



Plant Health News Letter

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From the Director General's Desk



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Director General - NIPHM

Agricultural sustainability and Biosecurity of the native agro-ecosystems is under severe stress due to globalization of trade of agricultural commodities. The criss crossing of agricultural commodities from one continent to the other has increased incursion of exotic pests and Invasive Alien Species, threatening biosecurity of different countries. Invasive pests which entered into India have caused catastrophic damage on several crops such as euophid mite on coconut, papaya mealybug on papaya, coffee berry borer on coffee, cotton mealybug on cotton, spiraling whiteflies on guava, serpentine leaf miner on many vegetable crops.

Biosecurity risks are on the rise cutting across the natural barriers due to ever increasing movement of men & materials. The rate of introduction of new species into ecosystems has increased dramatically due to multiple pathways through which alien species including invasives are gaining access. The Invasive Alien Species on gaining access are impacting the native agroecosystems and biodiversity. Impact of the invasives are felt at species, genus, community, population and ecosystem levels jeopardizing food safety, food security and livelihood security of the farmers. The impact on ecosystems (as in the case of water hyacinth) can have irreversible impacts on the environment and on the economy of the nations. Preparedness & Biosecurity Risk management along the Biosecurity Continuum is a major challenge confronting the Policy Makers, Scientists and the Regulators.

Interconnectedness of Agriculture including Forests, Animal husbandry including Fisheries and Public Health necessitates urgent action by nations world over to strengthen Biosecurity Risk Management. In addition to National quarantine regulations, International conventions/Agreements such as CODEX, IPPC (International Plant Protection Convention), Convention on Biological Diversity, the Cartagena protocol on Biosafety, Sanitary & Phytosanitary Agreement play a major role in protection of a country's biosecurity.

Pest Risk Analysis plays a very significant role in International trade to prevent the entry of regulated quarantine pests. Sanitary & phytosanitary treatments are important tools that can be invoked at preborder and border to manage pests that are of concern, when trade is permitted between different countries. Pest surveillance, Diagnostics, Risk Communication, Response & Management play a significant role in eradication & in management of the pests, if they gain entry into a country. Compliance with SPS agreement, establishment of Pest Free Areas, Areas of Low Pest Prevalence provides access to International markets.

Risk management along the biosecurity continuum viz., Preborder, Border & Post Border can be achieved with integrated Biosecurity. There is a strong need for involvement of different stakeholders and multi-sectorial integration encompassing scientific, environmental, technological and policy to protect a country's biosecurity from incursion of new pests. Cooperation among South Asian countries is essential to prevent entry of invasive alien plant pests of concern to the region due to sharing of borders and relatively free movement of men & materials among the South Asian Countries.

NIPHM is designated as a nodal agency at the national level for building capacity in Agricultural Biosecurity. NIPHM is organizing training programmes to sensitise and enhance the capacity of Officers at different levels through specialized programmes in Biosecurity and Incursion Management, Pest Risk Analysis, Regional Plant Health System Analysis, Pest Surveillance, Phytosanitary Treatments, Pest Diagnosis and Plant Quarantine Programmes. NIPHM is taking a proactive role by organizing medium term and long term training programmes to build technical expertise in India. NIPHM in collaboration with USDA is also organizing Regional Plant Health System Analysis course to build capacity in South Asia and Africa.

I hope Scientists of ICAR Institutions and State Agricultural/ Horticultural Universities, Agricultural Extension functionaries of Central and State Agriculture/ Horticulture / Forestry Departments, DPPQS and other stakeholders will take advantage of these capacity building programmes and join us in our commitment to safeguard the nation from ingress of invasive alien plant pests and their impacts.

(K. Satyagopal)
Director General



Theme Article

INVASIVE PLANT PESTS: PROBLEMS AND THE WAY FORWARD

Dr. N. Sathyanarayana and Dr. Korlapati Satyagopal, IAS

Movement of plants and plant materials to different places commenced with nomadic way of early man and the advancement in navigation and air transport paved way for the accelerated movement of alien plants and animal species to different continents from the place of origin. In a way it enriched species richness world over. However, some of the alien species were harmful replacing the indigenous population or adversely affected the agricultural crops as pests. The alien species may not be harmful in their place of origin, as the invasiveness is curtailed by influence of many factors of the particular ecosystem. The alien species become invasive in introduced area due to absence of natural enemies and congenial environment parameters. Biological invasions produce severe, often irreversible impact on agriculture and natural resources. Invasive species are considered as the second greatest threat to native species, only behind habitat destruction. Accidental or intentional introduction of plant pests into newer areas are curtailed to some extent through legal mechanism implemented by National Plant Protection Organizations (NPPO).

Scientific evidence indicates that biological invasions are growing at an unprecedented rate, posing increasing threats to the diversity of life, and to the native ecosystems. Invasions impact adversely water availability, food security, human health and global economies. India, one among the 12 mega diversity countries in the world, is rich with 8% of world species. The richness of the varied agro-climatic zones and the ecological disturbances are congenial conditions for the invading alien species to thrive.

In India many invasive alien plant pests were introduced inadvertently and became wide spread due to lack of public awareness and its consequences. The absence of stakeholder involvement in pest risk analysis, risk management programmes and the absence of well-organized containment and eradication programmes enhanced the wide-spread movement of invasive pests.

RECENT PEST INCURSIONS INTO INDIA AND THE ECONOMIC IMPLICATIONS:

Coffee berry borer (*Hypothenemus hampei*) which is native to African continent was first reported in 1990 in Wayanad, Kerala, has now spread to the major coffee growing areas of South India. Annually more than Rs.20 crores is spent towards control measures. Ever since the introduction of coffee berry borer, the export to major countries is affected not only due to presence of the pest but also due to increased mycotoxin levels in infested beans.



The coconut eriophyid mite (*Aceria gurreronis*) which is native to South America was introduced into Africa and Asia, where the mite became invasive. The eriophyid mite was first noticed in 1995 in Ernakulam District of Kerala, the pest has spread to major coconut growing areas of Tamil Nadu, Karnataka, Andhra Pradesh, Lakshadweep and is further spreading towards North-East. In a survey conducted in 1999 at Kerala nearly 42% of plants (i.e 589 lakh plants) were affected and estimated yield loss was around 22%. The percentage of reduction in nut weight



due to mite infestation was estimated as 2.12%. India is the third largest coconut producing country in the world and presently the crop is covered in an area of 1.9 million ha with an estimated production of 12.8 billion nuts per annum, which accounts for 22.36% of world production. Annually more than Rs.100 crores are being spent towards management of this pest.

Spiralling white fly (*Aleurodicus dispersus*) was first reported in 1993 at Thiruvananthapuram, Kerala and later reported from Tamil Nadu, Andhra Pradesh, Karnataka and Maharashtra. Spiralling white fly native to Central America was introduced into India through imported planting materials from Sri Lanka / Maldives. More than 280 plant species are hosts and the invasive pest has caused 53% yield loss of tapioca and heavy yield loss is also observed in Groundnut, Banana, Papaya, Guava, Chilli, Coconut, Rubber in India. Further, it was



observed as a new pest of Mulberry in 2010 causing huge economic damage to silk worm rearing. The sooty mould formation is a secondary reaction due to the honey dew secretion by spiralling white fly, which adds to the infestation and damage.

Sunflower downy mildew (*Plasmopara halstedii*) was initially reported in Marathwada region of Maharashtra in 1992, where sunflower is extensively grown. A survey conducted in 1995-96 revealed 36.67% of infection in the region. Sunflower downy mildew which is seed transmitted in nature was introduced through seeds imported from America, the pathogen has spread to major sunflower growing States such as Karnataka, Andhra Pradesh apart from Maharashtra.

Serpentine leaf miner

(*Liriomyza trifolii*) native to America was accidentally introduced from Netherlands into India through Chrysanthemum cut flowers and reported from Karnataka in 1990. Serpentine leaf miner is a



highly polyphagous, invasive pest infesting more than 70 host plants in India which includes crops of pulses, vegetable, fodder, oil seed, ornamental, fibre crops, etc. The pest has spread to most parts of India. According to ICAR survey, tomato is more susceptible host to this pest. Farmers in Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu have reported 25 % losses in tomato crop due to the attack by this pest.

MEASURES TO PREVENT NEW PEST INCURSIONS: Through implementation of legal mechanism i.e. Plant Quarantine (Regulation of Import into India) Order, 2003, the imported plants and plant materials are regulated and the commodities are inspected, sampled and tested at the port of entry. The perishable live plants, bulbs, rhizomes, cuttings etc., imported for propagation, after completion of inspection at the port of entry are provisionally released to grow under Post-Entry Quarantine (PEQ) facilities established by the importers. Many plant pests of economic importance have been intercepted by plant quarantine authorities at International port of entries. However, the unregulated/ smuggled plants, the lack of awareness on exotic plant pests, its likely impact among public at large and absence of preparedness to contain at initial stages has resulted in incursion of many economically important plant pest entries into India.

Bio-invasion by the alien species may lead to economic loss, ecological imbalance, threat to food security, decrease in availability of water and nutrition and disturbances in biodiversity. When a new or exotic pest is reported for the first time serious efforts have to be taken to contain and eradicate the pest through concerted efforts by the stakeholders. The agricultural trade is increasing many folds year by year, consequently the looming pest threats are also increasing. Some of the looming pest threats to the country in near future are:

Coconut Hispid beetle (*Brontispa longissima*) is one of the economically important pests of coconut. The Hispid beetle is a polyphagous pest and has already invaded into neighbouring countries such as Maldives and Myanmar from its Indonesian origin. Hispid beetle is a looming threat to coconut in India. Even though import of Coconut plants is prohibited, the pest may find its way through imported ornamental palm plants.



Fruit flies: The imported fruits may serve as major pathway of entry for exotic fruit flies, which might severely affect fruit production as fruit flies are polyphagous and can also harm vegetable. The Mediterranean fruit fly (*Ceratitis capitata*), South American fruit fly (*Anastrepha fraterculus*), Queensland fruit fly (*Bactrocera tryoni*), etc. are posing threat through imported fruits.



Cotton boll weevil (*Anthonomus grandis*) is considered as the most costly insect pest of Cotton in United States and losses to the tune of \$150 to \$300 million annually. This exotic pest from Central America is a major economically important threat to cotton to India.

**Ug99 – Stem Rust of Wheat** (*Puccinia graminis f.sp. tritici*):

Ug99 strain of stem rust of wheat is a dreaded pest, as more than 80% of Wheat varieties grown in India are susceptible. The pest has reached Yemen from its place of African origin and can be a serious threat to wheat production in India.

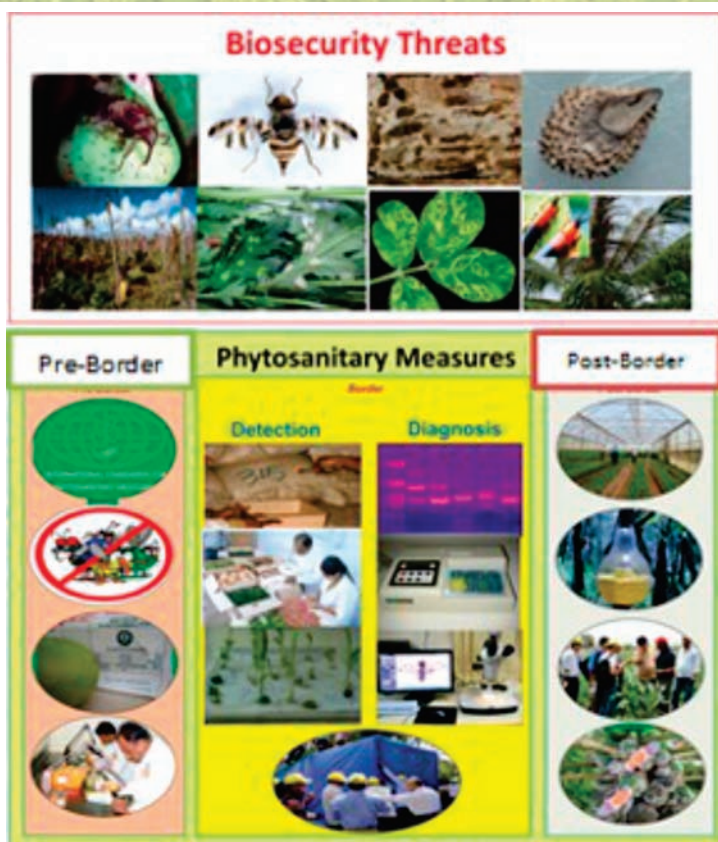
**Tomato leaf miner**

(*Tuta absoluta*) which is native of Peru was introduced into Europe, South America, North Africa and Middle-East. Tomato



leaf miner is considered as a major pest of Tomato and caused severe damages in the countries where it was introduced. The pest has high adaptability to climatic conditions and has the potential to spread fast. Tomato leaf miner is emerging as a

major threat to Africa and Asia where tomato is grown extensively.



There are many such exotic, invasive pests of great concern to India which are emerging as looming threats either through imported plants/ plant materials or through natural pathways. There is a need to establish legislation to deal with exotic plant pests as regulatory system can only deal the management of pest incursion effectively. A nationally coordinated system of surveillance, inspection, testing, diagnosis and control using entry and post entry measures are required to prevent the establishment and spread of exotic plant pests that may have harmful effect on plants, human, animals and environment. These activities are responsibilities of Central Government, State/ Union Territory, Research Institutes, Agricultural Universities, Private/ Public sectors, Farmers and Public.

NEED FOR BIOSECURITY CONTINUUM

At present the biosecurity of the nation is handled in a sectorial approach. There is no or negligible integration among various stakeholders. Harmonization and integration among the relevant sectors responsible for pest incursion management is essential for preventing the pest's entry, establishment and spread and save the nation from unwanted crop loss as well as expenditure towards control measures. Effective biosecurity continuum measures at pre-border (before import), border (at ports of entry) and post-border (exotic pest surveillance) will aid to prevent the entry and establishment of invasive plant pests.

Past experiences indicate lack of preparedness to combat the invasions of invasive alien pests on emergency basis, leading to

entry and establishment of a number of invasive weeds and plant pests in recent years. There is a need to establish Emergency Plant Pest Incursion Management Protocols to combat further invasion of alien species into India that are likely to find their pathway through increased trade. It is pertinent to identify roles and responsibilities in the eventuality of plant pest incursion, besides enhancing the existing plant quarantine human resource to meet the increase in international trade of agriculture and strengthening the infra- structure facilities required for quick detection and diagnosis. There is a need to enhance the capacity of all the stakeholders to ensure effective and timely interventions to prevent / manage pest incursions. The looming threat of invasive species needs to be addressed by having effective contingency / emergency plant pest incursion management plans.

WAY FORWARD

There is a need to develop multipronged strategy to prevent the incursion of invasive alien species and if introduced then immediate measures to manage the invasive species. Some of the country specific strategies that can be employed to address the issue are:

1. Regulatory Framework: In India the Agriculture, Horticulture and Forestry are the State subjects. The production, protection and conservation of Agriculture, Horticulture and Forestry resources in each State are managed by respective State Departments. There is a need to review the existing policies and regulations and empower the State Departments of Agriculture, Horticulture and Forestry in regulating the inter-state movement of plants and plant materials to prevent, contain and eradicate exotic and invasive species which may threaten the native plant eco-system. The NPPO, which is responsible for implementing the regulations at national level, has to secure necessary budgetary support to meet the cost for containment and eradication in the event of pest incursion, including compensation in the event of extreme step of destroying the host plants to contain / eradicate the pest.

2. Regional Cooperation: India has land contiguity with many neighbouring countries and close proximity to the Island nations of Sri Lanka and Maldives, as a result any new pest incursions in these neighbouring countries may eventually enter into India as pests do not recognize national boundaries. India being a lead country in the South Asian Region, should take the initiative for identifying the potential pest threats to the region and engage in human resource development in the area of Pest Risk Analysis, Pest Surveillance, Pest Diagnostics and Pest Incursion Management. Further, in the event of any new pest incursions in the neighbouring countries which may be of potential concern to India's biosecurity, the NPPO of India may have to take proactive role by providing necessary assistance to the neighbouring countries in containment and eradication.

3. Institutional Framework: State Department of Agriculture, Horticulture and Forestry do carry out regular surveys and surveillance for various parameters of production, conservation but the component of surveillance for exotic or invasive plant pests need to be included in the regular activities of each department. The States which have land contiguity with neighbouring countries and close proximity to neighbouring island countries should establish “State Biosecurity Authority / Council” with State regulatory support to safeguard the plant resources from exotic plant pests. There is a need to create “District Biosecurity Committee” under the chairmanship of District Collector and include the Joint Directors of Agriculture, Horticulture and District Forest Officer and representatives of Biosecurity Cells within the districts as members to review the incidence of any pest epidemics as well as new pest occurrence within their jurisdiction. A “Block Biosecurity Committee” may be formed involving block level officials of agriculture, horticulture, forestry including farmers, traders, NGOs and industries dependent on agriculture, horticulture and forestry as stakeholders for reporting any exotic pest / invasive species. In the event of any new pest sightings the District / Block Biosecurity committee must immediately alert the State Biosecurity Council and NPPO.

4. Building Management Capacity: There is a need for capacity building and networking of biodiversity specialists, environmentalists, plant quarantine specialists to address the issues posed by incursion of invasive alien species and exotic pests. To begin with capacity building efforts should be focused to build basic awareness on threats posed by potential invasive alien species and exotic plant pests among border control officials, quarantine officials, customs, food inspection authorities and stakeholders. The State Agricultural / Horticultural Units along the border areas should be made part of the emergency preparedness/rapid response network. The above officials should be trained to organize regular surveys and surveillance for detection of new pest and take lead role in the event of eradication / containment.

5. Research Capacity: There is a need for concerted efforts by ICAR/ State Agricultural Universities to strengthen human resource in the areas of pest risk analysis for identifying potential pest threats to the economically important crops in the region, State, Country and South Asia. Research efforts has to be focused for developing appropriate tools in early detection, quicker diagnostic protocols for identification, evaluating measures that can be employed to contain/ suppress/ eradicate the exotic plant pests.

6. Environmental Risk Analysis: The NPPO must identify the emerging quarantine and invasive pest threats to India through appropriate risk analysis and environmental assessment. It must provide the detailed biology, ecology, host

range, morphology supported by photographs of the pest with key identification characteristics and host symptoms of looming pests and their likely impact on environment to the State Biosecurity Council, District Biosecurity Committee and Block Biosecurity Committees to organize awareness campaigns among the stakeholders to safeguard the Biosecurity through surveillance and early detection. The NPPO must develop guidelines on Do's and Dont's in the event of exotic / invasive pest sightings.

7. Awareness: The public awareness on invasive species is vital in preventing the entry, establishment and eradication. Creating awareness on harmful effects of invasive species, their economic impact and successful eradication programs carried out elsewhere, in the curriculum of schools and colleges go a long way in enhancing the awareness among the citizens. Regular workshops on looming threats of invasive species involving NPPO, State Biosecurity Council, District Biosecurity Committee and Block Biosecurity Committees will not only create awareness but also enable them in containment and eradication in the event of any new incursions.

COOPERATIVE AGRICULTURE PEST SURVEY (CAPS) IN USA

CAPS is a national approach to survey the exotic pest species in USA and conducts science-based national and state survey. Target specific exotic plant pests identified as threats to U.S. agriculture and/or the environment such as insects, plant pathogens, molluscs, and weeds are surveyed for early detection to apply mitigation measures in the event of detection. Target oriented, “New Pest Response Guidelines” (NPRG) for Prevention and Planning are brought out by the USDA-APHIS and made available in the official website. NPRGs serve as a framework for providing methods and tools used for containment, control or eradication for a pest. NPRGs are developed proactively prior to the arrival of a pest.

India is still free from many economically important exotic plant pests and other invasive species. Emergency preparedness to prevent the entry, establishment and to initiate containment and eradication activity in case of pest incursion is needed in India. There is a well-organized preparedness mechanism in place to prevent, control and eradicate locust invasion into the Country. However this mechanism is confined only to the western borders of India and being implemented by NPPO for invasion of Locust only. While drawing the lessons from locust control programme, urgent action is required for establishing a similar preparedness action plan for various looming threats of exotic plant pests and invasive alien species into India.

On-Farm Production Technique for *Pseudomonas*

1
Prepared liquid media using clean water



2
Fill up the 1/3 of flask with media



3
Close flask mouth with cotton plug



10
Liquid *Pseudomonas* is used for seed/soil treatment & foliar spray



9
Mix the liquid *Pseudomonas* in compost in 1/3 ratio for soil application



Low cost inoculation chamber



4
Put flasks in a pressure cooker (upright position) & cook for 40 min.



5
Inoculate flasks in an inoculation chamber



8
Transfer *Pseudomonas* in another bottles for transport



7
Shake flask every day 3-4 times



6
Incubate flasks at room temp. for 3-5 days

For more details, for undergoing training and to procure mother culture / low cost media and technologies, interested participants / parties can visit NIPHM website <http://niphm.gov.in> and can contact Registrar email: registrarniphm@nic.in

Eradication of *Ambrosia psilostachya* weed in Karnataka

The weed *Ambrosia psilostachya* has invaded and is reported in the interior parts of Karnataka. NIPHM carried out the delimiting survey to map its distribution. The weed has spread in an area of 400 Acres and is confined between N 13° 08' 656½ to N 13° 11' 189½ and E 76° 40' 759½ to E 76° 42' 426½. The Department of Agriculture Cooperation, Government of India entrusted the responsibility of eradication to NIPHM & DPPQ&S involving multiple stakeholders viz. ICAR, UAS Bangalore, State Government etc. The eradication activity was launched in 2012 for creating awareness among the farmers on ill effects of the weed. The significant reduction in the weed population has been recorded in the farmers' field where more than 3 sprays with weedicide have been taken-up. Massive spray is being now initiated on public land, forest land and irrigation canals. A field day on eradication of the weed was held on 17.12.2014 at Madihally, Turuvekere Village, Tumkur District, involving farmers, officers from State Revenue Department, Forest Department, University of Agricultural Sciences, DPPQ&S and NIPHM. About 115 farmers from ambrosia infested villages, 30 school children participated in the field day. The field day created better awareness among the stakeholders to rededicate the efforts for eradication.



Weed in a public land before (Photo- A) and after weedicide application (Photo- B)

Field day on awareness of ambrosia weed at Madihally

Around the World

Hispine beetle (*Brontispa longissima*) – A looming threat to Coconut plants

The coconut Hispine Beetle (*Brontispa longissima*) is a destructive coconut pest, it is native to Indonesia and Papua New Guinea and has spread to Asian and Pacific ocean countries such as Solomon Islands, Vanuatu, New Caledonia, American Samoa, Australia, Hong Kong, Vietnam, Maldives, Thailand, Taiwan, Cambodia, Lao, Myanmar, Singapore and more recently into China, Japan and Philippines. The pest is slowly spreading and now reached Maldives and Myanmar, close to India. The host range includes Coconut, Areca nut, Oil Palm, and many ornamental palms. *Brontispa* attacks palms of all ages, although it is most damaging to young palms in nurseries and for the first 4-5 years after planting out in the field, especially in dry areas.

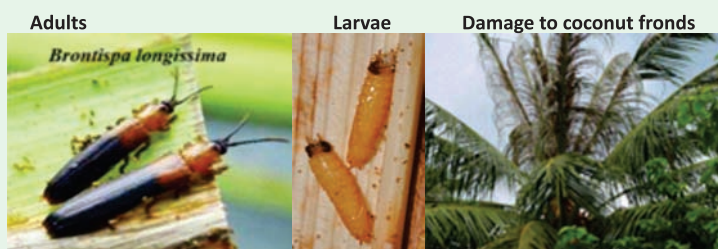
The import of Coconut plants into India is prohibited. The pest can enter through three possible routes. (i) Natural ways from neighbouring countries such as Myanmar, (ii) through tourism from Maldives and (iii) import of ornamental palm plants. The pest has entered into Maldives through import of ornamental palm plants and causing major damage to the palms.

Both adults and larvae damage the leaflets of young unopened fronds. They graze away the leaf surface in streaks, which are typically parallel to the midrib. The narrow feeding scars enlarge to form irregular, brown blotches as the frond opens. The brown areas shrivel and curl, giving the leaf a characteristic scorched, ragged appearance. Large areas of the leaflets break-off leaving the foliage partially skeletonized. Destruction of young leaf spike tissues restricts growth for a long time and severe attack may cause death. Fruiting is drastically reduced in severely affected plantations.

The Hispine beetles are reddish-brown to black in colour measuring 8.5 – 9.5 mm long, 2.0 – 2.25 mm wide. The eggs are laid on leaf surface, egg period is 4-6 days, larval 30-40 days, pupal 6 days, pre-oviposition period 1-2 months, and adult longevity is 200-220 days. The adult Hispine beetle is similar to another devastating, exotic pest of concern to India – Coconut leafminer (*Promecotheca cumingii*), which is prevalent in Sri Lanka.

The incursion of Eriophyoid mite has caused considerable damage to the Coconut dependent industries and still affecting livelihood of many people in India. The Hispine beetle can be a serious threat to Coconut, Oil Palm and Areca nut plantations. The plant quarantine officials at all port of entries, Agriculture/ Horticulture extension officials of border States need to keep close watch for any incidence of the pest. The ICAR Institutes/ State Agricultural Universities must develop suitable traps and lures for monitoring the incidence of this pest.

Biocontrol using egg parasitoid (*Haekeliana brontispa*, *Trigrammatoidea nana*), larval parasitoid (*Aescodes hispinarum*), pupal parasitoid (*Tetrastichus brontispa*) and entomopathogenic green muscardine fungus (*Metarhizium anisopliae*) are being followed in the countries where the pest is a problem. There is a need to establish emergency action plan to mitigate the pest in the event of any possible pest incursion and biocontrol agents may also employed in management.



Special Events: Demonstration of "Biointensive IPM strategies in Tobacco"

Dr. K. Satyagopal, Director General NIPHM and Dr. K. Gopal Chairmen, Tobacco Board initiated a collaboration programme to promote sustainable tobacco cultivation through Biointensive based pest management approach.

Under the collaboration, NIPHM provided technical help to Tobacco Board to organize demonstrations on safe and judicious use of pesticides, Biointensive pest management approaches in the farmers' field at Andhra Pradesh and Karnataka.

The NIPHM trained 29 progressive farmers in on-farm production of *Trichoderma*, *Pseudomonas*, Entomopathogenic Nematodes, Bracon, Reduviid, Spiders, Mycorrhiza. They were also trained on importance of Agro Eco System Analysis (AESAs) and Ecological Engineering in managing plant pests.



The Chairman Tobacco Board, Dr. K. Gopal took active interest in the programmes and visited NIPHM to interact with the trainees and had discussion with Dr. K. Satyagopal, DG, NIPHM to develop a plan of action for the activities in Andhra Pradesh and Karnataka. NIPHM trained the Officials of Tobacco Board, conducted 5 farmers field demonstration on use of



Biopesticides i.e. *T. harzianum* and *P. fluorescens* and trained 150 farmers in West Godavari District of Andhra Pradesh.

NIPHM, actively involved in popularizing low cost Biopesticides and Biocontrol agents among the farmers. NIPHM in association with Central Tobacco Research Institute (CTRI) organized field survey and provided technical advisory to the tobacco farmers on use of Biopesticides, Pheromones, yellow sticky traps and light traps for the pest management. This initiative had positive impact on the farmers by reducing chemical pesticide application/sprays.



Special Event: Greater Awareness Among Farmers: On-farm Production of Biocontrol Agents



NIPHM has developed/ standardized simple methodologies with the available low cost inputs for the mass production of biocontrol agents and microbial biopesticides at farm level. It is offered as 10 days training programme to the extension officials from April 2014 onwards. In order to take these simple techniques to within reach of farmers NIPHM is already organizing 3-4 days hands-on programme to the progressive farmers. The training mainly focuses on the mass production of

host culture *Corcyra*, Parasitoids viz., *Trichogramma*, *Chelonus*, *Gonioses*, *Bracon* and Predators such as *Reduviids*, *Spiders* and Microbial Biopesticides such as *Trichoderma*, *Pseudomonas*, Entomopathogenic fungi and Entomopathogenic Nematodes (EPN), Vesicular Arbuscular Mycorrhiza (VAM) and vermicompost.

The concepts of Agro-Ecosystem Analysis and Ecological Engineering for Pest Management are also explained during field visits.

NIPHM has trained 124 farmers from different states i.e. Nalgonda (Telengana state), Theni (Tamil Nadu), Chattisgarh,



Rajahmundry (Andhra Pradesh), Kolhapur (Maharashtra). Farmers were given the videos developed by NIPHM on “on-farm production of biocontrol agents & microbial bioagents”.

Special Events: Inauguration of PGDPHM II Batch for Officers of Agriculture Department of Kerala



Department of Agriculture, Govt. of Kerala is collaborating with NIPHM to offer Post Graduate Diploma in Plant Health Management for the Agricultural Officers of Kerala. The main objectives of the course are:

To develop a highly committed and competent cadre of agricultural professional and to promote environmentally sustainable plant health and Bio-security Management in Kerala. 1. To develop competence in Agro-ecosystem based analysis. 2. To develop skills to organize Farmer Field Schools effectively. 3. To promote safe and judicious use of pesticides through adoption of appropriate application techniques. 4. To develop skills in pest surveillance and disease diagnosis. 5. To train officers and farmers on environmentally sustainable plant health management approaches. 6. The PGDPHM is a



two years programme having four semesters. The SAMETI facilitates by providing necessary amenities required for organizing the program.

The 2nd Batch of the programme was inaugurated by Dr. K. Satyagopal, IAS, Director General, NIPHM on 29th December at SAMETI, Trivendrum Kerala and delivered the inaugural address. Special address was delivered by Dr. P. Rajasekharan Chief (Agriculture) State Planning Board. The presidential address was given by Shri R Ajithakumar Director of Agriculture and Sri. VV Pushpangadan Additional Director of Agriculture (CP) delivered the key note address. Smt P.S. Radhamony Director SAMETI, Dr. CK Preethambaran, Retired Director of Research, Kerala Agricultural University, and Smt. S. Sobha Deputy Director of Agriculture were also present on this occasion. Thirty participants from Department of Agriculture, Kerala have joined the programme. After inaugural session Dr. K. Satyagopal, IAS, Director General, NIPHM delivered a lecture to the participants on “Role of AESA based Plant Health Management to promote safe and judicious use of pesticides & sustainable agriculture”.



Regional Plant Health Systems Analysis Course

International trade of plants and plant products has witnessed several fold increase in the post WTO era. A number of International Agreements/Treaties/ Conventions have emerged in the past decade to harmonize various factors/ issues associated with International Trade. The understanding of a country's Plant Health System (PHS) in the context of various international Agreements, Conventions and Treaties has therefore become necessary. The analysis of Plant Health Systems provides an opportunity to National Plant Protection Organizations (NPPO) to critically review their existing crop production-cum-protection systems to safeguard agricultural biosecurity. It also enhances capacity to compete with developed countries to gain market access for export of commodities.



NIPHM has entered into collaboration with USDA to strengthen the Institute's capacity in Training, Research & Policy issues in the areas of Plant Biosecurity & Plant Health Management. Collaboration with USDA envisages strengthening capacity in South Asia & Africa through Regional Plant Health Analysis course jointly by USDA & NIPHM.

The Regional PHSA programme is designed to enable the NPPOs of South Asian and African Countries to review the existing National Regulations, evaluate the gaps and identify the appropriate systems that need to be followed to enhance agriculture production, safeguard native agro-ecosystems from invasive pests and promote exports. The Course covers (i) Sustainable Agricultural Production, (ii) Biosecurity and (iii) Market Access.



The course imparts skills to promote, sustainable agriculture practices such as Agro-eco system Analysis based Plant Health Management in conjunction with Ecological Engineering for Pest Management play a vital role in food production to meet the international standards on food safety and phytosanitary requirements. International Conventions /Agreements such as International Plant Protection Convention (IPPC), Convention of Biological Diversity (CBD) and Sanitary & Phytosanitary Agreements are discussed in detail to highlight their role in protecting a country's Biosecurity. The need to harmonize the Biosecurity regulations in compliance with various International Conventions and Agreements is also stressed. The role of Pest Risk Analysis, Pest Surveillance and Emergency preparedness in managing the pest risks efficiently is explained.

The course provides insights to risk management along the biosecurity continuum viz., pre-border, border & post-border. Establishment of Pest Free Areas and Areas of Low Pest Prevalence & their role in providing access to International markets are also discussed in detail.



The Regional Plant Health Systems Analysis Course is designed exclusively for the benefit of the Quarantine Officials, Plant Protection Officers & Scientists of South Asian and other African countries. The International Training Course will be held annually or biannually involving experts from USDA and lectures from IPPC experts under the NIPHM – USDA Collaboration.



The first International Training programme on Regional Plan Health Systems Analysis (RPHSA) was organized at NIPHM from 24.11.2014 to 08.12.2014. The course was attended by participants from Sri Lanka (2), Bhutan (2), Nepal (2) and Bangladesh (4) and 17 Indians from State Agriculture Departments/Universities, ICAR and DPPQ&S. Experts from USDA Dr. Parul Patel, Dr. Kristian Rondeau and Ms. Kirsha Rhymer experts from USDA were involved in the programme.



In addition Dr. Dave Nowell from IPPC, Rome; Dr. Joel Floyd, National Domestic Diagnostics Coordinator, USDA and Dr. Dan Borchert USDA delivered lectures to the participants over video conferencing system.

Biosecurity Risk Management along the continuum to protect native agricultural biosecurity following aspects are covered in the course:

i) Production- Sustainable Practices for Plant Health:

- Agro Ecosystem Analysis based Plant Health Management in conjunction with Ecological Engineering for Plant Health Management.
- On farm production of biocontrol agents & microbial biopesticides.
- Good Agricultural Practices.
- Safe & Judicious use of Pesticides

ii) Protection- Plant Pest Incursion Management:

- Biosecurity Concepts
- International Standards for Phytosanitary Measures (ISPMs)
- WTO-SPS Agreement and IPPC
- Seed Health Regulations
- Phytosanitary Regulations
- Pest Risk Analysis
- Pest Surveillance
- Emergency Preparedness

iii) Promotion- Safe trade & Market Access:

- Phytosanitary Certification
- Pre-Clearance and Off shore Programmes
- Inspection protocols
- Systems Approach
- Phytosanitary Treatments
- Export Promotion Agencies

US- India-Africa Triangular International Training Programme



Thirty Extension Functionaries from Liberia, Kenya and Malawi were trained at NIPHM under US-INDIA-AFRICA Triangular International Training Programme on "New Dimensions in Agricultural Extension Management" on 30th Sept. and 1st Oct. They were imparted knowledge and skills in AESA based PHM in conjunction with Ecological Engineering for Pest Management, Biological control, Biosecurity Concepts, SPS Agreement, Integrated Rodent Pest Management, Safe and Judicious Use of Pesticides.

Capacity Building

Orientation Programme for PEQ Authorities (8th - 13th Dec.)

Confinement of imported plant propagative material under Post Entry Quarantine (PEQ) for a specific period is adopted as an appropriate phytosanitary measure in cases where a quarantine pest is difficult to detect or requires more time for accurate diagnosis. The imported planting materials such as live plants, cuttings, saplings, bulbs, tubers, rhizomes, sprouting seeds, bud wood, etc., which are perishable in nature are required to be grown under Post Entry Quarantine facility (confinement area) for stipulated period under supervision by notified Inspection Authorities. The participants, who perform the duties of inspection authorities, 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. They 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 the clearance from PEQ and Import non-compliance (if any) for different types of planting materials as per the Standard Operating Procedures.

**Stored Grain Pest and their Management (15th to 20th Dec.)**

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 pest management in warehouse is of serious concern especially in the context of food security and export of grains. 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, the participants from Andhra Pradesh, Tamil Nadu, 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. They also gained knowledge on various methods in detection and identification of various stored grain insect pests including Khapra beetle, use of pheromones and traps for monitoring and management of stored grain insect pests by employing scientific fumigation practices.

**Pest Surveillance (9th to 16th October, 2014)**

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. The participants learnt various aspects of pest surveillance and its role and applicability in Plant Biosecurity, domestic pest management and market access. They have gained knowledge about various lures and traps for carrying out fruit fly surveillance.

**Phytosanitary Treatment (MBr and ALP) (17th Nov. - 1st Dec.)**

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. Phyto-sanitary treatments are helpful in safeguarding biosecurity and also in gaining market access.

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. The training provides hands on experience on Methyl Bromide and Aluminium Phosphide fumigation, handling of equipment involved in fumigation, and various safety precautions while doing the fumigation process. The participants learnt the use of approved fumigants, their physical and chemical properties, mode of action and safety precautions to be followed while handling fumigants, principles of fumigation, monitoring the fumigant concentration, appropriate use and maintenance of fumigants, and accreditation procedures for Methyl Bromide and Phosphine fumigation. The participants had hands-on experience on use of safety equipments, fumigation equipments and calibrations to improve their skills and competency in doing Methyl Bromide and Phosphine fumigation.



Capacity Building

On-farm Production of Biocontrol Agents and Microbial Biopesticides to Promote AESA based PHM in conjunction with Ecological Engineering for Pest Management (9th to 18th Oct.)

The participants from Bio-Resources Development Centre, Meghalaya Basin Development Authority (MBDA), Government of Meghalaya, Chhattishgarh were participated in this programme. They were trained in AESA & Ecological Engineering for pest management and on-farm production of biocontrol agents & biopesticides such as *Bracon* sp., *Chaelonis* sp., *Reduviid*, *Spiders*, *Trichogramma* sp., *Trichoderma* sp., *Pseudomonas* sp., *Metarhizium* sp., *Paecilomyces* sp. NPV, and Entomopathogenic Nematodes, Mycorrhiza and botanicals. Mother culture of biopesticides and biocontrol agents were provided to them to establish on-farm production unit and for further training to the farmers.

**Agro-ecosystem Analysis and Ecological Engineering for Pest Management (28th Oct. - 17th Nov. & 10th - 30th Dec.)**

In the programme participants learned about agro-ecosystem analysis (AESA) and ecological engineering (EE) for managing pests in crops. They learnt about the concepts of insect zoo, plant compensation ability, mass production of *Trichogramma*, *Bracon*, *Chelonus*, *Chrysoperla*, *Goniozus*, spider, reduviid bug, entomopathogenic nematodes etc. and host insects such as *Corcyra*, *Helicoverpa* and *Spodoptera* as well as mass production of microbial biopesticides such as *Trichoderma*, *Pseudomonas*, *Beauveria*, *Metarhizium*, *Nomuraea*, *Lecanicillium*. Trainees have also learned the FFS methodology, structure, curriculum, groups dynamics etc.

Appropriate Pesticide Application Techniques and Farm Level Storage Practices (14th to 21st Oct.)

Appropriate pesticide application techniques and equipment selected for applying pesticide are vital to the success of pest control operations. This complex process requires a high level of knowledge and understanding, practical skills, well maintained and calibrated equipment, and probably most importantly a desire or will to protect the environment. The main purpose of pesticide application technique is to achieve maximum efficacy with minimum side effects on non-target organisms. The knowledge on farm level storage structures enhances the farmers to safely store the produce and also can sell it when there is a better market price. The participants gained knowledge on use of high volume, low volume and ultra-low volume spraying techniques, nozzle selection, calibration of the equipment, pesticide formulation and compatibility, judicious use of pesticides, storage problems of food grains at commercial / farm level. The participants learnt the importance of suitable equipment selection and operation of the equipment, selection of suitable nozzles and calibration of the sprayers.

Pesticide Residue Analysis (28th Oct. to 27th Nov.)

Increased consumption and indiscriminate use of chemical pesticides caused concern for human health. The residues above the prescribed limits as per FSSAI regulation for domestic consumption and MRL levels prescribed by CAC (Codex Alimentarius Commission) not only affect the domestic consumers but also impart the export trade. The India has initiated a scheme on monitoring pesticide residues at national level involving more than 30 laboratories across the country. In addition a number of Universities, Research Institutes and Private Labs are also involved in testing the food commodities for pesticide residues. The training programme is designed to create competent analyst in the area of Pesticide Residue Analysis. The participants will learn the National Regulations, International efforts under CAC for fixing the maximum residue levels (MRLs). The participant will learn the importance of sampling, preparation of sample for extraction, detection and quantification of residue using latest analytical equipment viz., GC, LC, GC-MS/MS, LC-MS/MS etc. The participants will also understand the operation & calibration of equipments. In addition they also learn about the basic requirements of NABL accreditation of laboratories as per ISO 17025-2005.

Inspection, Sampling and Prosecution Procedures under Insecticide Act 1968 (27th Oct. - 3rd Nov. & 11th - 18th Dec.)

Pesticide quality plays an important role in managing the pest in a sustainable way. The production, import, sale and quality of pesticides are regulated under Insecticide Act-1968. The insecticide inspectors are notified by State and Central Government to regulate quality of the pesticides through regular inspection, sampling of pesticides both at point of manufacture and commercial sale counter. The training programme enables the Insecticide Inspectors to understand their role and responsibility as per the Insecticide Act. Appropriate procedure for inspection & sampling by Insecticide Inspectors at manufacturing and sale point. The documentation required to be followed during sampling involving seller and manufacturers, the method and time frame for dispatch of pesticide samples to the testing laboratories are taught through scenario / practical exercises. They also given exposure through case studies of procedures for prosecution, criminal procedure code the event act etc. in the event of pesticide not meeting the minimum requirements.

Safe and Judicious Use of Chemical Fertilizers and Chemical Pesticides (21st to 28th Nov.)

Pesticides are poisonous substances and they can cause harm to many living organisms, therefore their use must be very judicious. The application techniques ideally should be target oriented so that safety to the non-targets and the environment is ensured. Spray drift and the risks associated with the application of pesticides in agriculture are attracting increasing attention. In this regard, safe use of chemical fertilizers and chemical pesticides is important to be considered. Hence appropriate selection of spraying technique such as high volume, low volume, ultra-low volume and proper selection of nozzles, dosage requirements plays a vital role in pest management apart from judicious use of pesticides. In this program, the participants learnt to select the right equipment based on high, low and ultra-low volume techniques, selection of nozzle based on droplet size, calibration of nozzle and calibration of sprayers, dosage requirements, label claim of pesticides, precautions to be taken while spraying and storing the pesticides. Practical knowledge on care and maintenance of the sprayers is also covered.

Capacity Building

Urban Integrated Pest Management (8th to 22nd Dec.)

Rodents, cockroaches, mosquitoes, bedbugs and termites are pest of concern in urban areas. In addition they spread many diseases causing public health problems. As a result management of these pests has acquired commercial status. In order to ensure Urban Pest Management is carried out on scientific basis, Pest Control Operators have to complete a Certificate course on Urban Integrated Pest Management. NIPHM offered this Certificate Course as a regular programme. The participants learnt biology, ecology and management of cockroaches, rodents, mosquitoes, bedbugs, termites employing appropriate techniques. They also got an overview on importance of zoonosis and safe & judicious use of pesticide application techniques in managing the pests.

**Rodent Pest Management in store houses of food grains (27th to 31st Oct.)**

Rodents are becoming increasingly problematic in successful cultivation of many commercial crops such as cotton, sugar cane, coconut etc. In addition it is estimated that 5-6 % of grains produced are lost due rodent pest infestation. The training is designed for extension officials and entrepreneurs to impart skills in diagnosis of different rodent pest species, measuring infestation and designing appropriate management strategy. The trainees learnt the role of rodent ethology in their scientific control/management and role of different types of traps, baits, and judicious use of rodenticides. The participants learnt about various rodent proofing practice in warehouses.

**SRI in conjunction with Ecological Engineering (1st- 6th Dec.)**

Participants were provided knowledge & skills on 'SRI in conjunction with Ecological Engineering' was conducted. In this training programme the participants have been given the practice of system of rice intensification, hands-on practice on planting ecological engineering flowering plants in rice field, taking weekly AESA observations in rice and vegetable fields etc. Trainees were also given the hands-on practice on mass production of biocontrol agents and microbial biopesticides.

Integrated Soil Nutrient and Weed Management (ISNWM) (28th Oct. to 3rd Nov. & 10 to 16 Dec.)

Participants from different states were trained in ecological engineering, living soil concept, improvement of rhizosphere for enhancing soil microbial activities, integrated nutrient management, hands-on-practical on IWM and weed vegetation analysis. During the course, participants have been exposed to techniques of safe and judicious use of pesticides, on farm production of BCAs, Biopesticides and mycorrhiza.

Good Agriculture Practices (GAP) (10th to 14th Nov.)

The training on GAP was organized to train officers from various states. The participants were exposed to IndiaGAP, AESA, Ecological Engineering for Pest Management and living soil concept and on farm production of BCA and Biopesticides, mycorrhiza.

Train the Trainer (9th Dec.)

A training was organized in which Mrs Kirsha Rhymer, Senior Training Specialist, USDA delivered the lectures and conducted exercises for the NIPHM officers to enable them for conducting the training programmes effectively.

**Workshop on Regulating Agricultural Biotechnology: Indian and International perspectives (27th to 30th Oct.)**

A four-day workshop on Regulating Agricultural Biotechnology: Indian and International perspective was organized at NIPHM in collaboration with Department of Biotechnology (DBT) and the United States Department of Agriculture (USDA) in order to strengthen the human resource involved in Biotechnology Regulations especially Genetically Modified (GM) crops.



The workshop broadly covered the legal framework of biotechnology regulations, scientific risk assessment principles and practices in terms of food and environmental issues, conduct of field trials, monitoring and compliance of regulations. Thirty-nine participants from State Agriculture/Horticulture Department, State Agriculture Universities, DPPQ&S, NIPHM and private industries participated in the workshop.



Off Campus PGDPHM

The NIPHM has initiated Off-campus PGDPHM programme for the Agricultural Officers of Kerala Government in 2014-15 and the master trainers (Agricultural Officers) who have undergone this programme at NIPHM have initiated action to promote sustainable agriculture by adopting skills learnt from NIPHM to reduce excessive reliance on chemical pesticide. They have launched special programmes to promote on-farm production of Biopesticides along with Agro Eco-System Analysis based Plant Health Management in conjunction with Ecological Engineering for Pest Management. Smt. Grija M. at Nediyruppu (Malappuram Dist.), Mr. PG Sujith, at Annamanada Grampanchayath, & Kuzhur, Gramapanchayath (Thrissur District), Mr. Prakash Putham Madathil, at Varikkode, Kodur (Malappuram) and Smt. Deepi Vardhan at Petta (Thiruvananthapuram), Smt. Reshmi CR at Vadakkenchery (Palakkad). have organized the farmers training programme "on-farm production of *Trichoderma*" in their respective service areas and trained farmers and members of Self-Help-Groups (SHGs). The farmers and the members of SGHs have started production and utilization of *Trichoderma* for own consumption. Among a total of 125 farmers trained 33 are women members of SHGs.



Ecological Engineering for Pest Management is emerging as a new paradigm in insect- pest management. NIPHM is promoting Ecological Engineering for Pest Management in conjunction with Agro Eco-System Analysis based Plant Health Management. The Ecological Engineering for Pest Management relies on the philosophy of using cultural techniques to effect habitat manipulation to enhance the population of natural enemies of the pests. Mrs. Reshmi C.R., Mrs. Deepti V, Batsi and others Agricultural Officers of Kerala Government trained under the PGDPHM programme are now making efforts in implementing the Ecological Engineering for Pest Management in conjunction with AESA at farmer's fields in Kerala.

Ecological Engineering for Pest Management



Alumni Forum

'On Farm Production of biocontrol agents to promote AESA based PHM in conjunction with Ecological Engineering'. (19th to 21st Dec.)

An Off campus Farmer's Training was organized at Krishi Vigyan Kendra Campus Village Katia Distt. Sitapur (UP). 64 farmers and farm women from nearby villages were trained in low cost techniques of mass multiplication of Spider, Reduviid, Bracon, *Trichoderma*, *Pseudomonas*, and mycorrhiza. Mother cultures of these biocontrol agents and biopesticides were provided by NIPHM for method demonstration and for further multiplication at KVK and application at farmers' fields.



Dr O P Sharma, (JD Agro) NIPHM explained methods to the farmers and Dr Anand Singh, Programme Coordinator thanked Dr K Satyagopal IAS, Director General NIPHM for promotion of sustainable agriculture through AESA and Ecological Engineering for Pest Management. Dr D S Srivastava SMS PP assured to implement and popularize the concept of Ecological Engineering at farmers' fields.



Creating awareness among farmers through popular articles in various local news papers.



संस्थान में राजभाषा हिन्दी का क्रियान्वयन

दिनांक 12-12-2014 को डॉ.के.सत्यगोपाल, भा.प्र.से., महानिदेशक, एनआईपीएचएम की अध्यक्षता में राजभाषा कार्यान्वयन समिति की बैठक संपन्न हुई। बैठक के दौरान गत समाप्त हिन्दी तिमाही प्रगति रिपोर्ट की समीक्षा की गई। महानिदेशक ने संस्थान में राजभाषा हिन्दी में कार्यालयीन कामकाज के प्रभावी कार्यान्वयन हेतु निम्नलिखित निदेश दिए : (1) धारा 3(3) के अनुपालन को सुनिश्चित करना। (2) अधिकारियों एवं कर्मचारियों को राजभाषा हिन्दी में कामकाज करने हेतु स्वयं रुचि लेना। (3) छोटी-छोटी अभ्युक्तियां एवं नोट लिखकर इसकी शुरुआत किया जाना। (4) राजभाषा हिन्दी से संबंधित निरीक्षण के दौरान संयुक्त निदेशक (राजभाषा), कृषि मंत्रालय, नई दिल्ली द्वारा दिये गए सुझावों का अपनाएं जाना एवं (5) संस्थान की वेबसाइट का द्विभाषी किया जाना। दिनांक 01-10-2014 को संस्थान में श्री विजय कुमार साव ने 'हिन्दी अधिकारी' पद पर कार्यभार ग्रहण किया। संस्थान का वर्ष 2013-14 वार्षिक रिपोर्ट हिन्दी में तैयार किया गया।



The 14th General Council & Executive Council meeting was held on 17th October at DAC, MoA New Delhi under the Chairmanship of Shri Avinash Kumar Srivastava, IAS Additional Secretary, DAC.



Vigilance Awareness Week was celebrated from 27th October to 1st November. Dr. K Satyagiopal IAS DG NIPHM administrated the pledge to the staff members on 30th October to prevent corruption at every level.



Shri Arun Kumar Singh, IA&AS, Deputy Comptroller and Auditor General visited NIPHM on 14th October. Dr. K Satyagopal IAS DG NIPHM explained about the capacity building activities and R&D work of NIPHM.



Dr. K. Satyagopal IAS, Director General NIPHM with officials participated in the Prime Minister's Clean India Campaign on October 2nd. All officials took pledge to maintain cleanness at workplace & to devote at least two hours every week for this noble cause.

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