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Plant Health News Letter

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IN THIS ISSUE

From the Director General's Desk

Mrs. V. Usha Rani, IAS
Director General

Kerala popularly called as the God's own country is one of the beautiful states of India. Nearly half of Kerala's people are dependent on agriculture alone for income. The agricultural scenario in Kerala is somewhat unique and distinct from many other States in India. Some features of natural environment are conducive for hampering the agricultural production like highest incidence of pests and diseases and competition from weeds which make certain crop- production risky. Paddy farms and rice fields are fast disappearing and diminishing from Kerala that creates threat to food security of the state. Biodiversity in agricultural fields has now become history of past. Consequently, the share of agriculture and allied sectors in total GSDP of the State has also declined from 14.38 percent in 2011-12 to 11.6 percent in 2014-15. Honeybees which are the major pollinators in cardamom, coffee, coconut, cashew and vegetables like cucurbits and leguminous plants including peas and beans, all of which are grown in Kerala are showing sharp decline in their population. The state had learnt the bitter lessons of "Chemical Farming" and mono cropping hitherto practised as "Scientific Agriculture." To replace harmful chemical insecticides and pesticides the state is moving towards an organic, environment-friendly methods of agriculture to ensure and preserve the richness and fertility of the soil for the coming generations.

To hone up the technical skills among the Kerala Agricultural officers towards the promotion of eco-friendly approaches for better plant health management and to help the farmers of kerala state to move towards Organic farming, Government of Kerala has entered into an MoU with the National Institute of Plant Health Management (NIPHM), Hyderabad, to conduct two years (off campus) Post Graduate Diploma in Plant Health Management (PGDPHM) under Crop Health Management Scheme. All the 90 trainees trained under the PGDPHM Programme are promoting various eco-friendly technologies developed by NIPHM viz., low cost on-farm mass production of bio-agents (Predators and parastoids), bio-pesticides,(*Trichoderma, pseudomonas*) and bio-fertilizers (VAM, PSB, *Rhizobium* etc),vermicompost and vermiwash etc.,. All the trained Agricultural officers were provided with mother cultures of bio agents from NIPHM. The master trainers (PGDPHM trainees) have established the on-farm production units of *Trichoderma, Pseudomonas, Mycorrhiza, Trichogramma,* fruitfly lures, vermicompost, vermiwash etc., at Krishibhavan in their respective places and conducting several training programmes to the farmers, Self Help Groups (SHG) etc. Further several SHG's have established on farm production units in many Panchayats and producing the various biopesticides/ biocontrol agents in Kerala state.

The sincere efforts taken up by the State Government of Kerala to promote organic farming in all Assembly constituencies has created a positive impact among the farmers to move towards the organic farming. NIPHM appreciates the sincere efforts being done by the Kerala PGDPHM students for promoting the technologies in their state. As a token of gratitude NIPHM has announced the cash prizes and silver medals for the first three meritorious PGDPHM trainees of each batch who are successfully promoting the technologies. Institute congratulates all the Kerala PGDPHM trainees for successfully implementing the NIPHM technologies and helping the Kerala Government towards pesticide free state.

(V. Usha Rani, IAS)
Director General

Theme Article: NIPHM and Kerala Government join hands in Organic Farming

Dr. K. Vijaya Lakshmi, Dr.P.Sakthivel and Dr. Jyothi Sara Jacob

Kerala, most popularly known as the God's own country is endowed with most graceful lands on earth filled with nature and beauty. Nearly half of Kerala's people are dependent on agriculture alone for income. Kerala produces 97% of the national output of black pepper and accounts for 85% of the natural rubber in the country. Coconut, tea, coffee, cashew, and spices are the main agricultural products. Paddy cultivation was part of the proud culture of Kerala state. But now the picture is changing. The whole concept of Green Revolution, in which the use of high-yielding varieties of seeds, intensive irrigation, insecticides, pesticides etc. have come under a lot of criticism for damaging the environment. The environmental costs of following these methods have not been compensated by the increase in the productivity. Also, as seasons pass, the productivity is declining as well.

Paddy farms and rice fields are fast disappearing and diminishing from Kerala that creates threat to food security of the state. Biodiversity in agricultural fields has now become history of past. Consequently, the share of agriculture and allied sectors in total GSDP of the State has also declined from 14.38 percent in 2011-12 to 11.6 percent in 2014-15. Honeybees which are the major pollinators in cardamom, coffee, coconut, cashew and vegetables like cucurbits and leguminous plants including peas and beans, all of which are grown in Kerala are showing sharp decline in their population. Kerala is fast emerging as a model for sustainable farming in its attempts to recover from social, environmental and health hazards created by excessive use of chemicals in farming.

Kerala recovering from Endosulfan tragedy:

During 1976-2000, the Plantation Corporation of Kerala aerially sprayed endosulfan, a persistent organic pollutant (POP) over an area of about 12000 acres in nine villages in Kasargod district. This was to eradicate tea mosquitoes in the cashew plantations. The people living inside the plantations and downwind and downstream of the experiment were exposed to this hazardous chemical for 25 years. Studies conducted after the ban of the pesticide show significantly higher concentration of endosulfan products in environmental media like water, soil and lake sediments and human blood, even in a village 25 km away from the sprayed area. People residing in the villages within the plantation have been afflicted with different kinds of illness. People also noticed the death of fishes, honeybees, frogs, birds, chicken and even cows.

Kerala is going back to the traditional Organic Farming:

The state had learnt the bitter lessons of "Chemical Farming" and mono cropping hitherto practised as "Scientific Agriculture." To replace harmful chemical insecticides and pesticides the state is moving towards an organic, environment-friendly methods of agriculture to ensure and preserve the richness and fertility of the soil for the coming generations.

The farmers in Kerala are convinced that the only way is to return to the traditional sustainable ways of cultivation without harming the ecosystem. Many farmers have realized that they are fighting a losing battle with the "high yield variety - fertilizer-pesticide pack" of Green Revolution. They have also realized that the degradation and disruption of the fragile ecosystems of the 'God's own country' are the chief culprits for the water scarcity, nutritional insecurity, loss of primary productivity and agrarian crisis being faced by the State.

By and large, there is an increasing awareness among the consumers also on the deleterious effects of pesticides and hence, there has been a high demand for organically cultivated food produces. Therefore it has become a solemn responsibility of the Government to encourage organic farming to ensure poison-free food at affordable price to every citizen. Thus the organic farming, a system with the broad principle of 'live and let live', is catching up in Kerala State.

Organic farming began finding momentum in Kerala since the unveiling of a policy in 2010 that set the goal of converting the entire agricultural production in the State to organic within 10 years. Kerala is fast emerging as a model for organic farming in its attempts to recover from social, environmental and health hazards created by excessive use of chemicals in farming.

Kerala declares organic farming policy:

The organic farming is a flagship programme of the Kerala State Government being implemented since 2012-13, with the estimate objective of transforming the state into completely organic. The programme was initiated in Kasargod district which was declared as organic district in 2012 with some of main objectives –

1. Making farming sustainable and remunerative
2. Ensure agricultural biodiversity and ford nutritional security
3. Create organic villages with the active participation of farmers and farmer's groups
4. Ensure the local availability of organic inputs by promoting their on farms production units
5. Strengthening the marketing of organic produce and ensuring profitability
6. Facilitate and support certification of organic produce
7. Marketing the GAP certified products under a separate logo and brand name

State Govt. of Kerala Entered in to MOU with NIPHM to promote Organic farming

To hone up the technical skills among the Kerala Agricultural

officers in promotion of eco-friendly approaches for better plant health management and to help the farmers of Kerala state to move towards Organic farming, Government of Kerala has entered into MoU with the National Institute of Plant Health Management (NIPHM), Hyderabad, to conduct

Inauguration of Off-campus PGDPHM (Kerala) by Dr. K. Satyagopal IAS (former DG NIPHM)

Post Graduate Diploma in Plant Health Management course (off campus – PGDPHM) under Crop Health Management Scheme. The course is being conducted through the SAMETI, Trivandrum. The Agricultural Officials from the cadre of Agricultural Officers/ Assistant Director of Agriculture under the Dept. of Agriculture, Kerala are being trained on various novel techniques which promote eco-friendly management of pests. The duration of the course is two years (4 semesters, 30 credits, 70 contact classes). Three batches are initially enrolled for this programme. The first batch (2013-15) has completed the programme successfully and another two batches are in progress (2014-16 and 2015-17).

Objectives of PGDPHM programme

- To develop a highly committed and competent cadre of Agricultural professionals to promote environmentally sustainable plant health and biosecurity management in Kerala
- To develop competence in AESA (Agro-ecosystem Analysis) based Plant Health Management in conjunction with Ecological Engineering for pest management
- To develop skills to organise farmers field school efficiently
- To expertise in situation analysis of vertebrate pest problem, with focus on rodents in agricultural fields and adoption of ecological based management
- 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

Mrs. V. Usha Rani, IAS DG-NIPHM awarding medal to the Meritorious student of 1st Batch PGDPHM at SAMETI, Trivandrum during convocation

NIPHM technologies being promoted at Kerala by the Agricultural officers for sustainable Plant Health Management:

The Kerala Agricultural officers were given extensive hands on training at NIPHM to promote the following Eco–friendly

Hon'ble Agricultural Minister Shri. Sunil Kumar Interacting with 2nd batch PGDPHM trainees

NIPHM technologies to help the farmers of Kerala to move towards organic farming.

1. Agro-ecosystem analysis based Plant Health Management:

In order to address the adverse impacts of agrochemicals on agro-ecosystems, Integrated Pest Management (IPM) has evolved. Further from Economic Threshold Level (ETL) based IPM approaches, Agro-ecosystem Analysis (AESA) based IPM is gaining importance. In the AESA based approach, in addition to integration of various pest management strategies, it incorporates other plant health components like the whole agro-ecosystem, plant health at different

Natural enemies in rice

AESA demonstration by Mr. George Prasad, 1st Batch

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, AESA chart preparation followed by group discussion and decision making. Insect zoo is created to enable the farmer understand predation of pests by natural enemies. AESA approach will enable the farmer to take the decisions based on the AESA analysis. The Kerala AOs are organizing AESA training classes to farmers groups to enable them to understand the crop situation which in turn is helping them to take correct plant protection measures.

AESA chart Preparation - Mrs. Manjusha- 2nd Batch

2. Ecological Engineering for Pest Management:

Ecological Engineering for Pest Management, a new paradigm, is gaining acceptance as a strategy for promoting biointensive IPM. Ecological Engineering for pest management relies on the use of cultural techniques for habitat manipulation to enhance biological control agents. Through ecological engineering i.e. by habitat manipulation with flowering plants, trap crops and other companion plants the population of pollinators, predators and parasitoids can be enhanced to manage the herbivorous

Popularization of EE field demonstrations in rice (Mrs. Sindu- 1st Batch; Mrs. Anju Paul & Mr. Suresh- 2nd Batch)

insect pests there by application of chemical pesticides can be reduced. In Kerala this concept is widely accepted by the farming community in view of its affordability. It is being practiced in different crops like rice and vegetables. Kerala farmers are growing EE plants especially marigold along the bunds of vegetable plots so that they get additional revenue by the sale of flowers in the nearby market.

3. On-farm Production of Biocontrol Agents and Microbial Biopesticides:

Though there is a long history of using biocontrol agents for pest management, currently farmers do not have access to biocontrol agents at appropriate time and at affordable prices. To overcome the existing lacuna there is a need to develop/modify and popularize simple mass rearing techniques of biocontrol agents among farmers. Moreover, farmers are unable to take advantage of even the existing simple mass rearing technologies. NIPHM has developed

Mr. C.V. Jitesh, (1st Batch) giving Hands on training on Mass Production of *Trichoderma*

Mrs. Girija (1st Batch) explaining the on-farm Mass Production of *Trichoderma*

Mrs Divya, (2nd Batch) explaining low cost mass production of *Trichoderma*

Establishment of on-farm Mass Production unit of *Trichoderma* (Mr Ebrayi - 2nd Batch)

Training on *Trichogramma* mass production (Mr. Roy - 2nd Batch)

Mass production of *Redviid* predator at Krishibhavan (Mr. Roy, - 2nd Batch)

simple and low cost on-farm mass production technologies for various bio-agents like parasites, predators, antagonistic microorganisms against plant diseases and various bio-fertilizers. The Kerala Agricultural officers have acquired through practical knowledge on the mass production of all these bio-agents, bio pesticides and bio-fertilizers and they become master trainers and they in turn are promoting these technologies among the farmers in Kerala. They have established the on-farm production units of these bio-agents and many Self-help groups are also producing these bio-agents for their own farm use. The various bio-agents and biopesticides being promoted by Kerala Agriculture officers include *Trichogramma, Goniozus spp., Bracon spp., Reduviid bugs, Coccinellids, Entomopathogenic nematodes (EPNs)* and microbial biopesticides such as *Trichoderma spp. Pseudomonas, Verticilium, Metarrhizium, Beauveria, Nomuraea etc.,*

4. Use of Entomopathogenic nematodes (EPN):

These are beneficial nematodes parasitizing insect pests and are being effectively used as a bio-control agent against a wide variety of insect pests and are increasingly being considered as a viable alternative to chemical pesticides. NIPHM has developed simple low cost technologies for mass multiplication of EPN that can be adopted by farmers as well as by commercial establishments. These EPNs are giving very good control of soil borne pests especially root grubs which are attacking many vegetable and fruit crops in Kerala.

Popularization of mass multiplication of EPN (Mrs. Lisy mol - 2nd Batch)

5. Popularization of fruit fly lures and traps:

Fruit flies are one of the economically important plant pests affecting fruits & vegetable production in India. It is estimated that 20-30 % loss in fresh fruits & vegetables is due to fruit flies. In addition to causing direct damage, fruit flies are major bottle neck for export of high value fruits & vegetables into developed countries. Area wide control of fruit flies is one of the important approaches of pest management. Though many types of commercial traps & lures are available in the market, they are not well accepted & adopted by large section of farmers. NIPHM has developed a very low cost trap & lures that a farmer or farmer association can prepare themselves at very low cost. This concept has been very well received by both Agricultural Extension Officials as well as progressive farmers in the Kerala state as the fruit flies attacking mango and other commonly grown cucurbits are being very well managed by the traps without resorting to chemicals.

6. Vesicular Arbuscular Mycorrhiza (VAM):

This fungi forms symbiotic association with root system of the plants and helps in increasing the growth, enhances uptake of water, nutrients and also enhances drought and disease tolerance in crop plants. The very simple and low cost mass production technology developed for the VAM as well accepted by Kerala farmers. Many mass production

Training on preparation of fruit fly lures to Farmers Self Help Group(Mrs. Sreleekha - 2nd Batch)

Low cost fruit fly traps being widely used by the Kerala farmers

Skill development training on Fruit fly lure preparation to Farmers Self Helf Group by Mr. Nowshad, (2nd Batch)

Popularization of Fruit fly lures by Mrs. Vidya, (2nd Batch)

units were developed by the PGDPHM trainees and many farmers awareness training programmes and distribution of VAM to the famers is being carried out at Kerala.

Demonstration of on-farm production of VAM (Mr. Krishnakumar - 1st Batch)

Training on on-farm production of VAM (Mr. Suresh -2nd Batch)

Demonstration of On-farm production of VAM to SHG (Mrs. Manjusha - 2nd Batch)

7. Promotion of Bio-fertilizers as an alternative to chemical Fertilizers:

Biofertilizers are known to play a number of vital roles in soil fertility, crop productivity and production in agriculture. In view of scope of bio-fertilizers for sustainable farming systems, NIPHM has taken initiatives for setting up on pilot basis, bio-fertilizer training cum production laboratory at NIPHM. The facility is useful in selecting efficient strains of bio-inoculants and culturing them. The mother cultures of bio-fertilizers (*Rhizobium, Azotobactor, Azospirillum*, PSB, KSB, ZSB, *Pseudomonas, Mycorrhiza* etc.) are produced and made available to trainees for further multiplication for use under various agro-climatic conditions. Efforts are being made to promote simple and low cost on-farm production of bio-fertilizers through the PGDPHM programme in Kerala state.

Training on on-farm production of Biofertiliers to farmers (Mrs. Sreelekha - 2nd Batch)

Establishment of Azolla production unit in Krishibhavan (Mrs. Lisy Mol Sunny - 2nd Batch)

8. Use of Vermicompost and Vermiwash:

The organic wastes are effectively decomposed by the biological activity of microbes and earthworms. The end product of vermicomposting, is a finely divided peat-like material possessing high porosity and water holding capacity and contains many nutrients in forms that are readily taken

Popularization of low cost vermibed among the farmers (Mrs. Manjusha & Mrs. Sreelakha - 2nd Batch)

Establishment of vermiwash unit in Krishibhavan (Mrs. Divya - 2nd Batch)

Training on vermicompost and vermiwash preparation (Mrs. Sangeetha - 2nd Batch)

up by plants. In addition to vermicompost, vermiwash is also an important organic liquid which provides macro & micro nutrients, vitamins, hormones (Auxin and gibberlins), enzymes (cocktail of protease, amylase urease and phosphatase), and useful microbes (nitrogen fixing bacteria such as *Azotobacter sp., Agrobacterium sp.,* and *Rhizobium* and some phosphate solubilising bacteria. Vermiwash can also be used as a foliar spray whereby it acts as a pesticide in sustainable agriculture. The training on the production of vermicompost by utilising the wastes of the harvested produce will ultimately help farmers or farmers groups to generate good income by establishing it as a small scale industry.

9. Pest Risk Analysis:

Biosecurity is a strategic and integrated approach consisting of policy and regulatory frameworks to analyze and manage risks to human, animal and plant life and health, and associated risks to the environment. Pest risk analysis forms the basis for identification of risks posed to biosecurity of a nation. Awareness in these areas are given as the unified biosecurity systems can save the nation from bioinvasions, bioterrorism.

10. Popularization of Natural Enemy Friendly Light Trap:

Light traps are mainly used for attracting moths & other night flying insects which are attracted towards the light. However, besides a number of species of moths, beetles, flies, and other insects, most of the beneficial insects also get

attracted to light traps. The NIPHM has developed an affordable Natural Enemy Friendly Light Trap to enable insect trapping in field conditions and at the same time the beneficial insects will be released out from the trap. The trap is provided with a plastic funnel with perforation to enable the escape of the smaller sized beneficial insects (mostly defenders) back into the field.

Impact of PGDPHM programme on successful implementation of Organic farming in Kerala:

NIPHM Appreciates Kerala Agricultural officers

Smt. V. Usha Rani, I.A.S., Director General NIPHM complemented the sincere efforts made by the PGDPHM trainees of State Agriculture Department of Kerala for successfully promoting the NIPHM technologies and helping the farmers to move towards organic farming. As a token of appreciation the Director General announced cash prizes for the first three meritorious PGDPHM trainees of Kerala.

All the 90 trainees after undergoing the PGDPHM Programme are promoting various eco-friendly technologies developed by NIPHM *viz.*, low cost on-farm mass production of bio-agents, bio-pesticides and bio-fertilizers technologies such as Biopesticides (*Trichoderma, Pseudomonas*), predators and parastoids, biofertilizers (VAM, PSB etc),vermicompost and vermiwash etc. All the students were provided with mother cultures of bio agents from NIPHM. The master trainers (PGDPHM trainees) established the on-farm production units of *Trichoderma, Pesudomonas, Mycorrhiza, Trichogramma*, fruit fly lures, vermicompost, vermiwash etc., at Krishibhavan in their respective places and conducting several training programmes to the farmers, Self Help Groups (SHG) etc. Further several SHG have established on farm production units in many Panchayats and producing the various biopesticides/ biocontrol agents in Kerala state.

Kerala Agricultural Minister Announces Incentives to Kerala PGDPHM trainees

In recent meeting held at SAMETI, Trivandrum, Kerala the Hon'ble Agricultural Minister Shri. Adv. V.S. Sunil Kumar lauded the efforts made by PGDPHM trainees and he announced the incentives for the Agriculture officers who are undergoing the PGDPHM programme at NIPHM

Popularization of NIPHM technologies through print and electronic media:

After successful completion of the PGDPHM programme at NIPHM, the master trainers (PGDPHM trainees) are promoting the sustainable plant Health Management practices by organising various training programmes to the farmers and also popularising the technologies through print and electronic media.

Successful case studies:

1. Palakkad and Kottayam Districts:

Previously the framers of these two districts were extensively using the chemical pesticides to control the pest and diseases which has adversely affected not only the farm ecosystems but also resulted in development of many health hazards among the farmers.

Mr. Joseph, the Agricultural Officer who previously worked in Perumatty of Palakkad district had extensively popularized various NIPHM technologies among the farmers of the area. Around 1480 farmers had benefitted through the various training programmes organised by him on eco-friendly technologies developed by NIPHM. Recently he has taken keen interest in the promotion and adoption of the NIPHM technologies among the farmers of Vaikom in Kottayam district. His activities helped the farmers to move towards the adoption of sustainable plant health management practices without using the chemical pesticides. The different activities promoted by Mr. Joseph in these districts are mentioned hereunder.



Demonstration of AESA in rice | Vermicomposting



Mass production of Trichoderma | Low cost fruitfly lures

2. Udayamperoor of Ernakulum District:

Mrs. Lisy Mol, the Agricultural Officer has taken keen initiative to popularize the NIPHM technologies in the farmers' fields of Udayamperoor, Ernakulam district. Several training programmes were organised to the farmers groups






on FFS, AESA based EE, preparation of low cost fruit fly traps, mass production of biofertilizers, vermicompost, vermiwash, biopesticides etc. Total 2950 farmers/SHGs had benefitted through the various training programmes organised by her on eco-friendly technologies developed by NIPHM.

3. Thiruvali of Malappuram:

Mrs. Mehruneesa, the Agricultural Officer working in Thiruvali of Malappuram Dst. has created awareness among the farmers on various sustainable plant health management practices. 60 farmers and 70 vocational Agriculture students from Thiruvali panchayath of Wandoor and Nilambur block in Malappuram district and 100 farmers of Palakkad district under 6 blocks and 10 Panchayaths were trained on different NIPHM technologies. On-farm production unit named Trichocentre's was established at Thiruvali for production of Trichocard (*Trichogramma), Trichoderma and Pseudomonas*, VAM, fruit fly lures and vermicompost. The extension work carried out by Mrs. Meharuneesa in the promotion of eco-friendly approaches




created awareness among the farmers and SHG farmed in Thiruvali of Malappuram districts established the production units of biopesticides and biofertilisers.

NIPHM eco-friendly technologies being promoted by Mrs. Meharuneesa in Thiruvali of Malappuram district created awareness among the farmers and SHG in Thiruvali and some of the farmers or SHGs established the on-farm production units of biopesticides and biofertilisers.

The sincere efforts taken up by the State Government of Kerala to promote organic farming in all Assembly constituencies has created a positive impact among the farmers to move towards the organic farming. In recent times, the Government agencies, social organisations, political parties, women's organisations and farmers' self-help groups are all participating in what is becoming an organic farming revolution in the state. The state now is meeting over 70% of its demand for vegetables on its own compared with just 20% a few years ago. People from across the state have taken a deep interest in organic farming. The government is likely to declare Kerala as fully organic state in future days to come.

International Training on Regional Plant Health System Analysis

The RPHSA programme aims in creation of a pool of experts to analyze Plant Health Systems to safeguard native agricultural biosecurity and to build SPS capacity to gain market access. It is designed to enable officials working with the NPPOs of South Asian Countries and actively engaged in the area of Plant Biosecurity. The training programme is thematically divided into three areas viz. (i) Sustainable Agricultural Production, (ii) Biosecurity and (iii) Market Access and various topics related to those themes were covered with an emphasis on regional harmonization in areas like Pest Risk Analysis, Pest Surveillance and Emergency preparedness in managing the pest risks and to gain market access as well.

The training was organized from 05th to 19th, December, 2016 and attended by 10 international participants from Bangladesh and 11 national participants from the States of Tamil Nadu, Tripura, Himachal Pradesh, West Bengal, Karnataka, Maharashtra and Telangana. The participants were trained in various aspects of crop production, protection and promotion.



National workshop on 'Recent advances in Weed Management Strategies'

NIPHM organized a two days National Workshop on “Recent advances in Weed Management Strategies' from 29th to 30th November, 2016. The main objectives of the Workshop were to evaluate the impact of weed management methodologies recommended for different agro-climatic conditions in India, to assess the possibilities of non-chemical weed management strategies for sustainable agriculture system, to suggest measures to minimize herbicide use for weed control under cropped & non-cropped areas and to assess the possible threats of invasive weed species in India. A total of 57 participants including Scientists from different organizations, State Agricultural Universities were attended the Workshop.


National Summit of Pesticide Testing Laboratories

NIPHM conducts various training programs for the analysts of Pesticide Testing Laboratories (PTLs) for their capacity building particularly the “Pesticide Formulations Analysis” which is a mandatory training program under Rule 21(b) of Insecticide Rules 1971. NIPHM is also the Proficiency Testing (PT) Provider for all the PTLs on Quality Control of Pesticides. Hence, a National Summit was proposed to pool analysts from all the PTLs as well as senior officers who are looking after the PTL affairs at the headquarters of State Directorates of Agriculture, so as to refresh the quality control aspects and review the previous PT programs.

Accordingly a 2 days “National Summit of Pesticide Testing Laboratories for Training and Review of Proficiency Testing on Quality Control of Pesticides” was conducted during 3rd and 4thof November, 2016 at NIPHM, Hyderabad. The Officers and Analysts from 16 Laboratories representing 8 State departments of agriculture have participated besides the staff of Pesticide Management Division, NIPHM, in the summit. During the Summit, presentations followed by a open discussion took place on various issues like, the over view on methods of Analysis and Challenges faced by PTLs, Importance of ISO 17025-2005 for PTLs, Quality control of Pesticides at PTLs and Management Requirements, Review of Proficiency Testing.

Sanction of All India Coordinated Research Project on Nematodes (AICRP) Centre to NIPHM, Hyderabad

All India Coordinated Research Project on Nematodes on Cropping systems, Division of Nematology, ICAR – IARI, New Delhi has sanctioned NIPHM voluntary centre of AICRP (Nematodes) vide F.No. CS 4-4/2014-PP Dated 07.9.2016. This is the first AICRP Centre on Nematodes sanctioned by AICRP (Nematology) to the Telangana State. This Centre would cater nematode problems and their management in field and horticultural crops of the State.

Training Programme on "Plant Health & Plant Quarantine issues for Nurserymen" at West Bengal

Considering the importance of phytosanitary measures in nursery production for promoting export, NIPHM has organized a training programme on 'Plant Health and Plant Quarantine Issues for Nurserymen' at Muchisha, Calcutta, West Bengal from 7th to 8th November, 2016 and a total of 111 nurserymen attended the programme. The training was tailored for Nurserymen in the area of phytosanitary Certification in line with International Standards of Plant Quarantine, market access for Ornamental plants, good nursery practices, packaging and processing of plants for export and bio-intensive production systems. The programmes also provided exposure about export procedures for plants, cut foliage & cut flowers, importance of growing pest and disease free plants, Potential international market for export of plants/plant materials Alternatives to soil media, On farm production of Biocontrol agents, Bio fertilizers and Bio-pesticides etc.

One day Farmer Training on Rodent Pest Management in rodent endemic areas of AP

Institute organized two training programmes of one day farmer trainings on Rodent Pest Management at 1). Kokkirapadu Village, Pedapadu Mandal, West Godavari, Andhra Pradesh on 05.10.2016 total 162 farmers was attended for this training programme. 2). Komudavole Village, Eluru Mandal, West Godavari, Andhra Pradesh on 19.10.2016 total 132 farmers were attended for this training programme. This programme was conducted in collaboration with Department of Agriculture, A.P and financial support provided by NIPHM, Hyderabad. In Kokkirapadu village the major crops are paddy, sugarcane, coconut, cocoa and oil palm which are being cultivated/ grown by the farmers. In Komadavole village the major crops are paddy and coconut which are being cultivated/grown by the farmers. Farmers facing rodent problems during cultivation of rice and decreasing significant agriculture produce. The farmers were trained on importance of Rodent ethology/behaviour for their management, chemical & non-chemical rodent management techniques in agriculture and horticulture crops. Further practical demonstrations were given to farmers about rodent kill traps application, bait stations and their importance in application of poison baits, burrow smoking and preparation of rodent poison bait using bromadiolone (packeting, pocketing). The poisonous baits were distributed to farmers for field application.

Capacity Building

Plant Quarantine procedures for Import and Exports

A five day training on 'Plant Quarantine Procedures for Imports and Exports' and 'Plant Quarantine: National regulations and Procedures' was organized from 3rd to 7th, October, 2016. A total 24 participants were attended the training programme. The participants learnt topics related to SPS and Technical Barriers, International conventions, National Regulations, Standard Operation Procedures on imports and exports. Practical scenarios on procedures for import/export of seeds, plants, bulbs, grains, fruits, GMOs, germplasm and bio-control agents were organized.

Forced Hot Air Treatment

NIPHM is the only Institute in India to offer a specialized training programme on Forced Hot Air Treatment in compliance of ISPM - 15 and NSPM-9. A training programme on FHAT was conducted from 17th – 21st October, 2016. A total 31 participants were attended the training programme. The topics covered included 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.

Pest surveillance

NIPHM organized a 8 day training programme on Pest Surveillance from 23rd to 30th, November, 2016, and trained 29 participants representing Madhya Pradesh, J & K, Kerala, Maharashtra, Andhra Pradesh, Telangana, Tripura, Uttar Pradesh, West Bengal, Arunachal Pradesh, Tamil Nadu and Punjab. 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.

Pest Risk Analysis

PRA is a process which helps to assess the risks of entry, establishment, spread & impact potential of exotic pests. PRA identifies phytosanitary measures to prevent the introduction of entry of an exotic pest. The international standards brought out by IPPC serve as guidance for carrying out PRA. Training on PRA is organized from 05 to 09 December, 2016 and eight participants from the States of Chhattisgarh, Mizoram, Karnataka, Himachal Pradesh, Telangana, Tamil Nadu and Uttar Pradesh were trained.

NIPHM's banner training programme on AESA and Ecological Engineering based IPM and allied subjects (24.10.2016 to 28.10.2016)

NIPHM has organized a five day banner training programme especially for the officer trainees of Andhra Pradesh and Telangana State Agriculture departments. A total of 15 participants were attended the programme and trained on the concepts of Agro-ecosystem analysis (AESA), ecological engineering, Farmers Field School (FFS) and on farm production of various biocontrol agents. They were also trained on plant quarantine, pesticide application

Capacity Building

techniques, rodent pest management, vermicomposting, residue analysis in food chain and computer application for online resources in Plant Health Management.

Training programme on Entomo-pathogenic nematodes

Two days training programme (24th to 25th October, 2016) on entomopathogenic nematodes was conducted at NIPHM to popularize the mass production and use of Entomopathogenic nematodes against the insect pests of economically important crops. A total of 26 participants from Telangana State were attended the programme and learnt about the mass production and application of EPN for the management of soil as well as foliar pests of different crops.

Production Protocol for Bio-pesticides and Bio-fertilizers

Training programme on 'Production Protocol for Bio-pesticides and Bio-fertilizers' was organized from 01st to 10th November, 2016. A total of 19 participants were acquainted with the low cost mass multiplication techniques of bio-pesticides namely, entomopathogenic fungi, entomopathogenic virus, entomopathogenic nematodes, antagonistic fungi, antagonistic bacteria and bio-fertilizers viz., PSB, ZSB, VAM etc.

Farmers Field School Methodology

The training programme on Farmers Field School (FFS) Methodology was organized at from 7th to 11th November, 2016. The programme was attended by 11 participants from different states of India. During the training programme, participants were exposed to skill development in Agro Ecosystem Analysis.

On-farm production of Bio-control Agents and Bio-pesticides (Farmer's training)

Two farmer training programmes of three days duration were conducted from 15th to 17th November, 2016 and 23th to 25th November, 2016. In addition to this, two days training was also conducted for chili growing farmers of Warangal District of Telangana state under District Pest Management Programme. The protocol for mass multiplication of entomopathogens which included fungal, bacterial, viral bioagents and rearing host cultures was the key component of both theory and practical classes. A total of 50 farmers attended the programme. The mass production of the antagonistic fungi (*Trichoderma* spp.), antagonistic bacteria (*Pseudomonas* sp.) and biofertilizers were also covered during the training programme.

On-farm production of Bio-control Agents and Microbial Bio-pesticides

A 5 day training programme entitled 'On-farm production of Bio-control Agents and Microbial Bio-pesticides' was organized for the final year B.Sc. Horticulture students of

Capacity Building

Sikkim University and 19 students were attended the programme.

The students were exposed to various aspects of biological control, mass rearing of host insects for production of NPV, preparation of Trichocard; mass production of antagonistic fungi and bacteria, entomopathogenic fungi, preparation of mother cultures of bio-pesticides, isolation and mass multiplication of Entomopathogenic nematodes etc. The training given to the students will enable them to transfer these technologies to farmers during the RAWE programme.

Integrated Soil Nutrient and Weed Management

The training programme on Integrated Soil Nutrient and Weed Management (ISNWM) was organized from 6th to 12th December, 2016. The participants were trained in various aspects of plant health management. During the training, participants were learnt various techniques of safe and judicious use of pesticides, hands-on-practice on farm level mass production of BCAs, Bio-pesticides and Mycorrhiza. A total of 15 trainees from different states viz., Jammu and Kashmir, Himachal, Gujarat, West Bengal, Punjab, Telangana, Maharashtra, Tamil Nadu and Karnataka have attended the programme.

Refresher training programme to Agri-entrepreneurs in 'On farm production of Bio-control agents and microbial bio-pesticides

To expand agri-businesses, operations and enter into new areas of entrepreneurship a five day refresher training programme for Agri-entrepreneurs entitled "On farm production of bio-control agents and Microbial bio-pesticides" was organized from 13th to 17th December, 2016. A total of 17 participants were imparted hands-on training on mass production of various parasitoids, predators, microbial bio-pesticides and bio fertilizers. They were also trained in vermi-compost preparation, seed treatment with microbial bio-pesticides (bio-priming), pesticide application techniques, rodent pest management, fruit fly traps and lure preparation.

Management of Nematode diseases in poly-houses and fruit crops

NIPHM organized a training programme from 13th to 17th December, 2106 on 'Management of Nematode diseases in poly-houses and fruit crops' to horticultural officers of Telangana State. The objective of the training programme was to provide practical based knowledge on management of Plant Parasitic Nematodes in poly houses and fruit crops. A total of 19 participants attended the programme.

Training on 'On-farm production of bio-control agents and microbial bio-pesticides to promote AESA based PHM in conjunction with ecological engineering for pest management' for farmers of Tamil Nadu & West Bengal

Two training programmes of three days duration were organized for the farmers of Tamil Nadu. The farmers were given hands on training for mass production of various parasitoids (*Trichogramma, Bracon, Chelonus*), predators (*Reduviids, Coccinellids, Chrysoperla,* etc.) microbial bio-pesticides (*Trichoderma, Pseudomonas*) and bio-fertilizers. They were also familiarized with the vermicompost preparation, pesticide application techniques, rodent pest management, fruit fly traps and lure preparation. A total of 76 participants from Tamil Nadu and 19 from West Bengal were attended the programme.

Orientation-cum-Capacity building programme for the Facilitators/ coordinators of DAESI at MANAGE and NIPHM

Training program on "Orientation-cum-Capacity building program for the Facilitators/ Coordinators of DAESI" was conducted during 28th and 29th December, 2016. A total of 32 participants attended the course. The objective of the training was to expose the participants to the sustainable plant health management practices being popularized by NIPHM particularly in bio-pesticides and bio-fertilizers and

Capacity Building

hands on practice for their mass production techniques.

Training on "On-farm production of bio-control agents and microbial bio-pesticides" (Parakal farmers)

NIPHM has selected Warangal as the Pilot District for Implementation of District Pest Management Plan. Under this project, a two day training programme was organized for the farmers of Parakal mandal of Warangal district. The farmers were trained in on-farm production of biocontrol agents like parasitoids, predators, microbial biopesticides, Entomopathogenic fungi and Entomopathogenic Nematodes (EPN). A total of 39 farmers were attended the programme.

Appropriate pesticide Application Techniques and Farm Level Storage Structures

An 8 day training programme was organized on "Appropriate pesticide Application Techniques and Farm Level Storage Structures" from 17th to 24th October, 2016 with objective to achieve maximum efficacy with minimum side effects on non-target organisms. A total eight participants attended the training programme. The participants gained knowledge on use of spraying techniques and farm level storage practices.

Safe and Judicious Use of Chemical Pesticides

NIPHM organized a training programme on Safe and Judicious use of chemical pesticides from 21st to 28th November, 2016. Total of 24 participants from 8 states attended the training programme. Participants were trained on various aspects like appropriate selection of spraying techniques, dosage requirements, pesticide formulation and their properties, quality control of pesticides, judicious use of rodenticides, safe use of pesticides and precautions to be taken while spraying and storage of pesticides. Practical sessions were organized on application techniques, selection of suitable nozzles, calibration of the sprayers, and their operation.

Rodent Pest Management in store houses of food grains

A 5 day training program on 'Rodent Pest Management in store houses of food grains' from 07th to 11th November, 2016 was organized for FCI, CWC and SWC storage professionals. The training programme was attended by 10 officials. Participants were imparted 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.

Certificate course on Urban Integrated Pest Management

For private pest control operators institute organized a 15-days certificate course on Urban Integrated Pest Management was conducted from 28th Nov. to 12th Dec, 2016 with an objective to build technical manpower to undertake commercial urban pest control services in human habitations, institutions and industrial premises for structural pest management professionals. A total of 09 participants were attended the training. The participants were given field based training on biology and management of mosquitoes, termites, flies, cockroaches, rodents, stored grain insect pests besides giving exposure on pesticide toxicity, zoonotic diseases, safe and judicious use of pesticides, specialized facilities through scientific application techniques, food safety and principles of IPM with concomitant field practical.

5-day on Urban Integrated Rodent Pest Management (UIRPM) was organized as an integral module with 15-day UIPM program from 29th Nov to 03 Dec, 2016. One participant from Telangana attended the training programme.

Capacity Building

One day Farmer Training on Vertebrate Pest Management in Kerala

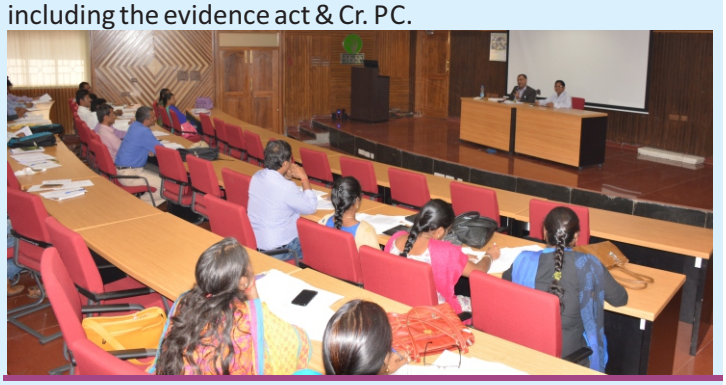
Institute organised two field training programmes of 01-day farmer training on vertebrate pest management at 1). Mallapuram district, Kerala on 16.11.2016 total 78 No farmers were participated. 2). Hunderi panchayat, Kannur district, Kerala on 16.12.2016 total 53 No. farmers were participated. Farmers gained knowledge on rodent pest management and other vertebrate management in Agroeco system using nonchemical approaches. This programme conducted in collaboration with Department of agriculture, Kerala Government.

Pesticide Formulation Analysis(PFA)

The Insecticide Analysts from various sate pesticide testing laboratories are being trained in the quality control analysis of pesticides during 12.07.16 to 15.09.16 for 66 days with a strength of 14 participants, wherein the participants were introduced to the concepts on pesticide management, various sections and rules of insecticide act 1968 &rules 1971, procedures of implementation during enforcement, pesticide formulations and their physico- chemical properties, principles of volumetric analysis and different type of titrations, volumetric and instrumental methods of analysis for quality control of pesticides. The participants were trained in operation and maintenance of UV-Vis & FT IR spectrophotometers, gas chromatographs & liquid chromatographs. They are given hands on experience of analysing pesticides using the modern analytical instruments as per the latest Bureau of Indian Standards (BIS) and Registration Committee (RC) approved methods of analysis.

Inspection Sampling and Prosecution Procedures under Insecticide Act 1968

This program is conducted for capacity building of the Insecticide Inspectors appointed under section 20 of the Insecticide Act 1968, for enforcement of the Act which helps them understand the Act and Rules and procedures to be followed for successful enforcement of the act. This course is organised from 13th to 17th December, 2016 wherein 37 participants underwent this particular program from various states. The participants are trained to equip themselves on the salient features of the Insecticide Act 1968, Insecticide Rules 1971, their implementation giving emphasis on the role of Insecticide Inspectors, duties & Responsibilities, the procedures for sampling, an exposure to the Procedures and methods of analysis of synthetic pesticides, Bio products and the interpretation of the Analytical Reports besides Procedures for prosecution including the evidence act & Cr. PC.



Sampling of Fruits, vegetables and other items for Pesticide Residue Analysis & calibration of Laboratory Equipment for PRA

This program is conducted for capacity building of Pesticide Residue Analysts . The participants were given theoretical and practical training in sampling of fruits and vegetables and the calibration of Analytical Instruments GLC, HPLC, GC-MS/MS and LC-MS/MS. A total 9 participants were trained.

Transfer of NIPHM technologies from lab to field

To transfer the NIPHM technologies from lab to field, NIPHM has initiated the farmer's field trials at Kampasagar district of Nalgonda and Garikapadu of Krishna district. For carrying out the field studies, two farmers' fields and one KVK from each district were selected and provided with all inputs and technologies developed by NIPHM for rice cultivation viz., bio-pesticides, bio-fertilizers and ecological engineering flowering plants etc. The crop was raised successfully without using any chemical fertilizers and pesticides and the yield of the crop was almost on par with the crop maintained with inorganic inputs.

Awards

NIPHM has in the very recent past tested and implemented the following innovative projects which were nominated for the Skoch Awards.

1. Online Plant Pest / Disease Advisory Services and

2. Live Streaming of Technology Demonstration over Internet for FREE

Both nominations were adjudged amongst the "Top 100 Projects in India" for the year 2016 by the SKOCH Awards Jury and were presented the "**Skoch Order-of-Merit**" during the 46th Skoch Summit held on 15th December 2016 at Constitution Club of India, New Delhi.

Under the "**NeGD-SKOCH Digital India Champion Awards 2016**", NIPHMs "**Online Plant Pest / Disease Advisory Services**" was awarded "**SKOCH Silver Award**" in its category from among the top 100 projects aforesaid. The awards were presented by the Addnl. Secretary, Ministry of Electronics and Information Technology, Government of India, President and CEO, NeGD, and Chairman, Skoch Group along with other Dignitaries.

Foundation day Celebration

National Institute of Plant Health Management (NIPHM) Foundation Day (8th year) was celebrated on 23-10-2016 in a befitting manner.

The Director General Smt. V Usha Rani, I.A.S. graced the occasion and addressed the gathering. In her keynote address the Director General noted the important milestones achieved by the organisation in its long journey. The Bio-control Laboratory, the Vermicompost unit, PFRA Centre of PMD, accredited laboratory by NABL as per ISO/IEC 17025:2005, the off-campus PGDPHM at Kerala are a few achievements to note. The organisation is committed to strive for the welfare of the farmers & train them in adopting sustainable agricultural practices and increase agricultural productivity. The Director General appreciated the efforts of all the officers, faculty and employees of NIPHM for their commitment, hard work and support in building up the organisation.

Vigilance Awareness Week

NIPHM observed the Vigilance Awareness Week from 31st October to 5th November 2016. The following activities were taken up during the Vigilance Awareness Week this year:

- The Pledge was administrated to all the officers and officials by the Director, PHM, NIPHM.
- Essay writing competition was conducted on Public participation in promoting Integrity and eradicating Corruption in connection with observation of Vigilance Awareness Week.
- Debate on Public participation in promoting Integrity and eradicating Corruption was held in connection with observation of Vigilance Awareness Week.
- A Lecture was delivered by Dr. L. S. Varaprasad, Rtd. Director, IIOR, Rajendrangar, Hyderabad on the theme "Public participation in promoting Integrity and eradicating Corruption" in connection with observation of Vigilance Awareness Week.

Retirement

Er. G. Shankar, JD-PHE & Registrar i/c retired from the services of the NIPHM on 30.11.2016. He served the Institute 33 years in the field of Plant Health Engineering. In addition to this he worked as a registrar in-charge also. NIPHM wishes him happy and peaceful post retire life.

Vacancies at NIPHM

National Institute of Plant Health Management, Hyderabad invites application for the following posts-

1. Joint Director (Plant Health Engineering)
2. Financial Advisor
3. Assistant Director (Pest Surveillance)
4.Assistant Director(PHM-Horticulture & Floriculture)
5. Scientific Officer (Pest Risk Analysis)

The details of educational qualifications, experience, age and other eligibility criteria, duties for appointment on Direct Recruitment / Deputation basis (including relaxations, if any) for the posts along with application format may be accessed from web http://niphm.gov.in.

Official Visit

Dr. Ch. Sreenivasa Rao participated in training program "International Food Safety Laboratory Network - India" at Singapore during 30-11-2016 to 13-12-2016. The program is organized by FSSAI in collaboration with Global Food Safety Partnership (GFSP) to trainMaster Trainers for Food Testing Staff of India, and delivered a special lecture on "General Data Requirements for Fixation of MRLs".

वर्ष २०१६-१७ हेतु राजभाषा कार्यान्यवन समिति की तृतीय बैठक संपन्न

दिनांक ३०-११-२०१६ को श्रीमती वी.ऊषारानी, भा.प्र.से., महानिदेशक, रावस्वाप्रसं (एनआईपीएचएम) की अध्यक्षता में वर्ष २०१६-१७ हेतु राजभाषा कार्यान्यवन समिति (राकास) की तृतीय बैठक आयोजित हुई। बैठक में महानिदेशक के समक्ष जुलाई–सितंबर, २०१६ की तिमाही हिंदी प्रगति रिपोर्ट प्रस्तुत किया गया। उन्होंने उक्त तिमाही प्रगति रिपोर्ट की समीक्षा की एवं पिछले बैठक के दौरान लिये गए निर्णयों पर की गई कार्यवाई पर संज्ञान लेते हुए संस्थान में राजभाषा कार्यान्वयन हेतु कई निदेश दिये। महानिदेशक ने कहा कि संस्थान में आगे भी राजभाषा अधिनियम की धारा 3(3) का अनुपालन शत-प्रतिशत किया जाए। बैठक में सूचित किया गया कि माईकोराइजा और सूडोमोनास वीडियो को हिन्दी में अनुवाद कर एनआईपीएचएम वेबसाइट अपलोड कर दिया गया है। इसी संदर्भ में महानिदेशक ने निदेश दिया कि किसानों से संबंधित प्रौद्योगिकी वीडीयो, महत्वपूर्ण जानकारियों एवं उपयोगी तकनीकों का हिन्दी अनुवाद किया जाए। उन्होंने सभी कर्मचारियो और अधिकारियों को फाइल पर अधिक से अधिक हिन्दी में टिप्पणी और अभ्युक्तियां लिखने हेतु निदेश दिये, जिससे की संस्थान में कार्यालयीन कामकाज में राजभाषा हिंदी को बढ़ावा दिया जा सके। हिंदी अधिकारी और हिंदी अनुवादक को जल्द से जल्द प्रशिक्षण सामग्री (मैन्यूअल) को हिंदी में अनुवाद करने का निदेश दिये। महानिदेशक ने निदेश दिया कि एनआईपीएचएम वेबसाइट का मुख्यपृष्ठ (होमपेज) का हिंदी अनुवाद, एनआईपीएचएम वेबसाइट पर अपलोड कर दिया जाए। अत: उक्त के अनुपालन हेतु एनआईपीएचएम वेबसाइट का हिंदी अनुवाद (होमपेज) अपलोड कर दिया गया है और इससे संबंधित अनुवाद कार्य प्रगति पर है।

Editor
Dr. Ch. Sreenivasa Rao, Director, Pesticide Management Division
dirpmniphm-ap@nic.in
Associate Editor
Dr. C. S. Gupta, Assistant Scientific officer(PP)
asoppniphm2-ap@nic.in

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Registrar
National Institute of Plant Health Management (NIPHM)
Department of Agriculture, Cooperation & Farmers Welfare,
Ministry of Agriculture & Farmers Welfare, Govt. of India
Rajendranagar, Hyderabad - 500 030, INDIA. Ph: +91 40 24013346,
Tele Fax: +91 40 24015346; niphm@nic.in; registrarniphm@nic.in