 days Training Programme on "Fundamentals of Plant Health Management for Plant Health doctors" to create a pool of master trainers. The participants visited the field and practiced the AESA procedures in different crops such as rice and vegetables. They also visited the fields which adopted Ecological Engineering techniques in Rice and Cabbage at NIPHM farm and worked out the models of Ecological Engineering for different crops in their region based on the literature available on attractant/repellent plants. They also learnt significance of the P:D ratio, plant compensation ability, insect zoo studies, etc.





The participants were trained in differentiating biotic and abiotic damage symptoms as well as detection and diagnosis of damage by insects, diseases, nematodes, etc., mass production of host insect *Corcyra* and parasitoids viz., *Trichogramma, Chelonus, Goniozus* etc., and predators such as *Chrysoperla*, Reduviids, and Spiders. They also learnt on-farm production of microbial biopesticides *Trichoderma, Pseudomonas*, EPF by using low cost inoculation chamber. They learnt the techniques of mass production of EPN as well as Vesiccular Arbscular Mycorhiza and Arbscular Mycorhiza. The participants developed expertise in various aspects of Plant Health Management so as to serve farmers as an effective plant health doctors.

Twenty Scientists and Extension Officials from ICAR, SAUs and state department of Agriculture and Horticulture from Assam, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil Nadu and Uttar Pradesh participated.

- **Integrated Soil, Nutrient and Weed Management (ISNWM)**

  Integrated Nutrient Management (INM) along with soil fertility plays a significant role in crop management through combined and harmonious use of organic, mineral and bio-fertilizer resources. Programme covered the principles of AESA, Ecological Engineering, Living Soil Concept, rhizosphere engineering, INM, IWM in different crops, Expertise on weed management equipment, safe use of herbicides and issues in weed management practices was also imparted. During the year, four programmes on ISNWM were organized in which 27 participants from various states viz. Haryana, J&K, Himachal Pradesh, UP, Chhattisgarh and Rajasthan were trained.

- **Rhizosphere Engineering**

  Monocropping and intensive crop cultivation practices are continuously mining the soil nutrients as well as reducing microbial population in the rhizosphere. A short course (6 days) in Rhizosphere Engineering was designed by NIPHM with the objective of creating awareness on the role of microbials in enhancing soil fertility and crop protection & production. Participants were imparted knowledge about the role of rhizosphere microorganisms and skills for rhizosphere manipulation in plant health promotion, Isolation techniques for beneficial micro-organisms, fungal bio-inoculants for soil and plant health management, multiplication techniques of *Trichoderma*, Mycorrhizae, Entomopathogenic Nematodes. During the year, two training programmes were organized in which 18 officers from different States viz., J&K, Bihar, Haryana and AP were trained. Similarly, a training course comprising both the aspects of ISNWM and RE was also offered during the year in which five officers from SAUs and State Government of Assam, J&K and Odisha have participated.

- **Farmers Field School Methodology (FFS):**

  The Farmers field school (FFS) is a participatory approach to extension, whereby farmers are given opportunity to make a choice in the methods of production through discovery based approach. For the purpose of imparting knowledge and skills in organizing FFS, a short duration (8 days) training course in 'Farmers Field School Methodology' was organized by NIPHM.

B) Production of Biocontrol Agents and Adoption of Biointensive Strategies:

- **Production Protocol for Biocontrol Agents and Quality Assessment & Quality Management of Microbial Biopesticides**

  The use of natural enemies and biopesticides is an alternative for sustaining high production with low ecological impact. Many insect parasitoids predators are able to kill the harmful insects or reduce their vigour and further multiplication. Similarly different soil-borne fungi and bacteria are able to kill or reduce the disease causing microorganisms and insect-pests, colonize plant roots and have beneficial effects on the plant. A number of technologies have been developed for mass production of the biocontrol agents and there is a need for quick dissemination of such technologies.

  In view of the importance of biocontrol agents in pest management, and to ensure the availability of quality biopesticides NIPHM initiated capacity building programmes on "Production protocol for bioagents and quality assessment and quality management of microbial biopesticides" of 21 days duration. NIPHM also organized short term courses viz., Production Protocol for Biocontrol agents and Biopesticides (duration 11 days) and Quality Assessment and Quality Management of Microbial Biopesticides (duration10 days).



- **Production Protocol for Biocontrol Agents and Biopesticides**

  The trainees were provided hands on experience on mass production of different parasitoids, predators, microbial biopesticides and entomopathogenic nematodes (EPN). The various skills imparted were, mass rearing of host Insects for production of NPV; Corcyra for production of *Trichogramma*; Papaya Mealybug and its parasitoid, *Acerophagus papayae*; preparation of neem seed kernel extract (NSKE); mass production of, *Trichoderma* spp., *Metarhizium* sp., *Beauveria* sp., *Verticillum* sp., *Nomuraea* sp., *Paecilomycis* sp., *Pseudomonas* sp., *Bacillus spp*., etc.; preparation of mother cultures for biopesticides; Isolation and mass multiplication of EPN and techniques for development of bioformulations. Twenty nine participants from Himachal Pradesh and Karnataka acquired skills in production of biocontrol agents and biopesticides during the programme 11 days duration.

- **Quality Assessment and Quality Management of Microbial Biopesticides**

  Use of biocontrol agents and biopesticides for successful biological control of pests mainly depends on their quality and timely application. There is a need for capacity building, capacity in quality assessment and quality management of biopesticides. The trainees were provided with hands-on practices for quality analysis on quality standards such as testing of *Helicoverpa armigera, N*uclear polyhedrosis virus (HaNPV), *Bacillus thuringiensis* (B.t.), *Trichoderma*, *Pseudomonas,* Entomopathogenic fungi, etc. This included both microscopic counts as well as bioassay methods for assessing quantity / quality. Three participants from Rajasthan and Andhra Pradesh were trained in the programme of 10 days duration.

- **Production Protocol for Biocontrol agents and Biopesticides and Quality Assessment & Quality Management of Microbial Biopesticides**

  A total of 40 participants from the states of Uttrakhand, Maharashtra, Andhra Pradesh, Punjab, Tamil Nadu, Odisha, Karnataka, Rajasthan, Uttar Pradesh were trained in two 21 days training programme. In which, skills for both production and quality assessment & management were imparted.



- **Special Programmes in Biological Control:**
  A tailor made programme on Production Protocol for Biocontrol Agents and Biopesticides of 6 days duration was organized on production of bioagents and biopesticides for 27 students from University of Agricultural Sciences Raichur.
- **Biointensive IPM for Rice including SRI**
  Paddy is one of the crops in which, chemical pesticides are relied excessively by farmers. Owing to the adverse effects associated with the indiscriminate use of pesticides on environment and non-target organisms, there is an urgent need for adapting biointensive methods of pest management and system of Rice Intensification (SRI) techniques.

  In this programme, the participants learnt and practiced of SRI techniques. The significance of SRI in Rhizosphere Engineering & management of pests such as brown plant hopper (BPH) and rodents were explained in great detail. The participants also learnt that SRI reduces water &labour requirements while enhancing crop yield. Trainees were given hands-on practice on mass production of biocontrol agents and microbial biopesticides. Two 6-day programmes on SRI and two 15-days programmes on biointensive IPM for rice including SRI were conducted in which 12 trainees participated from Bihar, Chattisgarh, Uttar Pradesh, Kerala, Andhra Pradesh and Himachal Pradesh.
- **Management of Polyphagous Pests with Special Reference to *Helicoverpa* and *Spodoptera* including Biocontrol Agent Production**
  Polyphagous pests cause enormous losses to crop yields due to their voracious feeding/sucking nature in economically important crops. Insecticide resistance developed *by* polyphagous pests has *necessitated* the need for biointensive IPM. The participants were given exposure to AESA based PHM in conjunction with EE for polyphagous pest management and mass production of biocontrol agents and microbial biopesticides.

C) Entomopathogenic Nematodes (EPN) as Biological Control of Root-grub in Sugarcane

During the CROPSAP training programme at NIPHM, trainees from *Maharashtra* learnt about *mass production of* entomopathogenic nematodes and its application techniques. Best practices of EPN application were demonstrated in sugarcane belt of Sangli and Kolhapur districts, within short time, the root grub population reduced significantly and in the workshops held at Karveer, Dist Kolhapur, on 29th Dec.2013 and at Kuckrood, Dist. NIPHM faculty trained the farmers in mass production of EPN. Shirala, Sangli 30th Dec. 2013 on production of EPN subsequently 29 progressive farmers from Sangli Dist. attended three days training programme at NIPHM during 17-02-14 to 19-02-14 under the Agriculture Technology Management Agency (ATMA). NIPHM successfully demonstrated in farmers' fields to show the way forward in mitigating the menace caused by root grub with the use of EPN.

D) Collaboration with Central, State Government Organisations & others:

- **Collaboration with Agriculture Department, Government of Maharashtra**
  Training Programmes on "Principles of Agro-Eco System Analysis and Ecological Engineering for Plant Health Management for the Officials of Maharashtra State Department of Agriculture under CROPSAP Project" were organized by NIPHM. Participants were trained on different aspects like Agro

Eco System Analysis, Living Soil Concept, Rhizosphere Engineering, Ecological Engineering, Principles of Biosecurity, Pesticide Application Techniques, Integrated Rodent Pest Management and Pest Surveillance. They were given hands on practice on farm production of biocontrol agents. 210 Officers from Maharashtra State Agriculture Department were trained in seven training programmes.



- **Collaboration with Tobacco Board, Government of India :**

NIPHM entered into an agreement with tobacco board for promoting biointensive management of pests in tobacco crop-ecosystem. Two training programmes of seven days duration each were organized in which, 50 Tobacco Board Officials from Andhra Pradesh and Karnataka States were imparted with hands-on practices in basics and specialized skills of AESA, EE for pest management. Management of pests and diseases of tobacco and other crops, role of parasitoids and predators in IPM, mass production of biological control agents, microbial biopesticides, EPNs, pesticide application techniques, FFS, Integrated Soil, Nutrient, and Weed management, etc were explained.



Field demonstration was carried out on 400 acres of tobacco cultivation through the Tobacco Board as part of the demonstration programme to provide technical assistance to tobacco farmers. NIPHM produced and supplied 1000 kg of *Trichoderma* and *Pseudomonas* each. The application of *Trichoderma* and *Pseudomonas* for seed (10 g/kg) and nursery treatment (2.5 kg/acre) and soil application (2.5 kg/acre) were demonstrated jointly by NIPHM and Tobacco board officials to manage the soil borne diseases of Tobacco. Three field days cum demonstrations on tobacco seed & nursery treatment were conducted on August 19th2013 in which 50 farmers were trained. Further, six field demonstrations on soil application were conducted from 30 September to 1st October, 2013 in six villages. A total of 150 farmers and field officers actively participated in all field demonstrations.

NIPHM and Tobacco Board Officers *visited* West Godawari & Prakasham districts *from 11th to 13th December 2013* for providing advisory service on use of biopesticides, ecological engineering, pheromones & light traps, sticky traps for management of pests like *Spodoptera*, *Helicoverpa* and other pests. By using *Trichoderma* and *Pseudomonas* farmers were able to reduce soil borne diseases and 2-3 chemical pesticide applications in tobacco nursery. About 80-90% reduction in the incidence of black shank & wilt diseases and 30-40% increase in plant vigour and yield was observed in the field, while 2-3 chemical pesticide sprays were also reduced. Farmers saved about Rs. 5,000-7,000 per acre & they expressed satisfaction on performance of biopesticides.

- **Collaboration with KVKs of ICAR, SAUs and NGOs**

In order to promote AESA based PHM in conjunction with Ecological Engineering for Pest Management, besides organizing capacity building programmes for Master Trainers of KVK centers. NIPHM has also

launched an initiative to collaborate with KVKs including those functioning under NGOs. Under this collaboration NIPHM organized capacity building programmes to Subject Matter Specialists (SMS) to impart skills in

a) AESA based PHM in conjunction with Ecological Engineering for Pest Management

b) On-farm production of Biocontrol agents and Microbial Biopesticides

In addition to participation of SMS from Government KVKs, SMS from KVKs functioning under NGO were also trained. During the year a total of 15 KVKs functioning under NGOs entered in to MoU with NIPHM.

- **Collaboration with CNBRCD, Bangalore**
  NIPHM entered in to MoU with **Centre for Natural Biological Resources and Community Development** CNBRCD an NGO (recognized by Department of Scientific and Industrial Research (DSIR), Government of India) to carry out research in promotion of PHM with specific reference to microbial biofertilizers and Mycorrhiza.
- **Collaboration with VIKASA, Araku Valley**
  NIPHM entered MoU with VIKASA for promoting environmentally sustainable Plant Health Management practices through Training and Research among Tribal Communities located in Araku Valley, Visakhapatnam district of Andhra Pradesh.

During the year 2013-14, the division has organized a total of 38 programmes and trained 497 participants.

VERTEBRATE PEST MANAGEMENT DIVISION

Vertebrate pests comprising rodents, birds and wild animals are increasingly causing crop losses of serious magnitude. Among them, rodents cause both direct and indirect damages to various crops/commodities by gnawing and contamination. Rodents pose problems to majority of food crops, particularly in tropical and sub tropical regions of the world. Asian and African countries are endemic to rodent pest problems and witness an annual pre-harvest loss of 5-10% in rice production, however occasional outbreaks of rodent populations can lead to severe crop losses, with a potential to cause major food shortages. It was estimated that 6% loss due to rodents in rice production in Asia amounts to enough rice to feed 225 million people every year. Additionally rodents act as carriers and reservoirs for many dreaded zoonotic diseases.

Among the rodent fauna of the Indian sub-continent, 18 species are commensal and agricultural pests. The lesser bandicoot rat, *B. bengalensis*, is predominant and highly problematic rodent pest species in irrigated crop fields and grasslands. The crop losses due to rodents is estimated to be 5-15%, often exceeding more than 20-30% especially in rodent endemic areas. In addition to crop damage, hoarding of 4-5% panicles by bandicoots in cereal crops amounts to 1-2 quintals loss of coarse wheat/rice per hectare. Among field crops, cereals (rice and wheat), sugarcane and pulses (black gram and green gram) are more vulnerable to rodent attack. Rodents also cause problem to high value horticultural crops like cocoa, oil palm, coconut, pine apple etc. The losses exceed more than 50 % especially in cocoa. Rodents also inflict about 2-3% losses to the stored food grains and losses by food grain contamination are 10 times more than actual feeding losses. Ingression of wild rodent species into the urban environs lead to the spread of many zoontic diseases like letpospirosis and scrub typhus.

Due to the enormous economic impact of rodents at production and storage of agricultural crops, besides concerns of public health issues, rodent control/management in agrarian ecosystems and urban environs become imperative to safeguard public health & agricultural wealth in developing countries. NIPHM is a major capacity building centre in the field of vertebrate (in particular to the rodents) pest management both in agrarian ecosystem as well in urban environs. To address the above issues, NIPHM organizes the following training programmes

A) Refresher Training Programmes on Rodent Pest Management

One programme of 7-day duration was organized at NIPHM for 30 agricultural extension functionaries from rodent endemic States like, Andhra Pradesh, Tamil Nadu, Karnataka, Punjab and Bihar. The participants were imparted with knowledge on biology, ethology and integrated rodent management principles. They learnt skills in safe and

judicious preparation and application of poison baits. Participants carried out exercises on diagnosis of rodent pest species, measurement of their infestation and crop damage. Participants also prepared action plans for organizing mass rodent control campaigns.

B) Off-Campus Progrmmes in Endemic States

Generally rodent pest problems in agricultural fields are pronounced in endemic states. Considering its nature, five off-campus refresher training programmes of 7 days duration were organized in five endemic States in collaboration with partnership centers i.e.PAU-Ludhiana, Punjab; NAU-Navsari, Gujarat; TNAU-Tamil Nadu; SKUAST-Jammu, Jammu & Kashmir and AAU-Jorhat, Assam, to enhance participation of extension functionaries. NIPHM extended financial as well as technical support for the programmes under National Plan on Rodent Pest Management. The training content is similar to on-campus programme with focus on State specific rodent problem in agriculture fields, storehouses etc. and their management. In each programme, 20 field extension functionaries of agriculture and horticulture from respective States were trained intensively.



C) Rodent Pest Management in Store Houses of Food Grains

One 6 day programme was organized in which 4 Officers from State Warehousing Corporations of Andhra Pradesh, Odisha and West Bengal learnt skills in diagnosis of rodent pest species, infestation measurement, bait preparation and baiting techniques. They acquired knowledge about role of reproductive biology and ethology in scientific management of rodent pests in storage structures. Participants visited storage godowns to learn *best* practices of preventive and integrated rodent pest management.

D) Integrated Vertebrate Pest Management

The institute has organized one 21-day programme on Integrated Vertebrate Pest Management to the faculty of ICAR and SAUs in which 6 Scientists from (Acharya N.G. Ranga Agricultural University, Assam Agricultural University, Orissa university of agriculture and technology, Punjab Agricultural University were trained. Different aspects of different vertebrate pest problems in agrarian ecosystems biology, ecology and ethology and management of rodents pests, problems due to ungulates, wild boar, birds and their managements were covered in the course. The participants were given thorough field exposure on different vertebrate pest problems and their management.

E) Certificate Course on Urban Integrated Pest Management

Two certificate courses of 15 days duration on Urban Integrated Pest Management were organized with an objective to build technical manpower to undertake commercial urban pest control services successfully in human habitations, institutions and industrial premises for the structural pest management professionals. In these programmes, participants were given field based training on biology and management of mosquitoes, termites, flies, cockroaches, rodents,

stored insect pests besides giving exposure on pesticide toxicity, zoonosis, safe and judicious use of pesticides through application techniques, food safety and principles of IPM with concomitant field practicals. The participants took assignment works in groups on biology and management of major urban pests. Twenty hour structural pest management professionals participated.

During the year 2013-14, the division has organized a total of 7 programmes and trained 67 participants.

PLANT HEALTH ENGINEERING DIVISION

Application of pesticides continues to play a significant role in reducing crop losses due to pests even under IPM as a last resort. The success of pest management operations depends on proper technique of application of pesticide and the equipment used. Selecting the right equipment for pesticide application is *vital* for successful pest control to ensure safe and judicious use of pesticides. Huge amounts of pesticides are wasted or unnecessarily applied and persons involved in spraying are exposed to Aehiousrisks of pollution. Application of pesticides is being done mostly by untrained operators and they also take most of the decisions in the field themselves. They are unmindful of the safety precautions in handling, usage and disposal of pesticides. It is also to be noted that the operators do not make a distinction between chemical insecticides, herbicides, fungicides and bio pesticides while choosing the appliances, nozzles and application techniques. Such inappropriate applications invariably result in excessive application of pesticides.

Therefore there is a need to create awareness on selection and operation of proper equipment and techniques for safe and judicious application of pesticides. Continuous research programmes are also essential to develop suitable technologies to meet the localized requirements in the areas of application of different types of pesticides and post harvest practices. NIPHM focuses on building the capacity of the stakeholders in correct selection of equipment and techniques of application and use of appropriate nozzles, safe and judicious use of pesticides and also in proper methods of storage. The institute is also involved in development of low cost appropriate technology for adoption at farm level.

a) Capacity Building Programmes:

Trained and skilled manpower should be available to train and empower the farmers/operators to select, calibrate and operate the application equipment. Sensitization and exposure of extension functionaries of State Governments, and other stakeholders to the vital aspects of pesticides application technology is essential for ensuring safe & judicious use of pesticides for enhancing food *safety* and global trade. The training programmes offered by NIPHM are

- **Safe and Judicious Use of Pesticides**

  The programme is of 8 days duration in which aspects of Insecticides Act, 1968 & Insecticide Rules, 1971, various pesticide formulations with regard to their applications, compatibility, shelf-life, toxicity, symptoms of poisoning & first–aid/ antidotes, environmental pollution were discussed in detail. The participants were also exposed to the appropriate application techniques, selection of nozzles & equipment, its maintenance, and calibration. Two programmes were organized on safe and judicious use of pesticides in which 31 officers from T.N., M.P., West Bengal, Karnataka, Kerala, H. P., Punjab, Haryana and Chattisgarh were trained.



- **Special Programme on Safe and Judicious Use of Pesticides for Pvt. Industry**
  One special programme of 4 days duration was organized in which 20 senior field officers of M/s. Coramandal Pvt. Ltd were exposed to the importance of calibration, selection of nozzles and application techniques and International Code of Conduct for safe and judicious use of pesticides. Toxicity due to pesticides, symptoms of poisoning, first–aid and antidotes required were also explained.
- **Pesticide Application Technology**
  One training programme of 8 days duration was organized to the extension functionaries emphasizing the knowledge on safe and judicious use of pesticides, proper selection of techniques, corresponding machine, calibrating the appliance, choice of nozzles, maintenance, weed control techniques and rodent control techniques. Twenty one officers have undergone this training from Andhra Pradesh, Jharkhand, Maharashtra, Punjab, Nagaland, Karnataka, Kerala, Chattisgarh and Himachal Pradesh.
- **Appropriate Pesticide Application Techniques and Farm Level Storage Practices**
  The programme of 8 days duration was designed to impart skills and knowledge on proper application techniques, selection of correct nozzle, selection of the equipment, its maintenance, calibration of the equipment, safe and judicious use of pesticides. Storage problems of food grains at commercial or farm level, traditional storage structures, modern storage structures at farm level, problems of moisture and damage of food grains and control of stored grain pest at farm level were discussed. Two programmes were organized and 40 officers from Odisha, Tamilnadu, Maharashtra, Madhya Pradesh, Andhra Pradesh, Rajasthan-, Assam, Haryana, Karnataka and Manipur participated.

b) Research and Development:

As part of R&D efforts, the Institute has developed affordable appliances to enable safe and judicious application of pesticides, and safe drying & storage of food grains.

- **NIPHM Paddy Dryer:**

A paddy dryer of (2T) capacity has been developed by the institute during the year to enable on farm drying of food grains especially during the rainy seasons. Experimental trials were also carried out using moist paddy and it was observed that moisture was reduced from 28% to 14% in 12 hrs. The product was developed by Er.G. Shankar-Joint Director.

- **Solar Hybrid Dryer:**

Solar dryers can reduce post harvest losses and significantly contribute to improving processing facilities leading to good quality products while reducing dependence on conventional energy sources. The solar hybrid dryer was designed and the experimental trials were conducted for different products such as copra, chillies, and raisins. The product was developed by Er. G. Shankar, Joint Director; Er. M Udaya Bhanu, Scientific Officer and Dr. K Satyagopal, IAS, Director General.

During the year 2013-14, the division has organized a total of 6 programmes and trained 112 participants.

Pests

PESTICIDE MANAGEMENT DIVISION

Pesticides, both chemical and bio-pesticides, do play a significant role in management of pests to minimize crop losses. However, most of the *chemical* pesticides have to be handled with caution and care throughout their life cycle viz., production, transport, storage, usage and disposal, in view of the adverse impact they have on the agro-eco-systems, environment and human health. Pesticide Management provides appropriate advisories for scientific management of the pesticides. The International Code of Conduct on distribution and usage of pesticides provides guidelines for regulating the availability, distribution and use of pesticides.

Ever since the launch of green revolution in the 1960s, the consumption of chemical pesticides has been widespread and used quite excessively by the farmers on different crops. The Insecticide Act, 1968 and Insecticide Rules, 1971 regulates import, manufacture, sale, transport, distribution and use of pesticides in the country. The Central, Regional and State Pesticide Testing Laboratories analyze the samples sent by the Insecticide Inspectors for quality assessment.

NIPHM is one of the designated institutions for offering the mandatory training programme in pesticide formulation analysis as per the Insecticide Act. The Analysts of Central and State Pesticide Testing Laboratories have to undergo the 66 days training programme offered by NPHM to be qualified as analysts. NIPHM is also entrusted with the mandate of capacity building of all the stake holders for effective Pesticide Management. The division offers:

a) Capacity building programmes to enhance the skills of the Pesticide Analysts, Insecticide Inspectors and Dealers of Pesticides.

b) Provides consultancy for establishing Pesticide Testing Laboratories and for securing accreditation by National Accreditation Board of Calibration and Testing Laboratories (NABL).

c) Conducts Proficiency Testing in Pesticides (both Quality control and Residue analysis) to assess the competence of the analysts and laboratories.

Pesticide Management Division of NIPHM is also notified as a regional laboratory of CIL for the analysis of bio-pesticides under section 16 the Insecticides Act 1968. The State Departments of Agriculture avail the facility at NIPHM for detecting adulteration/lacing of bio-pesticides with synthetic pesticides. The Pesticide Management Division, is well equipped with modern analytical instruments required for quality control of pesticides, monitoring of pesticide residues and analysis of bio-pesticides besides confirmatory analysis. The Laboratory is accredited by NABL under ISO 17025-2005 for chemical *pesticide* analysis.

I. Capacity Building Programmes for Quality Control

- **Pesticide Formulation Analysis Course (PFA)**

  The objective of the course is to build the capacity of Analysts working in the Pesticide Testing Laboratories. Programme is devised to be highly practical oriented and to give hands on experience on each techniques of analysis. The participants were trained in using legally valid analytical methods approved by Bureau of Indian Standards (BIS) and the Registration Committee, Central Insecticide Board, for analysis of pesticide formulations. The techniques & methods of analysis both in volumetric as well as modern Analytical Instruments-namely Chromatographic (HPLC, GLC) and Spectroscopic (UV-Vis &IR) Techniques were covered during the programme.



The PFA programme is of 66 days duration and two programmes were conducted during the year where in a total of 50 participants from the states of Andhra Pradesh, Tamil Nadu, Karnataka, Maharashtra, Gujarat, Punjab, Puducherry, Rajasthan, Jammu & Kashmir Directorate of PPQ&S, NIPHM and Students from Maharashtra were trained.

- **Refresher Programme on Analysis of New Molecules of Pesticide Formulations:**
  The objective of the course is to build the capacity of the Analysts of the PTLs in analyzing the newly introduced pesticide formulations and upgrade their analytical skills using modern Analytical Instruments. The course covered both theoretical and practical aspects of the Spectroscopy, Chromatography, Instrumentation, the maintenance and trouble shooting. Nine participants from the States of Andhra Pradesh and Tamil Nadu participated in the 10 days duration course.

II. Programmes on Enforcement of Insecticide Act 1968 & Insecticide rules 1971:

- **Principles of Pesticide Management:**
  The objective of the course is to build the capacity of the scientists of Agricultural Universities and other stake holders who are involved in teaching and involved in Pesticide Management. The Principles of Pesticide Management course is of 21 days duration, covering various aspects of pesticides from registration to disposal- the total life cycle of the pesticides as per the Insecticide Act 1968 and Rules 1971 and International Code of Conduct. 2 participants from University of Agriculture, Karnataka and Horticultural University, Andhra Pradesh attended the programme.

- **Inspection, Sampling and Prosecution under Insecticide Act and Rules**
  The objective of the course is to build the capacity of the Insecticide Inspectors to understand the Act and Rules besides understanding the procedures of inspection, sampling of Pesticides from the markets as well as manufacturing industries. The course also covered issues involved in the process of getting the samples analyzed from the designated *PTLs*, interpretation of Insecticide Analyst's reports and appropriate administrative action and prosecution wherever necessary. Practical demonstration of sampling at a retail shop was also organized. The programme is of 6 days duration and two programmes were conducted in which 57 Insecticide Inspectors from the State of A.P., T.N., Karnataka, J&K, Assam, Bihar, Gujarat, H.P., M.P., Punjab, U.P., New Delhi & West Bengal were trained.

- **Training programme for Pesticide Dealers**
  A three days exclusive programme for Distributors, and Dealers was organized to familiarize with different aspects of the Insecticide Act 1968 and Rules 1971. The Pesticide Industry (5 companies) extended their support by sponsoring 42 members from the States of A.P and Karnataka.

III. Capacity Building in Pesticide Residue Analysis

- **Pesticide Residue Analysis (PRA) :**
  The objective of the course is to build the capacity of Pesticide Residue Analysts working in various Pesticide Residue Testing Laboratories. The participants were trained in preparation of samples, extraction, cleanup of the extracts and estimation besides confirmations using different analytical methods viz., Association of Official Analytical Chemists (AOAC International), QuEChERS, Environmental Protection agency (US-EPA), USA and Laboratory Developed Methods(in house methods). The participants gained knowledge to adopt the technology to analyze different matrices of samples during the programme and learnt skills for pesticide residue analysis. The PRA programme is of 30 days duration and 3 programmes were conducted during the year for 20 participants from Maharashtra, Karnataka, Universities of Agriculture-Gujarat, Karnataka, Maharashtra, Andhra Pradesh, NIPHM and the participants of PGDPHM.

- **Sampling of Vegetables, Fruits and Agricultural Commodities for PRA**
  The objective of the course was to build the capacity of Analysts in sampling of agricultural commodities from the farms for pesticide residue analysis as per the international norms. The participants were trained in different techniques and methodologies adopted

while drawing the samples for pesticide residue analysis so as to represent the total farm/ field. The programme is of 2 days duration and two programmes were conducted for Analysts from Karnataka, Maharashtra, private sector, student from Karnataka during the year.

IV. Laboratory Quality Management & Internal Audit based on ISO-17025:2005

The objective of the course of 6 days duration, is to build the capacity of Analysts working in *PTLs* to organize and manage the Laboratories as per the norms of ISO 17025-2005 and prepare themselves to obtain NABL accreditation. This programme was conducted thrice in the campus and 34 participants were trained from the State Government of Maharashtra (30), ANGRAU, AP, (4). The same programme was also conducted off campus and a total of 17 participants participated in the training programmes at *SPTLs at* Coimbatore, Bhubaneswar, and Pesticide Residue Laboratory, Karnataka.

V. Consultancy Services offered

- **Consultancy for securing NABL Accreditation and Training on Laboratory Management and Internal Audit as per ISO:17025-2005**

NIPHM offers consultancy for Internal Audit of *PTLs and* preparedness for Accreditation by NABL under ISO 17025-2005 to various SPTLs Departments of Agriculture and the Laboratories of Agricultural Universities. The Institute has offered consultancy to the Pesticide Residue Laboratory, Maharashtra and the Lab received accreditation. The Institute has also rendered consultancy *services* to the following laboratories for securing NABL accreditation and provided training in Laboratory Management and Internal Audit as per ISO 17025-2005 during the year.

i. State Pesticide Testing Laboratory, Andhra Pradesh.
ii. Pesticide Residue Testing Laboratory, ANGRAU, Andhra Pradesh.
iii. State Pesticide Testing Laboratory, Patna, Govt. of Bihar.
iv. Pesticide Residue Testing Laboratory, University of Agriculture, Raichur.
v. State Pesticide Testing Laboratory, Coimbatore, Govt. of Tamil Nadu
vi. State Pesticide Testing Laboratory, Bhubaneshwar, Govt. Of Orissa
vii. Pesticide Residue Testing Laboratory, Govt. of Karnataka

- **Proficiency Testing:**

The Pesticide Management Division conducts proficiency testing in Pesticide Formulation and Pesticide Residue Analysis which is one of the requirements for the laboratories seeking accreditation by NABL under ISO/IEC 17025-2005 and many laboratories participated in the programmes. The proficiency testing for Pesticide Residue analysis was conducted for the sample matrices of Tomato and water during the year. 21 Laboratories participated in the PT programme for Residue Analysis in Tomato and 23 for Water matrix. The " Z" score has been communicated to all the participated Laboratories based on the evaluation of reported results by each Laboratory.

- **Inter Laboratory Comparison Testing:**

NIPHM also conducts and participates in the Inter Laboratory comparison tests for the analysis of pesticides for quality control and residue analysis.

VI. Analysis of Bio products:

NIPHM analyzed bio-products to detect adulteration with synthetic pesticides. 920 samples were received from different State Departments of Agriculture and the Central Insecticide Laboratory, Directorate of Plant Protection Quarantine & Storage, Faridabad during the year and 670 samples were analysed, reported the results to the concerned and another 250 samples are under process.

VII. National Project on Monitoring of Pesticide Residues (NPMPR):

NIPHM is one of the recognized centers under the National Project on Monitoring of Pesticide Residues. During the year 2013-14 about 951 samples from different commodities were analysed under the project and the report submitted to the project convener.

During the year, the division has organized 22 programmes and trained 278 participants.

PLANT BIOSECURITY DIVISION

Plant Biosecurity is of paramount importance to any country to safeguard food-security, sustainability of agricultural/horticultural production and also in protecting livelihood of people. Though incursion of alien pests into newer areas is not a new phenomenon, increased global trade has paved way for quicker entry of many exotic pests to hitherto unknown areas. Anthropogenic activities play a major role in such quick movement of alien pests either directly through trade or indirectly through illegal movement of seeds, planting material and agricultural commodities.

India is one among the 12 mega biodiversity centers in the world & is highly vulnerable to invasive pests. The far reaching consequences of entry, establishment, and spread of various kinds of pests are fearsome especially to a country like India due to its varied agro-climatic zones and due to its primary dependence on agriculture. The pest incursions in the past caused serious economic damage, notable among them are; coffee berry borer (*Hypotehnemushampei*), coconut eriophyid mite (*Aceria gurrreronis*), spiralling white fly (Aleurodicus disperses), cotton mealy bug (Phenococcus solenopsis), papaya mealy bug (*Paracoccusmarginatus*), sunflower downy mildew (*Plasmopara halstedii*), bunchy top of banana etc. Most of these invasive alien species have established and invaded widespread areas in India, due to lack of awareness among stakeholders and due to inadequate surveillance, containment and eradication programmes.

The Indian subcontinent is still free from many devastating pests of Agriculture, Horticulture, Plantation & Forestry plants which are causing serious damage elsewhere. There is a need to protect the entry, establishment & spread of these exotic & invasive plant pests in India. Government of India has initiated action to establish an integrated National Agricultural Biosecurity system covering plant, animal and marine resources, to combat threats of bioinvasion of pests and build capacity to enhance SPS compliance & competitiveness to gain market access and enhance competitiveness in international trade. In order to strengthen Agricultural Biosecurity in the country NIPHM has been designated as the nodal centre by Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India to develop capacity of all stake holders. The division has undertaken following activities.

CAPACITY BUILDING PROGRAMMEES

NIPHM organized 22 training programmes in Biosecurity & Incursion Management and special capacity building programmes to promote SPS compliance. In addition, Workshops, International programmes and exclusive programmes for the Officials of DPPQ&S were organized.

A. Biosecurity and Incursion Management

- **Biosecurity and Incursion Management**

  Rapid globalization and advancements in transport, travel, tourism coupled with liberalization of trade pose increased risk of introduction of exotic and invasive pests into the country. Alien Plant Pests which gained entry into India are causing significant economic damage to agricultural production.

  The training programme *of 21 days duration* provided exposure to participants in biosecurity concepts, impact of invasive alien species and exotic pest threats. The participants learnt various strategies that can be employed along *the* biosecurity continuum viz.,

  i. **Pre border -** off shore inspection, certification and treatments, PRA & quarantine regulations.

  ii. **Border/entry point -** application of quarantine regulations, inspection, sampling, testing and treatment

  iii. **Post border -** regulations for growing in post entry quarantine facilities, pest surveillance, exotic pest monitoring, containment and/or eradication of pests.

  The participants were familiarized with the decision making tools such as Pest Risk Analysis to identify potential pests of concern to India, importance of pest listing and pest database, risk management measures, Diagnostic techniques and protocols for regulated pests. The significance

of pest surveillance, and pest risk analysis in securing market access for Indian agricultural commodities was highlighted.

The mock exercises during the programme enabled the participants to improve their skills in understanding and carrying out Pest Risk Analysis, emergency response in the event of new pest reports, use of Pest Risk Analysis to analyse the cost-effectiveness of eradication/containment programme, delimitation of infested area and identification of buffer zones and the measures needed for initiating eradication. The participants also learnt basic Detection & Diagnostic skills to identify pests of concern to India. The programme was attended by nine participants from Bihar, Rajasthan, Haryana, T.N., M.P., Assam & Karnataka.

- **Quarantine Insects: Detection & Identification**

Insect pests cause great damage in field and storage and hence are considered as threat to biosecurity. Reliable detection methodologies and accurate & timely diagnosis is paramount in identification of insect pests of quarantine concern and prevent entry, establishment and spread of pests of concern to India. NIPHM organized 6 days duration programme on 'Quarantine Insects: Detection and Diagnosis' and trained twenty two Officials from Odisha, Punjab, Karnataka, Andaman & Nicobar , Maharashtra , Haryana.

The participants learnt about the concepts of quarantine, quarantine pests, regulated pests, economic impact of introduced pests in India, important insects of quarantine significance to India. They were also exposed to the looming threats of insect pests to Agriculture, Horticulture, Plantation crops and Forest Trees, methods and protocols and online tools for identification of insect pests. The participants *received* hands-on experience in collection, pinning and preservation of insect specimens and procedures to be followed for dispatching the specimens for identification to diagnostic centers.

- **Pest Surveillance:**

Pest surveillance provides insights into the health status of a country's agriculture and strengthens preparedness for preventive actions both in addressing the problems due to domestic pests of serious concern as well as in protection of native agricultural biodiversity from the incursion threats of exotic pests. Surveillance also provides vital information for development of robust quarantine policies and also facilitates early detection of invasive alien species which is very essential for their eradication. Establishment of pest free areas and areas of low pest prevalence to gain market access can be achieved only through well designed pest surveillance programmes.

NIPHM organized 8 day duration programme on Pest Surveillance on three occasions and trained 102 participants representing Kerala, A.P., U.P., Karnataka, Chhattisgarh, Odisha, Manipur, T. N., Haryana, Maharashtra, Punjab, H.P., Arunachal Pradesh, West Bengal, M.P., Maldives, J& K & Bihar.

The participants learnt, various pest surveillance strategies such as detection, monitoring and delimiting surveys. The participants learnt tools required for surveillance of target pests and the procedures for establishment of Pest Free Areas to gain Market Access. The participants learnt about various lures and traps for carrying out fruit fly surveillance for monitoring as well as for area-wide control.

- **Stored Grain Pests-Detection and Identification & Phytosanitary Treatment (MBr & ALP)**

Increasing trade in stored grains and stored products is causing alarming biosecurity concerns. The international grain movement is increasingly becoming a contentious issue both for biosecurity protection and market access negotiations. The detection of such pests and precise identification is essential to determine the appropriate Phytosanitary treatment. Fumigation by and large is the most accepted Phytosanitary treatment. In India, fumigatio with Phosphine and methyl bromide are accepted treatments.

Modular approach is adopted in NIPHM training programmes, so as to facilitate stakeholders to opt for appropriate module or for entire course depending upon their role and need. Accordingly 21 day duration training programme having two built in sub-modules viz. (i) Stored Grain Pests-Detection and Identification & (ii) Phytosanitary Treatment (MBr& ALP) was organized and twenty officials representing Kerala, Bihar, Andhra Pradesh, Haryana participated.

The participants learnt various inspection & sampling methods to detect insect pests & identification of different stored grain insect pests by using various identification keys and online tools. The participants learnt the importance of specific pests which hamper the exportable commodities from India, with specific reference to Khapra beetle. In the second module, the participants learnt use of approved fumigants for quarantine purposes i.e. Methyl bromide and Phosphine.

During the two weeks programme the participants were also familiarized with physical and chemical properties of Phosphine and Methyl bromide, safety precautions to be followed while handling fumigants, mode of action of fumigants, principles of fumigation, monitoring the fumigant concentration, appropriate use and maintenance of fumigants and safety equipments. The participants were made to understand the guidelines laid in NSPM-11, 12 (MBr fumigation) and NSPM-22 (Phosphine fumigation) to conduct appropriate fumigation procedures as well as the accreditation procedure of fumigation operators prescribed by the Directorate of PPQ&S. The participants had hands-on practical experience in creating gas-tight enclosure, laying gas supply and monitoring lines, use of vaporizer, fan, leak detector and gas concentration monitor.

- **Stored Grain Pest Management for FCI and CWCs:**

India is witnessing a record grain production in the recent years and the godowns are overflowing and warehouse management has become a tough task. The mere presence of *insects*, even dead, like that of Khapra beetle, results in serious setback in international trade of stored grains and products. The domestic management is also of serious concern especially in the context of food security requirement. An exclusive programme of 6 days duration was organized for officers of Food Corporation of India (FCI), Central Warehousing Corporation (CWC) and State Warehousing Corporations in which forty one participants from A.P., T.N., Kerala, Karnataka and Maharashtra were trained.

The participants learnt the importance of stored grain pest management in the context of national food security and global grain trade. The trainees also learnt methods to detect and identify various stored grain insect pests by employing appropriate identification tools, use of pheromones and traps. The significance of Systems Approach in managing the food grains was explained. Participants conducted practical fumigation exercise using Phosphine as per NSPM-22.

- **Orientation for PEQ Inspection Authorities:**

Imported consignments of plants have the potential to introduce quarantine pests. In some cases, period of quarantine is necessary for a specific consignment because of the impossibility of verifying the presence of quarantine pests in that consignment at entry. Post entry quarantine allows for testing for the presence of pests, time for the expression of signs or symptoms, and appropriate

treatment if necessary. The imported planting materials such as live plants, cuttings, saplings, bulbs, tubers, rhizomes, seed sprouts, bud wood etc., are to be grown under Post Entry Quarantine facility (confinement area) for stipulated period under supervision by notified Inspection Authorities viz., Heads of the Department of Plant Pathology of State Agriculture/Horticulture University, Crop specific ICAR Institutes and IARI.

Six day training on orientation of PEQ Inspection Authorities was organized in which 12 Officials representing State Agriculture Universities & ICAR Institutes from T.N., Karnataka, Gujarat, Odisha, Maharashtra and Uttarakhand participated.

The participants learnt the role and responsibilities of Inspection Authorities in safeguarding the nation from ingress of exotic pests, protocols to be followed in establishing and certification of open field or closed PEQ facilities. The trainees also learnt the significance of PEQ inspections at required intervals and skills for detection and identification of quarantine pests, preservation of specimens, forwarding of specimens to nodal laboratories for authentication, applying appropriate mitigation measures in the event of detection of quarantine pests, reporting of final clearance from PEQ and Importer non-compliance (if any) for different types of planting materials as per the Standard Operating Procedures.

B. Sanitary and Phytosanitary (SPS) Measures:

Globalization of trade has triggered large scale movement of plant materials and criss-crossing of the exotic pests across the continents through the commodities traded. To ward off entry and establishment of unwanted pests, Pest Risk Analysis helps to identify various Phytosanitary Measures that can be employed to mitigate the pest risk. Fumigation employing Methyl Bromide and Phosphine is most commonly employed Phytosanitary Treatment for Seeds, Grains, Fruits, Timber etc; whereas, Forced Hot Air Treatment is being enforced for Solid Wood Packing Materials (SWPM). NIPHM has organized programmes to build the capacity of stakeholders in Public & Private sector as detailed below:

I. Programmes for Public Sector

- **Plant Quarantine National Regulations and Procedures:**

  As per Article IV of IPPC, each contracting party of IPPC shall make provision for an official National Plant Protection Organization to safeguard the country's agricultural economy and the biodiversity from the ravages of exotic pests. The main responsibilities of public authorities involved are; issuance of Phytosanitary certificates, pest surveillance, pest risk analysis, inspection, disinfestations, post entry quarantine etc. The stakeholders viz., plant quarantine officials, PSC issuing authorities and PEQ inspection authorities, need to acquire appropriate knowledge on plant quarantine regulations, procedures and documentation in order to safeguard Biosecurity and to facilitate safe trade. Further, adherence to procedures facilitates safe international trade and reduces non-compliances.

  The Six day duration training on 'Plant Quarantine National Regulations and Procedures' was conducted on two occasions and trained twenty three officers from State Department of Agriculture, SAU, ICAR and DPPQ&S representing Gujarat, Uttar Pradesh, Haryana, Bihar, Andhra Pradesh, Karnataka, Punjab, Maharashtra and Manipur. The participants learnt the importance of SPS Agreement, International conventions, National Regulations, SOPs on imports and exports. Further, through mock exercises & practical scenarios, the participants learnt the procedures for use of on-line PQIS software and procedures to be followed in import/export of seeds, plants, bulbs, grains, fruits, GMOs, Germplasm and bio-control agents.

- **Pest Risk Analysis:**

  Pest risk analysis (PRA) is a science based tool to tackle the alien pests of concern to any nation while facilitating international trade. PRA is a process which helps to assess the risks of entry, establishment and spread potential of exotic pests. PRA helps to identify the options to prevent the entry and management options in the event of pest establishment. The international standards brought out by IPPC serve as guidance for carrying out PRA.

The participants learnt the importance of International conventions & National regulations, SPS obligations for regulating trade based on pest risk analysis, concept of risk and risk analysis, PRA process for assessing the likelihood of pests being associated with the pathway, transport, its direct and indirect impact in the event of pest establishment, spread and the risk management options to minimize such event to happen. The participants *also* learnt the importance of PRA for market access for new commodities in the international trade through mock exercises. Seventeen Officials from DPPQ&S, State Agricultural Universities and Department of Agriculture representing T.N., A.P., Chhattisgarh, Karnataka, Rajasthan, Gujarat and Punjab were trained.

- **Orientation for Phytosanitary Certification (PSC) Issuing Authorities**

Phytosanitary certification is one of the basic measures employed by the IPPC member countries to prevent global movement of plant pests in traded agricultural commodities. Phytosanitary certificates are issued by the exporting NPPO as a plant health certificate after carrying out inspection, sampling, testing and treatment (if required) to promote safe trade. To promote export, D.A.C, MoA has notified more than 155 public Officers of Central/State Government, ICAR institutes and SAU's for carrying out phytosanitary certification.

'Orientation for Phytosanitary Certificate Issuing Authorities' of 6 day duration was organized in which 14 officials participated representing Maharashtra, Uttar Pradesh, Tamil Nadu, Goa, Gujarat, Manipur and Andhra Pradesh. The participants learnt international regulations and obligations under IPPC to promote safe agricultural trade, the role and responsibilities of NPPO and PSC issuing authorities. They also learnt procedures for use of on-line PQIS software skills for inspection & sampling, testing for pests of concern to importing countries, importing country's regulations. The importance of PFA/ALPP in export promotion and role of phytosanitary treatments for mitigating the pest risks as per the Standard Operating Procedures for Phytosanitary Certification were explained.

II. Programmes for Private Sector:

- **Plant Quarantine Procedures for Imports and Exports**

The liberalization of trade in the post WTO scenario has opened up new avenues for international trade in agricultural commodities. One of the main components in the international trade of agricultural commodities is application of Biosecurity and quarantine rules & procedures, by exporting and importing countries. The PQ rules, procedures and degree of implementation vary in specificity and protocols from country to country. Proper understanding and following the procedures reduces the chances of consignment rejections, penalties and non-compliances which are of major trade concerns.

A five day training programme on Plant Quarantine Procedures for Imports & Exports was organized in two batches 14 participants of seed industry were trained

from West Bengal, Andhra Pradesh, Gujarat, Haryana and Maharashtra States. The participants learnt topics related to SPS and Technical Barriers, International conventions, National Regulations, SOPs on imports and exports. Practical scenarios on procedures for on-line PQIS software use in import/export of seeds, plants, bulbs, grains, fruits, GMOs, germplasm and bio-control agents were organized.

- **Phytosanitary Treatments**

Phytosanitary Treatments often serve as one stop solution at the end point of export. The increased trade in agricultural products is accompanied by the increased risk of *entry* of inadvertently transporting quarantine pests to countries or regions. Quarantine pests can seriously disrupt trade of fresh agricultural products not only between countries, but also between geographical areas within countries unless accepted post-harvest quarantine treatments are available. Phytosanitary treatments are helpful in safeguarding biosecurity and also in gaining market access. Following programmes on Phytosanitary Treatments were offered.

a) Fumigation (MBr & ALP):

Among the phytosanitary treatments, fumigation is most accepted treatment. Fumigation treatment providers form an important and indispensable part for the import/export of agricultural commodities in international trade and knowledge and skill sets possessed by them can make a great difference in the success of phytosanitary treatments. NIPHM is one of the notified Institutes under Insecticides Rules 1971 Chapter III-10, (3a) (iii) for imparting training for commercial pest control operators on fumigation using Methyl bromide and Phosphine. A 15 day duration training programme was organized twice and trained 27 participants from Kerala, Maharashtra, Haryana, West Bengal, Rajasthan, A.P., and T.N. The participants learnt use of approved fumigants for quarantine purposes i.e. the physical and chemical properties of Phosphine and Methyl bromide. Safety precautions to be followed while handling fumigants, modes of action of fumigants, principles of fumigation, monitoring the fumigant concentration, appropriate use and maintenance of fumigants and safety equipments were also explained. The participants were able to understand the guidelines laid in NSPM-11, 12 (MBr fumigation) and NSPM-22 (Phosphine fumigation) to conduct appropriate fumigation procedures as well as the accreditation procedure of fumigation operators prescribed by the Directorate of PPQ&S. The participants had hands-on practical experience in creating gas-tight enclosure, laying gas supply and monitoring lines, use of vaporizer, fan, leak detector and gas concentration monitor.

b) Forced Hot Air Treatment (FHAT): The packaging material is one of the most threatening pathway for incursion of timber pests across the globe. Forced Hot Air Treatment (FHAT) is one of the approved treatments for packaging material under ISPM -15. National Standard for Forced Hot Air Treatment (NSPM-9) has been developed which prescribes treatment procedures and the steps to register the facility. It is essential to certify the FHAT facilities to ensure that wood packaging material is treated and marked in consistence with the provisions of ISPM - 15.



NIPHM is the only Institute in India to offer a specialized training programme on FHAT for industry stakeholders. Three programmes were conducted and 34 participants from A.P., U.P., Punjab, Maharashtra, Haryana Gujarat, Tamil Nadu and Karnataka were trained. The participants learnt the critical requirements for establishing FHAT facilities, calibration of sensors, placement of sensor, identification of coolest point, safety precautions, conducting the treatments, use of appropriate mark and record keeping in accordance with ISPM - 15 and NSPM - 9. The participants also learnt the pests associated with wood packaging materials.

c) Phytosanitary Requirement for Export of Ornamental Plants:

Kadiyam nurseries spread in 3,500 acres in 11 villages of Kadiyam mandal in East Godavari are doing good business and supplying ornamental plants throughout the country. However, the nurseries which generate revenue running into several crores of rupees per annum have not tapped the export potential. Realizing the export potential the Confederation of Indian Industries (CII), Green Initiative, Hyderabad approached NIPHM to provide training on Phytosanitary requirements to nursery men of Kadiyam. Accordingly a training programme on "Phytosanitary requirement for the export of ornamental plants" was organized in collaboration with Confederation of Indian Industries (CII), Hyderabad.

During the year, the Division organized 23 programmes and trained 401 participants.


Pests

EXCLUSIVE TRAINING PROGRAMMES FOR THE OFFICIALS OF DPPQ&S.

The NIPHM has been designated to function as a National Academy for training the Officials of DPPQ&S by organizing the following exclusive programmes.

(i) Induction training programme for newly recruited Officials
(ii) Induction training programme for inter scheme transferees
(iii) Refresher programme on Plant Quarantine & IPM

- **Induction Training Programme for New Recruits of DPPQ&S**

The Directorate of PPPQ&S recruits a number of officials to enforce and implement various mandated responsibilities in the areas of Plant Quarantine, Integrated Pest Management, Locust Control and Pesticide Management. It is important that all new employees receive induction training at the beginning of their employment and that they are provided with all the information necessary to carry out their jobs effectively. Further, the activities in the area of Plant Quarantine, Pesticide Management, Integrated Pest Management and Locust Control are compartmentalized and officials working in one division need to be aware of the importance and interrelationship of other divisions& the inter connectedness of different divisions.



Fourth batch of Induction Training Programme for 21 newly recruited officials of DPPQ&S was organized. The training focused on various aspects of Plant Biosecurity, Plant Health Management, Locust Management, Pesticide Management & Administrative aspects like procurement of goods and services and financial management. The Officers who are working at CIPMC Centers were trained intensively in production and quality control of bio-control agents, while, the officers working at Plant Quarantine stations were exclusively trained in detection and identification protocols for various types of pests, Quarantine and SPS issues etc.

- **Induction Training Programme for Transferees on Plant Biosecurity**

This course was developed to build and enhance capacity of in-service officials of DPPQ&S who are transferred to Plant Quarantine Division. The main objective of this programme was to orient the officials on the basic concepts related to allied sectors. A total of 17-inservice officials were trained in the Induction Training Programme for Transferees of DPPQ&s. The training programme focused on Plant Biosecurity, Plant Quarantine procedures for imports and exports, Pest detection & diagnosis, incursion management, pest surveillance, international and national standards, guidelines and SOPs.

- **Induction Training for Transferees on Plant Health Management**

The induction training course for DPPQS officials who are transferees to the IPM stream (CIPMCs/RPTLs) was organized to train them in Plant Health Management. During the course, AESA based plant health management in conjunction with Ecological engineering for pest management, Integrated Nutrient Management, Integrated Weed Management, Good Agricultural Practices (GAP), FFS methodology, pest and defender identification, P:D ratio, biological control of pests, quality assessment and quality control of microbial biopesticides, botanicals, management of nematode disease safe and judicious use of pesticides, pesticide application techniques, vertebrate pest management, etc. aspects were covered.

In addition to that exposure visits to institutes, field visits and field exercises at farmers' fields were organized. The participants collected insect pest specimens during field visits and prepared AESA charts. As a part of the training course, participants have presented assignments on special topics related to Plant Health Management. The 35 days programme was conducted for 21 participants comprising 18 officers of DPPQS and 3 newly recruited Assistant Scientific Officers of NIPHM.

INTERNATIONAL COLLABORATIONS

❖ Collaboration with USDA/USAID

National Institute of Plant Health Management strives to emerge as an internationally acclaimed Centre of Excellence for Human Resource and Policy Development in sustainable Plant Health Management and Plant Biosecurity. To strengthen the capacity in training, research and policy issues in the area of Plant Health Management and Plant Biosecurity, NIPHM has entered into collaboration with USDA/USAID. The collaboration with USDA/USAID was approved by DAC and Ministry of External Affairs.

The collaboration aims to address the Plant Health and Biosecurity issues through capacity building programmes by incorporating advanced practices in Plant Health Management and Plant Biosecurity at Regional and International level. The activities envisaged include joint training programmes at NIPHM through participation of USDA technical experts, faculty exchange programmes, US based training programmes for NIPHM faculty, development, customization and sharing of distance learning modules, applied research and designing Regional Plant Health Systems Analysis course to benefit officers of South Asia & developing countries. During the period under report the following activities were undertaken:

A. US based Training Programmes for NIPHM Officials:

- **Plant Health Systems Analysis (PHSA) Training Programme:**

  Two officials - Dr. N. Sathyanarayana, Director and Er. G. Shankar, Joint Director attended the programme on PHSA at Center for Plant Health Science and Technology (CPHST), USA during 17th to 28th June, 2013. The training has enhanced the capabilities of the Officials to act as resource persons for the Regional Plant Health Systems Analysis course for South Asian and other developing countries to be organized by NIPHM & USDA jointly in the future.

- **Risk Analysis Mentoring Programme (RAMP)**

  NIPHM is establishing a pool of trained experts in Pest Risk Analysis (PRA) both for organizing training programmes and reviewing the import regulations through risk analysis. Two officials Dr. A. G. Girish and Dr. Satish. K. Sain were deputed for the Risk Analysis Mentoring Programme (RAMP) at Plant Epidemiology and Risk Analysis Laboratory (PERAL), Center for Plant Health Science and Technology (CPHST) USDA, Raleigh during 10-28 March 2014.The RAMP is aimed to enable the participants to conduct PRA for agriculture commodities, identify pests of concern and appropriate mitigation measures to promote safe trade. The mentorship programme is follow-up training for the participants who are trained in basic pest risk analysis training programme. Dr. Girish carried out the risk analysis for import of tomato seeds for sowing purpose from Netherlands under the mentorship of Dr. Daniel M Brochert and Dr. Satish carried out the risk analysis for import of grape fruits for consumption purpose from South Africa under the mentorship of Dr. Shawn Robertson.

Pests

Activities under NIPHM-USDA/USAID Collaboration













A. Visit of Senior Officials of NIPHM to USA:

Dr. K. Satyagopal, IAS, Director General, NIPHM and Dr. N. Sathyanarayana, Director (Plant Biosecurity) visited USA during 9-23 November2013 in order to develop a detailed plan of action and formalize the arrangements with Heads of the concerned Institutes/ Universities in USA. The major objective of this visit is for interaction with USDA Professionals & University co-operators at various locations in USA to explore collaborative research opportunities, to develop a Regional Plant Health Systems Analysis Course, to organize joint international training programmes at NIPHM and to develop Distance Learning Modules.

B. Joint International Training Programmes Organized at NIPHM:

- **Pest Risk Analysis (PRA):**

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. PRA plays a key role for initiating any official action to prevent the introduction and spread of pests of plants and plant products. A joint international training programme on Pest Risk Analysis was conducted from 2nd to 6th September 2013 involving two experts viz. Dr. Stephanie Bloem and Ms. Neely Alison from USDA-APHIS. A total of 27 participants out of which 13 international participants representing Bangladesh, Sri Lanka, Ghana, Kenya, Malawi & Mozambique and 14 National Participants from ICAR Institutes, DPPQ&S and NIPHM participated in the training programme.

The participants learnt the importance of International conventions & National regulations, SPS obligations for regulating trade based on pest risk analysis & concept of risk and risk analysis. PRA process for assessing the likelihood of pests being associated with the pathway, transport, its direct impact and indirect impact were explained. The participants also learnt the risk management options to be employed in the event of pest establishment & spread to minimize such events to happen. The significance of PRA for market access for new commodities was explained to the participants through mock exercises.

❖ Collaboration with DAFF, Australia

Article 5 of the MOU signed between Ministry of Agriculture, Government of India & DAFF, Australia, identified broad areas of cooperation and collaboration. The item No. VII of the said MOU pertains to activities on SPS issues and collaboration. NIPHM in India and Cooperative Research Centre for National Plant Biosecurity, Australia are the Institutes identified for collaboration in strengthening capacity building in Biosecurity, Pest Risk Analysis and Plant Health Management etc. During the period two International Workshops on Sanitary and Phytosanitary (SPS) Awareness for Officials from South Asia & Sri Lanka were organized. A total of 45 officials participated in these workshops.

- **Sanitary and Phytosanitary (SPS) Awareness Workshop for South Asia:**

  WTO-SPS Agreement plays a critical role in regulation of international trade of various commodities that include plants and plant products. The intricacies of the agreement, if understood and analysed properly, can be put to effective use in both safeguarding country's biosecurity and to gain market access. NIPHM in collaboration with DAFF Australia organized a workshop on SPS Awareness for the Officials from India, Nepal, Bhutan, Bangladesh, Pakistan, Afghanistan, Maldives and Sri Lanka at New Delhi.

  The workshops addressed the core issues in SPS Agreement of WTO, such as food security, regional cooperation, the transparent development of policy and trade facilitation in South Asia. The programme introduced participants to World Trade Organization (WTO), the Sanitary and Phytosanitary Agreement, the International Plant Protection Convention (IPPC), Codex Alimentarius Commission (CAC), and the World Organization for Animal Health (OIE). The workshop also strengthened the capacities of participants in key technical aspects such as Pest Surveillance, Biosecurity & Invasive Alien species, Inspection and Sampling, Diagnosis, Treatments, Pest Risk Analysis and Risk Management through systems approach. The workshop was delivered by Dr. Ian Naumann and Dr. Zamir Hossain of DAFF, Australia and Dr. K. Satyagopal, IAS and Dr. N. Sathyanarayana of NIPHM, India.

- **Sanitary and Phytosanitary (SPS) Awareness Workshop for the officials of Sri Lanka:**

Department of Agriculture, Forest Fisheries (DAFF), Australia in collaboration with NIPHM organized SPS Awareness Workshop at Colombo, Sri Lanka. Dr. K. Satyagopal, IAS, and Dr. N. Sathyanarayana represented NIPHM in organizing the Workshop. Twenty two Officials participated in the workshop, which focused on Plant health, Animal health and Food Safety in Global Trading Environment, Risk Management options along the Biosecurity Continuum, Sampling, Systems Approach in pest management and Phytosanitary Treatments.

❖ IBSA Workshop on Harmonization of PRA Methodologies

Market liberalization and globalization have led to significant changes in agriculture and agricultural commodities especially food grain markets in all developing countries including India, Brazil and South Africa (IBSA). The food basket is changing rapidly, from staple food grains towards high-value fresh fruits and vegetables with increasing demand for safe and quality products. This highlights the importance of agricultural co-operation within IBSA and the need to share expertise, capabilities and experiences in complying with Sanitary and Phytosanitary (SPS) measures subjected to plants/plant products.



A workshop on Harmonization of Methodologies on Pest Risk Analysis (PRA) for IBSA Countries' was organized by NIPHM, with the aim to prepare a draft trilateral agreement for common PRA process to be adopted for market access among the IBSA countries. Nine officers participated in the Workshop. The deliberations focused on prioritization of plant & plant products for trade, major pests of concern in the pathway, harmonization of pest risk analysis, mitigation measures & treatments. The need to organize level 2-PRA training at NIPHM for IBSA members to create a pool of master trainers was also deliberated.

❖ Training Programme for the Officials of Afghanistan

Under the twinning MoU between the Governments of India and Afghanistan, training programme on Plant Quarantine & Phytosanitary measures and Pesticide Registration procedures, Pesticides Inspection in the markets were organized for the officials of Ministry of Agriculture, Irrigation & Live Stock, Afghanistan and trained 41 officials.

- **Training Programme on Plant Quarantine and Phytosanitary Measures:**

Plant Quarantine is the first line of defence in Plant Protection. The global movement of plants and plant material has a primary requirement of pest freedom. Hence, the phytosanitary measures are required to be in place to prevent the entry of exotic pests into the country thereby saving the agricultural economy from the ravages in these pests.

NIPHM organized a training programme on Plant Quarantine and Phytosanitary Measures for the officials of Ministry of Agriculture, Irrigation & Live Stock, Afghanistan. Twenty officials were trained on various aspects of Plant Quarantine, International Regulations and Standards for Phytosanitary Measures, Biosecurity concepts, Pest Diagnostics, Stored Grain Pest Management, pest detection & surveillance, impacts of introduced pests.

- **Training Programme on Pesticide Registration and Inspection Procedures**

A special programme of 10 days duration was conducted on Pesticide Registration & Inspection procedures in the markets for 21 participants from the Department of Agriculture, Govt. of Afghanistan. Participants were

trained on aspects covering Legislation, Registration (Data requirements), Sampling in the markets and Prosecution etc., as per the international guidelines and exposure to the Insecticide Act 1968 and Rules 1971 of our country. Practical demonstration of sampling methods followed under the Insecticide Act in our country was organized and significance of various forms and formats used for the enforcement of the legislation was explained.

❖ Other International Participant's/Trainees Visits

Thirty participants from Liberia, Kenya, and Malawi visited NIPHM on 3rd December, 2013 & they were given exposure to principles of Plant Health Management, Plant Biosecurity, Pesticide Management, Rodent Pest Management, and Pesticide Application technology etc. under US-INDIA-AFRICA Triangular International Training programme on New Dimensions in Agricultural Extension Management".

Eighteen participants from African Countries like Uganda, Nigeria, Benin, Burkina Faso, Malawian and Chad under "Technical Assistance Programme in Cotton" (23rd September to 6th November, 2013) organized by SAMETI underwent training for two days on 12th & 14th October 2013 at NIPHM. They were exposed to Agro-ecosystem Analysis and Ecological engineering for plant health management, Production protocol for biocontrol agents and Microbial biopesticides and Pesticide application techniques, etc.

Eradication of Invasive weed *Ambrosia psilostachya*

An obnoxious ragweed was reported to occur in Tumkur district of Karnataka and was later identified as *Ambrosia psilostachya* DC, an invasive weed of Mexican and Northern American origin. The weed is of quarantine significance to India and regulated as quarantine weed under Schedule VII of PQ Order, 2003. This weed is highly invasive in its native and introduced range. The negative effects of the weed are being experience in invaded forest and agro-ecosystems and in public and social lands. The weed needs to be contained to prevent the further spread and subsequently eradicated.

DAC entrusted the work relating to containment and eradication of Ambrosia to NIPHM. A delimiting survey was conducted for Ambrosia psilostachya with an objective to gauge the extent of its spread and arrest further spread and to plan for its eradication. The mapping of infested area was carried out through delimiting survey employing GPS and other tools. The spread of the weed was found confined between N 13°08'656" to N13°11'189" and E76° 40 '759" to E 76° 42'426". A three kilometer buffer zone surrounding the delimiting survey, necessary awareness was created among the stakeholders. Eradication, activities were initiated by organizing a stakeholder workshop to fix the responsibilities for organizations like DPPQS, KSDA, DWSR, UAS and others. During the year about 200 acres of cropped area came under weedicide spray. The eradication activities are in process.

POLICY SUPPORT

Policy support to Government of India on the issues of plant protection and biosecurity is one of the mandates of NIPHM. During the year the following activities were taken-up.

- **Plant Quarantine Order Review:** The Plant Quarantine (Regulation of import into India) Order 2003 is the current regulation for import of plant and plant materials into India. The need for review of the order was highlighted to the DAC and accepting the suggestion, the DAC has entrusted the responsibility of reviewing the PQ order to NIPHM. During the review, major discrepancies/contradictions having widespread ramification were observed and reported for necessary amendments to the PQ Order 2003. Import regulations for import of 46 commodities were also reviewed and modification of certain provisions and inclusion of additional pests under the list of Regulated Quarantine Pests was submitted to DAC.
- **Revision of IPM Packages:** The revision of Integrated Pest Management (IPM) packages developed by the DPPQ&S in 2001 has been entrusted to NIPHM. IPM packages of 73 crops are being revised by NIPHM with latest information on IPM practices along with inclusion of Agro-ecosystem analysis (AESA) and Ecological Engineering (EE) Pest Management concepts. During the year IPM packages for crops listed below were completed.

1. Cucurbits	2. Tomato	3. Okra	4. Cruciferous Vegetables
5. Drumsticks	6. Curry leaf	7. Brinjal	8. Chilli

The existing IPM packages were strengthened by addition of the following contents

- Detailed guidelines on Agro-EcoSystem Analysis (AESA) based IPM in conjunction with Ecological Engineering for Pest Management
- Life cycle charts of major insect pests along with natural enemies for different stages of the pests.
- Identification and damage symptoms of all insect pests, diseases, nematodes, weeds and nutrient disorders.
- Integrated Rodent Pest Management (IRPM) practices.
- Updated list of pesticides with reference to CIBRC registration
- Appropriate pesticide application techniques.
- Information regarding Pre harvest Intervals (waiting period) to ensure that the residue levels are within the prescribed MRLs.
- Insecticide Resistance Management (IRM) strategies

- **Modification of IPM packages developed by NCIPM :**

NIPHM modified the IPM packages developed by NCIPM for six crops viz., rice, maize, groundnut, soybean, cotton and chickpea, with the addition of the following components.

- Detailed guidelines on Agro-EcoSystem Analysis (AESA) based IPM in conjunction with Ecological Engineering for Pest Management
- Integrated Rodent Pest Management (IRPM) practices
- Do's and Dont's in IPM
- Appropriate pesticide application techniques

- **Pesticide Label and Leaflets:** In order to ensure that the label and leaflet on pesticide containers conveys vital information to stakeholders effectively, NIPHM was entrusted with the responsibility of reviewing the existing Rules and Guidelines. A committee under the Chairmanship of Dr. K. Satyagopal, IAS Director General, NIPHM, examined the issues in consultation with the stakeholders particularly representatives of the Pesticide Industry Association. After detailed discussions NIPHM has submitted detailed proposals to DAC to revise the existing policy governing label & leaflet of pesticides. Taking in







to account the suggestions made by NIPHM, DAC has published draft notification for amending the existing Rules, incorporating the suggestions made by NIPHM vide notification No. GSR 151 (E) dated 05-03-2014. The salient features of the new regulations are as mentioned in box:

Significant changes suggested in Rules & Regulations Governing Pesticide Label and Leaflets.

Common for Label and Leaflet

- Increase in font size
- List of pests and crops against which the pesticide is to be used to be furnished.
- Incorporation of Pre Harvest Interval (PHI) and re-entry period
- Pictograms for storage, use and handling of pesticides
- Information in English, Hindi and at least one regional language for proper communication
- Warning : "Not to be used on crops and pests other than those mentioned on label and leaflets"

Label only

- Minimum size suggested for label
- Instruction: "Read Leaflet Before Use".
- Warning: Destruction of container after use

Leaflet only

- Good Agricultural Practices
- Practices to be followed for usages of pesticides in confined areas like glasshouse, polyhouses, nursery beds, storage structures, fumigation etc.,

Policy Suggestions: During the year proposals on (i) Need for delinking the assessment component of PRA activity from regulatory agency (ii) Strengthening of Phytosanitary Certification System in India (iii) Need for establishing Pest Diagnostic Laboratories (iv) Need for establishing National Pest Diagnostic Network (NPDN) (v) Need to establish South Asian Plant Protection Organization (SAPPO) (vi) Distance Education and (vii) Incident Command System were also submitted to DAC for consideration.

ADMINISTRATION

General Council (GC)

During the year, two General Council Meetings viz. the sixth and seventh General Council meetings were held on 25.10.2013 and 28.01.2014 respectively. Both the meetings were held under the Chairmanship of Shri. Ashish Bahuguna IAS, Secretary to GoI, DAC., MoA.



COMPOSITION OF THE GENERAL COUNCIL OF NIPHM

1	Chairman	:		Secretary to the GoI Department of Agriculture& Cooperation, Ministry of Agriculture,GoI
2	Two Vice-Chairmen	:	i ii	Additional Secretary to the GoI , DAC, MoA Additional Secretary & FA to the GoI, DAC, MoA
3	Two members from non-official Institutions in India working in Plant Protection & allied fields	:		Shri Kapil Shah Other position vacant
4	Five eminent members who have made noteworthy contributions in the field of Plant Protection and allied subjects	:	i ii iii iv v	Dr.G.K.Veeresh, Retd.Vice-Chancellor, UAS, Bangalore Dr. Anupam Verma, Retd. Dean, IARI, New Delhi Dr. V. Ragunathan, Retd. PPA to Govt of India Dr. M.S. Chary, Retd. Director of CTRI Vacant
5	Ex-Officio Member	:		Agriculture Commissioner, DAC, MoA, GoI
6	Ex-Officio Member	:		Joint Secretary (PP) DAC, MoA, GoI
7	Ex-Officio Member	:		Plant Protection Adviser to the Govt. of India, DPPQ&S
8	Ex-Officio Member	:		Asst. Director General (PP), ICAR, New Delhi
9	Ex-Officio Member	:		Secretary in the Planning Commission or the nominee not below the rank of JS to the Govt. of India
10	Ex-Officio Members	:	i ii iii iv v	Secretary to the Govt. (Agriculture), Govt. of M.P. Secretary to the Govt. (Agriculture), Govt. of Rajasthan Secretary to the Govt. (Agriculture), Govt. of Tamilnadu Secretary to the Govt. (Agriculture),Govt. of Uttarakhand Secretary to the Govt. (Agriculture), Govt. of West Bengal
11	Ex-Officio Members	:	i ii iii iv	Commissioner/Director (Agriculture), Govt. of A.P. Commissioner/Director (Agriculture), Govt. of Bihar Commissioner/Director (Agriculture), Govt. of Punjab Commissioner/Director (Agriculture, Govt. of M.H.
12	Ex-Officio Member & Member Secretary	:		The Director General - NIPHM
13	Ex-Officio Member	:		One Vice-Chancellor of General Universities or Head of IITs/ IIMs or their nominee not below the rank of Director

Seven members of the GC present in the meeting shall constitute the quorum.

Executive Council (EC)

During the year, the Executive Council meetings were held twice 13th and 14th meeting of EC on 21.10.2013 and 28.01.2014 respectively. The meetings were held under the Chairmanship of Sri. Avinash Kumar Srivastava IAS, Additional Secretary (PP) to GoI, DAC.



COMPOSITION OF THE EXECUTIVE COUNCIL OF NIPHM

a	Additional Secretary (PP) to the GoI, incharge of PP in the DAC, MoA, GoI dealing with the NIPHM as Vice-Chairman of the GC of NIPHM	:		Chairman
b	Joint Secretary (PP) to the GoI	:		Vice-Chairman
c	The Director General of the NIPHM	:		Member Secretary
d	Director Incharge of Plant Protection, Department of A&C, Govt. of India dealing with the NIPHM	:		Members (2)
e	Two eminent persons who have made note worthy contributions in the fields of PP/allied subjects allied subjects; to be nominated by the GOI Consultant from among the members of the General Council	:	1 2	Vacant Dr. V. Ragunathan, Retd.PPA & FAO
f	Plant Protection Adviser	:		Member
g	Assistant Director General (PP), ICAR	:		Member

Four members of the EC present in the meeting shall constitute the quorum.

DIRECTOR GENERAL

Dr. K. Satyagopal, I.A.S, continued as Director General, NIPHM during 2013-14.

ACADEMIC COUNCIL :

The Academic Committee consists of 19 members and 5 members of Academic Committee present in the meeting constitute the quorum. The eighth meeting of Academic Committee of the NIPHM was held under the Chairmanship of Dr. K. Satyagopal IAS, Director General, NIPHM on 25.10.2013. The Academic Committee, during the meeting, has resolved to adopt research programmes during 2013-14 and to offer PGDPHM, Diploma Programmes and Certificate Courses of NIPHM as evening course, along with offering of PGDPHM for Officers of State Department of Agriculture, Kerala.



VISITS OF IMPORTANT DIGNITARIES

Dignitaries from International, National Institutes and Senior Govt. Officers have visited the Institute during the year.



Dr. Ian Nuuman, DAA (Australia) & Dr. Zameer Hussain, DAA



Sh. Utpal Kumar Singh, IAS JS-PP DAC

Smt. Rani Kumudini IAS, JS-Trade, DAC



USDA officials Dr. Stephanie Bloem & Dr. Alison Neeley

Dr. Peter Kenmore FAO representative

Implementation of Official Language at NIPHM

Regular Official Language Implementation Committee Meetings were conducted to review the Progressive Use of Hindi in the Office. During the year, four (4) Official Language Implementation Committee meetings (quarterly meetings) were held in the Institute, to monitor usage of Hindi in the Institute. A one-day Hindi Workshop was organized on 29.10.2013. The topic for the Workshop class was "Work of Hindi on Computers". The translated Section 3(3) documents are being maintained in a box file for future reference and official records purpose. During the year, 22 Hindi books, approved by the Ministry of Home Affairs were purchased and kept in the Institute's Library. 20 Hindi-English Administrative Glossaries were purchased from the Commission of Scientific and Technical Terminology, New Delhi for official purpose.

Vigilance Awareness Week held on 28.10.2013 to 02.11.2014

NIPHM observed the Vigilance Awareness Week from 28.10.2013 to 02.11.2013. The following activities were taken up during the Vigilance Awareness Week:

1. The Pledge was administrated to all the officials and officers by the Director General.
2. Banners were displayed at the Main gate of NIPHM as well as in the main building.
3. Competitions such as Slogan writing, Essay writing, Debate.
4. A lecture on "PROMOTING GOOD GOVERNANCE – POSITIVE CONTRIBUTION OF VIGILANCE" was delivered by Shri Suresh Kumar, Retd. Chief Administrative Officer, NAARM.

Recruitment Policy:

Reservation policy formulated by GOI for weaker sections is being implemented in this Institute and reports are sent to DAC as and when called for. In order to benefit the students from weaker sections of the society, scholarships are offered in educational programmes of NIPHM.

Exhibitions Participated by NIPHM

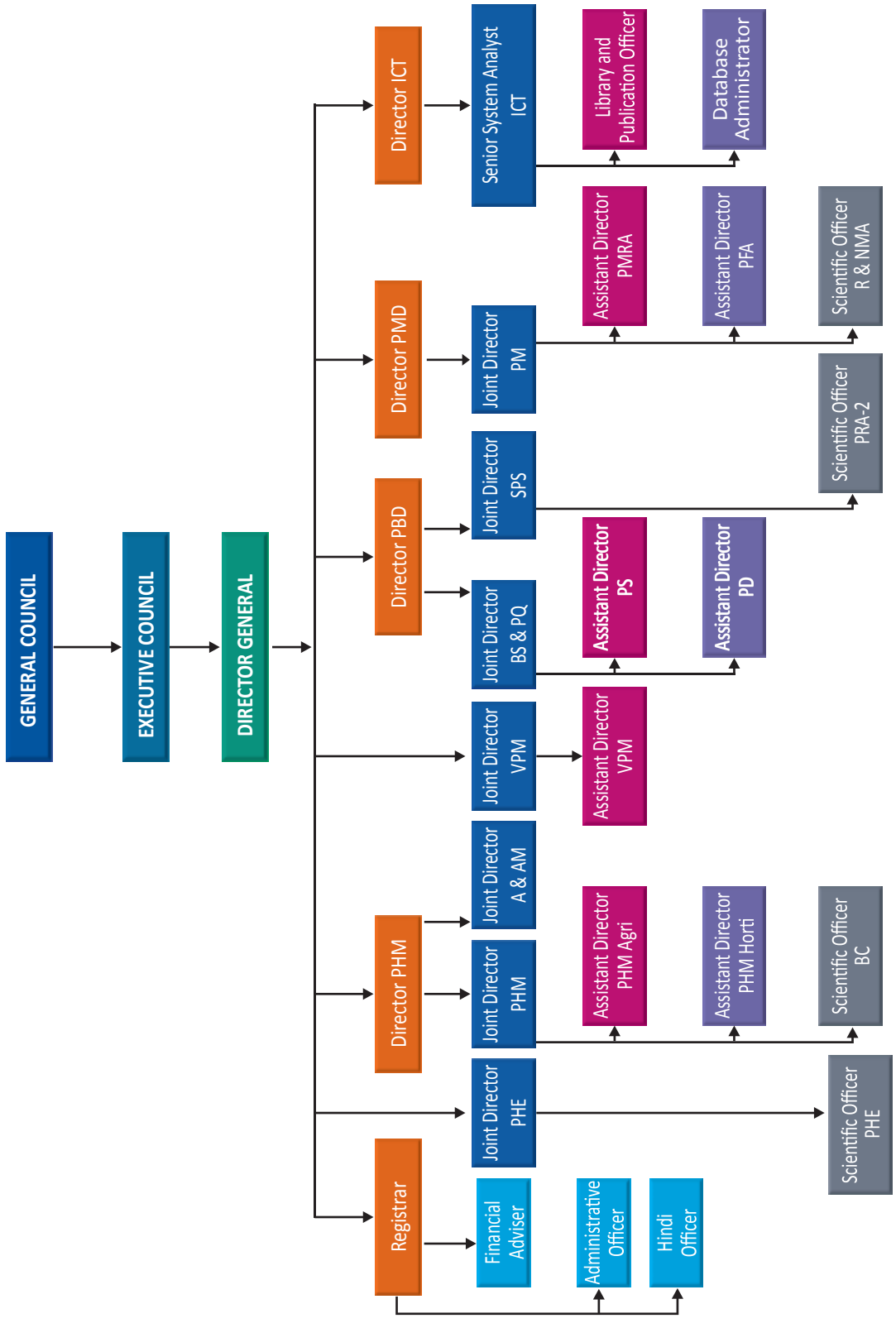
- Participated in the Rural Technology Mela from 8th to 13thNovember 2013 organized by NIRD. The technology developed by NIPHM was displayed to the farmers and other visitors during the exhibition. The Institute received the Best Stall Award in this Mela.
- Participated in Krishi Vasant exhibition at central Institute of Cotton Research, Nagpur organized by DAC, Government of India, Dept of Agri, Government of Maharashtra, ICAR and CII as Strategic partner form 9th to 13th February 2014.

Exhibition at NIRD, Hyderabad

Exhibition at Nagpur

Exhibition at Nagpur

Organizational Structure of NIPHM



Pests

DIRECTOR GENERAL / महानिदेशक

Dr. K. Satyagopal, I.A.S, continued as Director General, NIPHM during 2013-14.

वर्ष **2013-14** के दौरान डॉ. के. सत्यगोपाल, भा.प्र.से., संस्थान के महानिदेशक पद पर लगातार आसीन रहें।

Senior Officers of NIPHM / एनआईपीएचएम के वरिष्ठ अधिकारी

1.	Director General	Dr. K. Satyagopal, I.A.S
2.	Director(PMD)	Dr. Abhay Ekbote
3.	Director(PBD)	Dr. N. Sathyanarayana
4.	Director (PHM)	Dr. P. Jeyakumar
5.	Registrar i/c	Er. G. Shankar
6.	Joint Director (PHE)	Er. G. Shankar
7.	Joint Director (A&AM)	Dr. O. P. Sharma

Staff Position at NIPHM / रा.व.स्वा.प्र.सं. में कर्मचारियों की स्थिति

Plant Health Management Division	
Director (PHM)	Dr. P. Jeyakumar
Jt. Director (A&AM)	Dr. Om Prakash Sharma
Joint Director (PHM)	Vacant
Asst. Director (H&F)	Dr. Satish Kumar Sain
Asst. Director (Agri)	Dr. Dhana Raj Boina
Asst. Director	Sri. D. Chattopadhyay
Scientific Officer	Smt. N. Lavanya
ASO (Ent)	Dr. M. Narsi Reddy Dr. Richa Varshiney
ASO (Nematology)	Dr. B.S. Sunanda
ASO (WS)	Vacant
Asst. Plant Protec. Off.	Sri. P. Prabhakar
Stenographer Gr-III	Vacant
Tractor Driver	Sri. M.J. Reddy
Lab Attendants	Sri. S. Seshu Babu Vacant
Multi Tasking Staff	Sri. K. Lakshmaiah Sri. D. Bheemaiah Smt. J. Anasuja Smt. A. Anasuya Expired on 19.06.2013 (Vacant) Smt. Saleema Bee

Plant Biosecurity Division	
Director (PBD)	Dr. N. Sathyanarayana
Joint Director	Vacant
Asst. Dir (PS)	Dr. N.V. Kulkarni
Asst. Dir (PD)	Dr. A. G. Girish
S.O (PRA)	Smt. S. Latha
S.O (PRA)	Dr. K. Susheela
Asst. Scientific Officer	Dr. C. S Gupta
Asst. Scientific Officer	Ms. R. Madhubala
Stenographer	Ms. S.V. Padma
Lab Attendant	Sri. Mohd. Ibrahim

Information and Communication Technology Division	
Director (ICT)	Vacant
Senior System Analyst	Er. P. Mohan Singh
Senior Artist	Sri. V.V.S.B. Koteswara Rao
Library & Publication Off.	Sri. T. Rama Rao
Database Administrator	Sri. A.Nagaraju
Machine Minder	Sri. D.V. Sharma
Multi Tasking Staff	Sri. S. Raghuram
Laboratory Attendants	Sri. K. Swamy Dass Vacant

Plant Health Engineering Division	
Jt. Director (PHE)	Er. G. Shankar
Asst. Agri. Engineer	Sri. K. John Ninan Retired on 30.11.2013 (Vacant)
Scientific Officer	Smt. M. Udaya Bhanu
Asst. Scientific Officer	Sri. Govind Kumar Maurya
Care Taker Mechanic	Sri. Prabhudayal
Staff Car Driver (Spl. Gr.) –I	Sri. N. Bala Mallesh Retired on 31.08.13 (Vacant)
Staff Car Driver Gr.-II	Sri. T. Jangaiah Sri. S. Purna Chandra Rao (Vacant)
Mechanics	Sri. N. Achuta Rao Retired on 31.08.2013 (Vacant) Sri. B. Prabhakar
Blacksmith	Sri. B. Hanumantha Rao
Staff Car Driver (Ordinary Grade)	Sri. Usman Khan Sri. Gyan Singh Sri. B. Narsing Rao

Pesticide Management Division	
Director (PMD)	Dr. Abhay Ekbote
Jt. Director (Chem.)	Vacant
Asst. Director (PFA)	Dr. C V Rao
Asst.Director (PMRA)	Dr. Nirmali Saikia
Scient.Officer (R&NMA)	Smt. M. Jaya Devi
APPO	Smt. C VijayaLakshmi
Asst. Scientific Officer	Prashant N (vacant w.e.f 2.1.14)
Asst. Scientific Officer	Sri. Satish A Yadav
Asst. Scientific Officer	Smt. T Sridevi
Stenographer	Smt D. Sreelakshmi
Lab. Attendants	No.of posts Vacant-2
Multi Tasking Staff	Sri. J. Mallesha

Vertebrate Pest Management Division	
Joint Director (VPM)	Vacant
Assistant Director (RPM)	Dr. N. Srinivasa Rao
ASO (VPM)	Dr. P. Sakthivel
Laboratory Attendant	Sri B. Hanumantha Rao

Administration Division			
Registrar	Dr. P.V.S. Reddy I.Po.S. (W.e.f.07.10.2013) Registrar I/c Er.G.Shankar-Jt.Dir.(PHE)	Financial Advisor	Sri. A. Narasimha Murthy (Vacant w.e.f. 05.03.2014). Presently looked after by Sri. Kaushal Kishor- AFAO
AO	Sri. E. Rajashekar & Ms. Yelleena Panda Hindi Officer	Hindi Officer	Ms. Yelleena Panda
AF&AO	Sri. Kaushal Kishor	Print Technician	Sri. C.M. Vasistha
PS	Vacant	Office Supdt. (C&B)	Sri. J.S.R.C. Murthy
O.S. (Accts)	Smt. M. Bhaghya Lakshmi	Office Supdt. (E)	Sri. Y.V. Sathyanarayana
Hindi Translator	Smt. S. Prameela Rani	Hindi Typist	Yet to join
Stenographer	Sri. Mohana V.R. Krishna G. Sri. Ch.O.S.S.S. Nagaraju Vacant	Upper Division Clerk	Smt. K. Rani Vijaya Kumari No. of posts vacant-3
Lower Division Clerk	Smt. Syed Nazia Smt. K. Ramya Smt. G. Usha Smt. R. Krishna Priya Sri. B. Shiva Shankar Sri. N. Naresh Sri A. Shiva Kumar	Multi Tasking Staff	Sri. M. Narasaiah Sri. A. Rajak Sri. A.P. Bujji Babu Sri. G. Eshwaraiah Sri. D. Nagaiah Sri. P. Raghu Smt. T. Shanthamma No.of posts Vacant-8

Independence Day Celebrations 2013





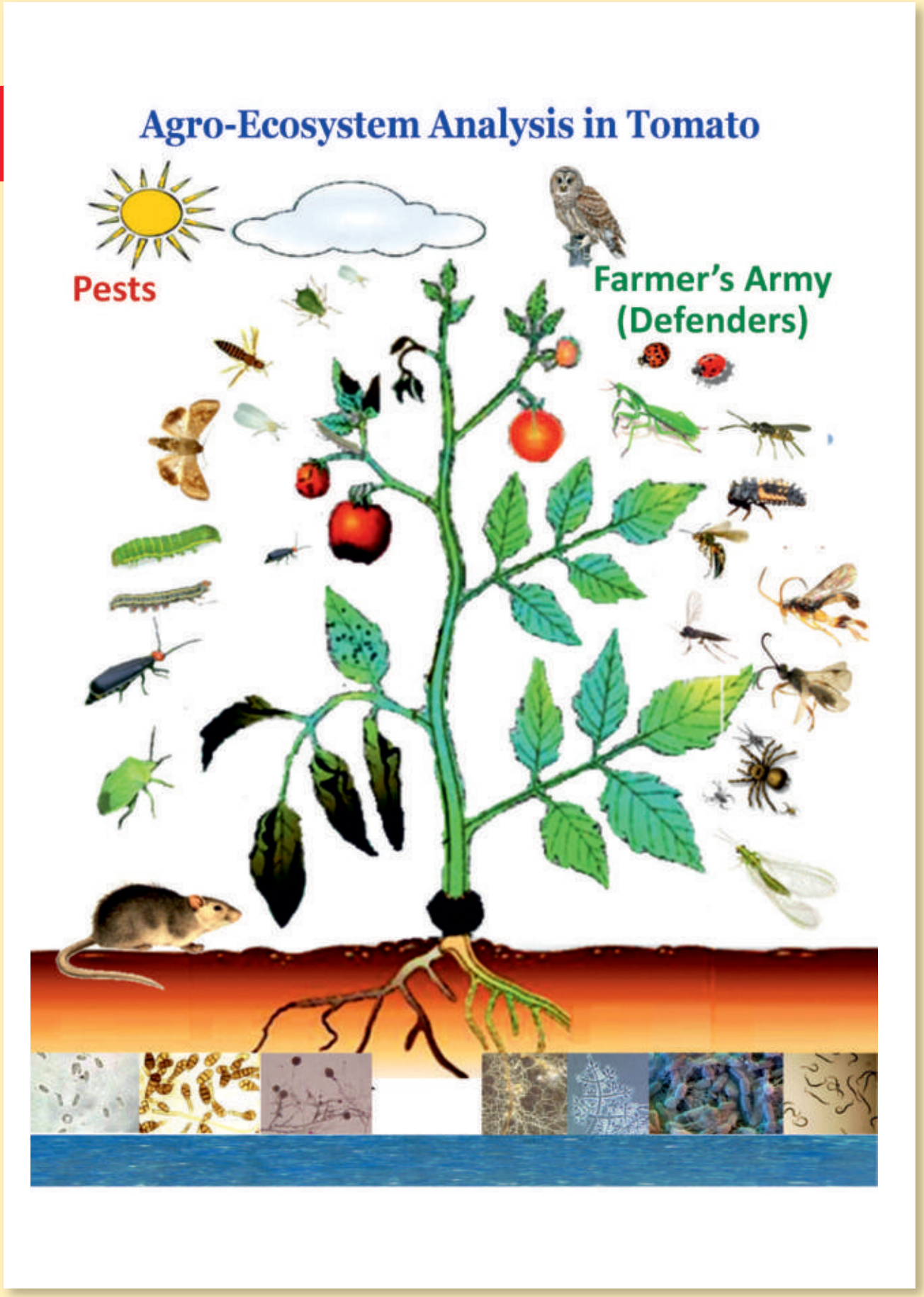

Republic Day Celebrations 2014










Agro-Ecosystem Analysis in Tomato
Pests
Farmer's Army
(Defenders)

Pesticide Formulation and Residue Analytical Center (NABL Accredited)

Pests

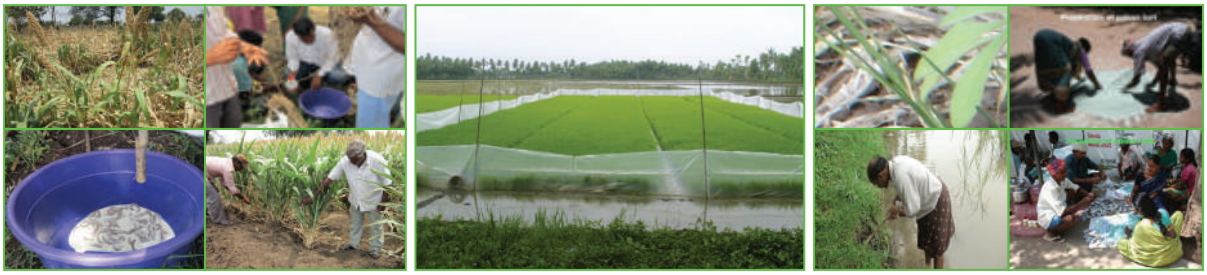






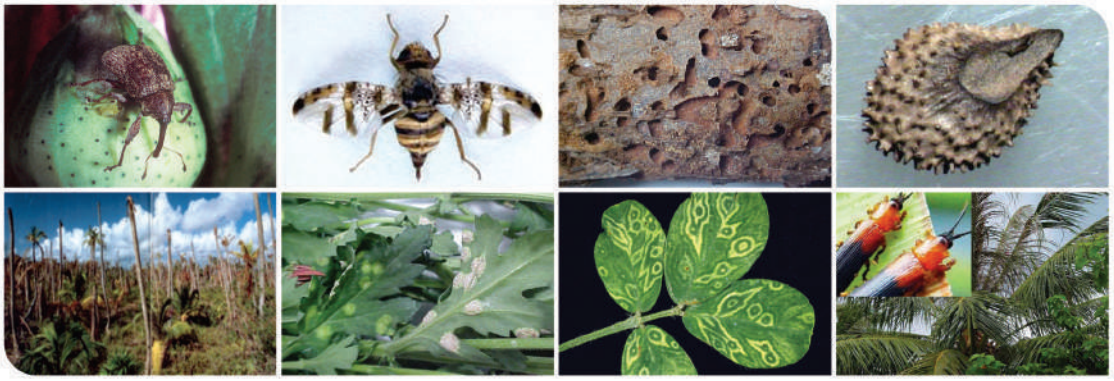
Rodent Pest Management in Agriculture/Horticulture/Storage





Urban Integrated Pest Management


Biosecurity Risks



Biosecurity Risk Management

Capacity Building

Biodiversity of natural enemies observed in Ecological Engineering field at NIPHM

Biodiversity of natural enemies: Parasitoids

Biodiversity of natural enemies: Predators

Biodiversity of natural enemies: Spiders

AESA & Ecological Engineering for Pest Management

राष्ट्रीय वनस्पति स्वास्थ्य प्रबंधन संस्थान

कृषि एवं सहकारिता विभाग, कृषि मंत्रालय, भारत सरकार

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