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NEWS LETTER

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Theme Article

Crop Raiding Monkeys and Management Approaches

Special Event

FTF ITT Training

WHAT'S INSIDE

Department of Agriculture, Cooperation & Farmers Welfare
Ministry of Agriculture and Farmers Welfare, Govt. of India

From the Director General's Desk

Recent days the vertebrate pests such as rodents, birds, wild boar, monkeys, bats, elephants, nilgai etc., have received the attention of farming community and agriculturists as a serious pests. They are posing increasing threat to standing crops and stored commodities. Due to expansion of agricultural farming areas by destroying the forest lands thereby disturbing the wild animal's habitat, there is an increased human and wild animals intervention and conflicts. Among all vertebrate pests, rodents are one of the major pest causing quantifiable damages in pre and post-harvest systems and in transmitting potential diseases and health hazards. In India there are more than 104 rodent species are present that includes porcupines, squirrels, gerbils, bandicoots, rats, mice and voles.

Rodents cause heavy damages in crop ecosystem and storage; we are more focussed on management of rodents at crop and storage levels with respect to vertebrate pest management. Interestingly the other vertebrate pests such as wild boars, nilgai and monkeys are emerging as a big menace to farming community and they have started damaging many crops thereby causing huge revenue loss to farmers. Recently about 200 acres of sugarcane crop in patches were destroyed by the wild boars along the Minjira River near Singur dam in Telangana State. Similarly monkeys of different species have become a major crop destroyer especially in fruit crops in most of the States and have caused severe loss to the fruit growing farmers in the state of Jammu & Kashmir and Himachal Pradesh.

Different species of monkeys are causing damages to crops in different parts of the country. The major crop raiding monkeys include Rhesus macaque, Bonnet macaque and Assamese macaque. The management techniques have become difficult at field level due to limited resources available with famers and intelligence of animal. It is the need of the hour that monkey management modules to be developed and practiced through a collaborative studies and applied researches by various organizations involved in vertebrate pest management. I am sure that this will help in better management of monkeys without violating the regulatory aspects of our country and will avoid revenue losses to farming community.

(G. Jayalakshmi, IAS)
Director General

Crop Raiding Monkeys and Management Approaches

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Introduction

India is the seventh largest country in the world and Asia's second largest nation, contains a great wealth of biological diversity and ranks top ten species-rich countries in the world. India, with 2.4% of the world's geographical area, has over 8% of the world's total biodiversity, making it one of the 12 mega diversity countries in the world (MoEF & Kalpavriksh 2004). India has four global biodiversity hot spots (Eastern Himalaya, Indo-Burma, Western Ghats and Sundaland). This status is based on the species richness and levels of endemism recorded in a wide range of taxa of both plants and animals. The varied edaphic, climatic and topographic conditions and years of geological stability have resulted in a wide range of ecosystems and habitats such as forests, grasslands, wetlands, deserts, and coastal and marine ecosystem (Chauhan 2014). This diversity can be attributed to the vast variety of landforms and climates, resulting in habitats ranging from tropical to temperate and from alpine to desert. India is also considered one of the world's eight centres of origin of cultivated plants. Being a predominantly agricultural country, India also has a mix of wild and cultivated habitats, giving rise to specialised biodiversity, which is specific to the confluence of two or more habitats.

Primates diversity in India

The bio diversity of India support variety of flora and fauna and the Primates are one of them. India is home to large family of monkeys species distributed from evergreen Western Ghats to north east states and dry forests of central India. Primates are a group of mammals that includes monkeys, apes, langurs and lorises. India is having good diversity of primates represented with 22 species which includes two species of lorises, nine species of macaques, 10 species of langurs, one species of ape (Table 1). Though in India these many primates were recorded we find 11 primates occupy less than 15% of the total land area. Only Rhesus macaque and Hanuman langur are widely distributed in most of the geographical areas of the country (Karanth et al 2010). Whereas the other endangered and vulnerable primates (Golden langur, Arunachal macaque, Pig-tailed macaque, stump-tailed macaque, Phayre's leaf monkey, Nilgiri langur and Lion-tailed macaque) are confined to small patches with restricted domestic ranges.

Crop raiding macaques

Primates from almost all families have been identified as crop-raiders although species differ in their ability to cope with encroaching human settlement. But the intensity of the crop raiding may vary with species to species. Macaques are medium-sized primates of the family Cercopithecidae (Old World Monkeys), sub-family Cercopithecinae and the genus Macaca, with 19 species (Groves 2001). Macaques occupy the widest geographical range of any non-human primates, and the widest variety of habitats, including grassland, mangroves, deciduous forest, tropical rainforest, temperate forest, rocky cliffs and beaches (Melnick and Pearl 1987).

The species like Rhesus macaque, Bonnet macaque, Assamese macaque and Hanuman langur were the most predominant species which are involved in the regular menace with the farmers. The basic reasons for menace with the monkeys is loss of species specific habitats, habitat degradation and fragmentation, intensive agricultural practices, insufficient prey base and food material, increase in human and livestock population, competitive exclusion of wild herbivores, land use transformation, developmental activities, growing interest in ecotourism and increasing access to natural reserves. The basic requirements of space, shelter and food overlap between humans and wildlife create conflicts. As forests are cleared for demands in agricultural expansion and population growth continues to raise, human and wildlife habitats is overlapping (Ayyappan et al 2016).

Species of agricultural importance

Rhesus Macaques

The Rhesus monkey is one of the famous species of Old World monkeys and distributed in large population across the country. It is native to Asia and has a widest geographic range in India. It lives in a wide range of habitats, from flatlands to high elevations up to 3000 meters in Himalayas and shows a great deal of adaptability to acclimate to a variety of climatic extremes, from the hot, dry temperatures found in deserts, to cold winter temperatures which fall to well below the freezing point.

Generally they live in multi male and multi female troops comprising 20–200 individuals with an average sex ratio of 1:4 male for females in a troop. Males and females both have separate hierarchies in the troop. They are diurnal animals, live both arboreal and terrestrial mode of life. Mostly herbivorous, feeding on mainly fruit, but also eating seeds, roots, buds, bark, leaves, flowers, and cereals. They have also been observed eating termites, grasshoppers, ants, beetles, bird eggs and also sometimes cooked meet. When food is abundant, they are distributed in patches and forage throughout the day in their home ranges. They have specialized pouch-like cheeks, allowing them to temporarily hoard their food.

They are very aggressive in nature and are able to adapt to the varying environments and live very comfortably among human habitation. With its nature and fast acclimatization, it is dominating the other sympatric species like bonnet macaque in the southern parts of the country and invaded into its geographic area, competing with them for all the resources. Rhesus macaque is the top most primate species in India, which damages maximum agricultural crops than other species.

Bonnet Macaque

The Bonnet macaque are endemic to south India with habitats including evergreen high forest and dry deciduous forest of the Western Ghats and some of the Eastern Ghats ranges as well. Bonnet monkey have a greyish brown back and a well defined circular cap on the head and with long tail which is two-thirds of its body length. Like rhesus macaque these are also lives in multi male and multi female groups with an average troop size is about 30 individuals. The bonnet macaque feeds on fruits, nuts, seeds, flowers, invertebrates and cereals. This species is problematic in some limited region where it is widely distributed. The preferred habitat

of the bonnet macaque is human dominated landscapes especially agricultural landscapes which are along the roadsides. The conflicts with humans have led to injuries, and unplanned translocations and killings of macaques led to number of bonnet macaques is drastically declining from roadside habitats where they obtain required food primarily by raiding crops in the surrounding agricultural fields.

Hanuman Langur/Gray Langur

There are six species of gray langur or hanuman langur found in India, Black footed gray langur and tufted gray langur mostly found in forest of South India, the other species like Kashmir Gray Langur, Tarai Gray Langur, Northern Plains Gray Langur, Southern Plains Gray Langur occupy the northern part of the country. The Hanuman langurs are biggest species of Old World monkeys found in the Indian subcontinent. They are classified as folivorous primates. Habitat destruction for agricultural activities, permanent settlement, collection of fuel and fodder and for minor forest produce is made the species to move from their habitats to adapt and occupy village woodlands. Crop raiding began due to their habitat loss.

Factors influencing the crop raiding by macaques

1. Increase in human population and expansion of human dwellings and settlement, the wildlife species have been restricted to small patches of land.
2. Indiscriminate destructions and fragmentation of natural habitats, blocks migration routes, facilitates encroachment, and encourages poaching.
3. Increasing trend for potential conflicts between wildlife and people resulting damage to resources and threat to human health and safety.
4. Non availability of sufficient food sources for the survival of macaques in their home range.
5. Attraction towards agricultural crops due to its higher availability and more nutritive.

Constraints in management

Management of problematic species mainly depends on their status as per the Indian Wildlife Protection Act 1972 (IWPA) and International Union for Conservation Nature (IUCN). The problematic species like *Macaca mulatta, Macaca silenus, Macaca leonine, Macaca assamensis, Macaca munzala, Macaca arctoides, Trachypithecus geei, Trachypithecus pileatus, Trachypithecus phayrei, Semnopithecus entellus, Semnopithecus ajax, Semnopithecus hector, Semnopithecus schistaceus, Semnopithecus hypoleucos, Semnopithecus priam, Trachypithecus johnii and Hoolock hoolock* were listed as endangered, vulnerable and near threatened in IUCN and Schedule I, II and III of the IWPA, 1972. The status of these species as per IWPA and IUCN is the stumbling block in managing these species in agricultural landscapes.

The management techniques have became difficult at field level due to limited resources available with famers and intelligence of animal. Each location and species presents a particular scenario with different factors affecting the intensity and occurrence of crop raiding that will require unique methods or a combination of strategies for better management of monkeys. Therefore, if crop raiding species cannot be eradicated, it certainly must be minimized and managed to reduce the damages to farmers.

Management Practices

Different management practices that can be employed in managing the crop raiding monkeys are listed in table 2. The practices like guarding and throwing stones and keeping dogs and langurs at the fields were effective for some extent, but due to the intelligence and higher steadiness the management strategies that have not helped in managing the monkey menace in agricultural crops. There is a need to develop the suitable cost effective management strategies to reduce the damage by crop raiding monkeys.

Table. 1. Distribution and conservation status of Primates in India

S.No	Common Name	Scientific Name	Distribution in India	IUCN Status	CITES	IWPA
1	Slender Loris	*Loris lydekkerianus*	Southern and eastern India (Andhra Pradesh, Karnataka, Kerala and Tamil Nadu)	Least Concern	Appendix II	Schedule I
2	Slow Loris	*Nycticebus bengalensis*	North-eastern India (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura)	Vulnerable	Appendix I	Schedule I
3	Lion-tailed Macaque	*Macaca silenus*	South Indian States Karnataka, Kerala and Tamil Nadu	Endangered	Appendix I	Schedule I
4	Northern Pig-tailed Macaque	*Macaca leonina*	North-eastern India (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura)	Vulnerable	Appendix II	Schedule II
5	Bonnet Macaque	*Macaca radiata*	Peninsular India (Andhra Pradesh, Goa, Gujarat, Karnataka, Kerala, Maharashtra and Tamil Nadu)	Least Concern	Appendix II.	-
6	Assamese Macaque	*Macaca assamensis*	North-eastern India (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Uttar Pradesh, and West Bengal)	Near Threatened	Appendix II	Schedule II
7	Arunachal Macaque	*Macaca munzala*	North-eastern India (Western Arunachal Pradesh)	Endangered	Appendix II	-
8	Stump-tailed Macaque	*Macaca arctoides*	North-eastern India (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura provinces)	Vulnerable	Appendix II	Schedule II
9	Rhesus Macaque	*Macaca mulatta*	Northern and central India (in the states of Andhra Pradesh, Arunachal Pradesh, Assam, Bihar,Chattisgarh, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir,Jharkand, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tripura, Uttaranchal, Uttar Pradesh, West Bengal and Telangana)	Least Concern	Appendix II	Schedule III
10	Long-tailed Macaque	*Macaca fascicularis*	Andaman & Nicobar Islands.	Least Concern	Appendix II	Schedule I
11	White Cheeked Macaque	*Macaca leucogenys*	Arunachal Pradesh	-	-	-
12	Gee's Golden Langur	*Trachypithecus geei*	North-eastern India (Assam)	Endangered	Appendix I	Schedule I
13	Capped Langur,	*Trachypithecus pileatus*	north -eastern India (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura)	Vulnerable	Appendix I	Schedule I
14	Phayre's Leaf-monkey	*Trachypithecus phayrei*	Northeastern India (Assam, Mizoram, and Tripura)	Endangered	Appendix II	Schedule I
15	Southern Plains Gray Langur	*Semnopithecus entellus*	South-western and west -central India (Andhra Pradesh, Karnataka, Kerala, Maharashtra, Goa, Gujarat, Rajasthan, Madhya Pradesh, Uttar Pradesh and Telangana)	Least Concern	Appendix I	Schedule II
16	Himalayan Gray Langur, Kashmir Gray Langur,	*Semnopithecus ajax*	North-western India (Himachal Pradesh and Jammu and Kashmir)	Endangered	Appendix I	Schedule II
17	Gray Langur, Hanuman Langur,	*Semnopithecus hector*	Northern India (Uttaranchal, Uttar Pradesh, and West Bengal)	Near Threatened	Appendix I,	-

18	Nepal Gray Langur, Central Himalayan Langur	*Semnopithecus schistaceus*	High Himalayan elevations (1,500-4,000 m) of India	Least Concern	Appendix I	-
19	Black-footed Gray Langur, Dark-legged Malabar Langur, Malabar Sacred Langur	*Semnopithecus hypoleucos*	South-western India (Goa, Karnataka and Kerala)	Vulnerable	Appendix I	Schedule II
20	Tufted Gray Langur, Coromandel Sacred Langur, Madras Grey Langur	*Semnopithecus priam*	This species is widely distributed in southern India	Near Threatened	Appendix I,	Schedules II
21	Nilgiri Langur,	*Trachypithecus johnii*	Western Ghats in south -western India (Karnataka, Kerala, and Tamil Nadu)	Vulnerable	Appendix II	Schedule I
22	Hoolock Gibbon	*Hoolock hoolock*	North-eastern India (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura)	Endangered	Appendix I	Schedule I

IUCN: International Union for Conservation of Nature and Natural Resources
CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
IWPA: Indian Wildlife Protection Act

Table. 2. Existing management methods used to control the entry of monkeys in to the agricultural crops

S.No	Method	Details of use and effectiveness
1	Guarding/chasing	Guarding field in person or employing a wage, often by women or children, will certainly helps in driving away the crop raiding monkeys from the field, but it is expensive and keeps people away from other activities. Effective in protecting the crops from monkey damage.
2	Noise/bells etc	Beating the drums and plates to make noise will make the animal to avoid the cropped areas, but habituation is a problem. Quite effective in control of monkeys
3	Stones/slingshots/spears	Throwing stones by using slingshot or locally made 'gophan' are useful in chasing the monkeys, but causes considerable damage and distress to monkeys (welfare issues). Particularly effective but human presence is necessary.
4	Rice balls	Keeping the rice balls (boiled rice + crushed ground nut seeds + red chilli powder + coconut oil) around the field deters the monkeys. As soon as they taste the mixture of rice balls, feels burning of tongue and thirstiness due to which monkeys will automatically avoid the area. Care should be taken that no water availability in the vicinity.
5	Dry fish	Tying of dry fishes to the branches of trees around the fields and above the crop will help in keeping away the crop raiding monkey because of the smell emitted from the dry fish. Effective in initial period but animal habituates over a period of time.
6	Dogs/Langurs	Often very effective, they fear about and avoid unfamiliar species like dogs and langurs. But requires a culture of keeping dogs and langurs.
7	Painting Individuals	Involves the capture of one troop member, usually the dominant male, painting him white/red and rereleasing him, thereby scaring the troop away as he runs towards them.
8	Translocation	Can be effective in rare cases (Imam et al. 2002) but requires a suitable unoccupied habitat and requires some provisioning and monitoring. It is often very expensive. Only one long term study has assessed the effectiveness (in baboons (Strum 2005)) and found after an initial adjustment period with increased mortality translocated groups performed similarly to indigenous groups. However, it required several interventions, some provisioning and many years intensive monitoring. It can be effective in smaller population.
9	Sterilization/Birth control	Sterilization could be effective but requires capture of animal and sterilization
10	Cropping patterns	Alter crops grown and timing of planting and harvesting – causes disruption to traditional agricultural practices and regular non availability food to monkeys. Crops like chilli, thorny brinjal and ginger etc may be grown in larger area in one season which is not preferred by monkeys due to which there will not be food availability at that particular area. So they will move to other areas in search of food.
11	Buffer zones	Regions of partially cleared land surrounding farms or buffers of less desirable crops – particularly effective when barrier crops are grown for 'sacrifice'.
12	Conservation of forest Refugia	Necessity for many species' survival. Suitable forest habitats may lessen the visit of monkeys to encroach on farms.

Plate 1. Major crop raiding macaques and langurs in India

Rhesus macaque

Bonnet macaque

Golden langur

Lion tailed macaque

Hanuman langur

Assamese macaque

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Inauguration of the 4th batch of PGDPHM, Kerala

NIPHM is working very closely with Department of Agriculture, Government of Kerala in promoting environmentally sustainable plant health management practices through Post Graduate Diploma in Plant Health Management course (Off-campus mode).

The 4th batch of Kerala PGDPHM programme was inaugurated and 18 officials joined the course. The inauguration function of the 4th batch on 10th July, 2017 was organized at NIPHM, Hyderabad. The inauguration programme was graced by Hon'ble Minister for Agriculture, Kerala. The programme was also attended by Sri. Sunil Kumar, Director of Agriculture, Kerala, Smt. G. Jayalakshmi, IAS, Director General of NIPHM, and Smt. V. Usha Rani, IAS, Director General of MANAGE, .

International Training programme on "Managing Biosecurity Treatment Systems"

Department of Agriculture, Cooperation and Farmers Welfare, Government of India in collaboration with Department of Agriculture and Water Resources, Government of Australia organized a Three days training on "Managing Biosecurity Treatment Systems" at NIPHM, Hyderabad from 07th to 09th August, 2017.

This training was conducted under the Australian Government's Partnerships for Development (GPFD) program.

The programme was formally inaugurated by Smt. G. Jayalakshmi, IAS, Director General of NIPHM. It was conducted by Australian biosecurity experts Mr. Nathan Reid and Mr. Gordon Weinert from Dept. of Agriculture and Water Resources, Australia. It covered the aspects of different biosecurity treatments for different agro products and also the need for audit requirements in the field of biosecurity treatments. Dr. Nora Galway, Counsellor (Agriculture), Australian High Commission and Dr. Shiv Sagar Verma, Joint Director (PQ) from DPPQ&S participated the training programme and attended the valedictory function. A total of 31 officers from DPPQ&S and faculty from NIPHM participated and trained in the biosecurity treatment system & enriched their knowledge & subject expertise.

National Workshop on "Weed Risk Assessment"

A two day's national Workshop on "Weed Risk Assessment" was organized from 30th to 31st August, 2017. The workshop objective was to analyze current status of invasive alien plants and their impacts, importance of WRA w.r.t international trade and SPS issues, WRA as a biosecurity tool in preventing the entry of invasive species with an added focus on International and Indian scenario, create awareness about the potential threats to India, and to develop proposals for WRA implementation.

The inaugural session was graced by G. Jayalakshmi, Director General, NIPHM; Dr. B.S. Phogat, Additional Plant Protection Adviser, DPPQ&S, Faridabad; Dr. R.M. Kathiresan, Director, Research and Development, Annamalai University and Dr. Alice R.P. Sujeetha, Director, Plant Biosecurity, NIPHM. Forty three participants, representing DPPQ&S, ICAR, State Government of Agri /Horti, SAUs attended the Workshop.

Promotion of Organic Rice Production Systems in farmers fields

Considering the importance of organic farming and growing demand for organically produced foods, organic rice cultivation was taken up during kharif, 2017 at Amdapur, Moinabad Mandal, Ranga Reddy dist, Telangana in three farmers field to study the impact of organic and conventional farming systems on rice yield. The crop was raised by following all bio-intensive approaches being promoted by NIPHM including the use of bio-fertilizers, bio-pesticides, parasitoids and ecological engineering concept etc. Data on pest and disease incidence were recorded at 10 days interval. Now the crop is in reproductive stage and all the insect pests and diseases were found to be below economic threshold level and the crop is very healthy.

Bio-intensive approaches being adopted in farmers field by NIPHM

Azolla in main field

Marigold around field bunds

Use of Trichocards

Use of Pheromone traps

Application of vermiwash

International Training Program on "Plant Health Management Technologies and Approaches"

USAID and MANAGE signed Limited Scope Cooperation Agreement and launched the Feed The Future India Triangular Training (FTF ITT) Program on 25th July, 2016 at New Delhi. Under this Programme,1400 agricultural professionals from 17 partner countries of Africa and Asia will be trained in reputed institutions on the training themes evolved based on Demand Analysis Survey.

Under this programme NIPHM has organized 15 days training programme on "Plant Health Management technologies and strategies" from 4th to 18th September, 2017. This training programme was attended by 24 participants representing 10 countries form Afghanistan, Botswana, Ghana, Kenya, Malavi, Magnolia, Myanmar, Sudan, Mozambique and Uganda.

In the programme various sustainable Plant Health Management Strategies including the Plant Biosecurity and food safety issues were covered by NIPHM faculty and eminent scientists across the India. The participants were taken to various national and international institutes to update their knowledge on the recent advances on plant health management strategies on the crops predominantly grown in Asia and Africa.

The valedictory function of this training programme was organized on 18th September, 2017 at NIPHM for which honorable chief guest Ms. Upma Srivastava, IAS Additional Secretary DAC&FW, Government of India, Mrs. V. Usharani, IAS, Director General MANAGE, Mr. Mustapha Hamzaoui, Director, Food Security, USAID, India, Mr. Ziaulhaq Akhondzada, Second Secretary, Embassy of the Islamic Republic of Afghanistan attended the valedictory function.

Capacity Building Training Programmes on Plant Biosecurity

Plant Biosecurity is of paramount importance to any country to safeguard food-security, sustainability of agricultural/horticultural production and also in protecting livelihood of people. Though incursion of alien pests into newer areas is not a new phenomenon, increased global trade has paved way for quicker entry of many exotic pests to hitherto unknown areas. The division organizes a number of training programmes in Biosecurity & Incursion Management and special capacity building programmes to promote SPS compliance. The following training programmes was organized by Plant Biosecurity Division during the month July to September, 2017 -

Sl.No	Name of the Programme	Duration	Date	
			From	TO
1	Pest Surveillance	5	24.07.2017	28.07.2017
2	Forced Hot Air Treatment	5	07.08.2017	11.08.2017
3	Fruit fly: Surveillance and Management	5	28.08.2017	01.09.2017
4	Stored grain pest detection, identification and phytosanitary treatment	21	04.09.2017	25.09.2017
5	Stored grain pest detection and identification	5	04.09.2017	08.09.2017
6	Phytosanitary treatments- MBr &ALP	15	11.09.2017	25.09.2017
7	Rodent Pest Management'	5	11.09.2017	15.09.2017
8	15-days certificate course on Urban Integrated Pest Management	15	31.07.2017	14.08.2017

Capacity Building Training Programmes on Plant Health Management

To enhance the knowledge of the farmers on Plant Health Management, NIPHM is creating a pool of master trainers by training them on various aspects of PHM strategies. There is a need to train the Agriculture Extension Officers in AESA based PHM in conjunction with EE for PM to promote environmentally sustainable plant health management practices to reduce excessive reliance on chemical pesticides. Incorporation of biofertilizers, particularly mycorrhizae in agricultural practices play a vital role in promotion of soil health and uptake of important macro and micro nutrients by the crops. Biological control through parasitoids, predators and microbials constitutes a significant component in holistic management of insect pests and diseases as well as abiotic stresses. In view of this, Plant Health Management Division organized following training programmes during July - September, 2017.

Sl.No	Name of the Programme	Duration	Date	
			From	To
1	Field Diagnosis and Management of Plant Parasitic Nematodes in Horticultural Crops	5	11.07.2017	15.07.2017
2	Refresher training programme to Agri-entrepreneurs in 'On-farm production of Bio-control agents and microbial bio-pesticides'	4	25.07.2017	28.07.2017
3	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 the farmers of Andhra Pradesh & Telangana	3	10.07.2017 20.09.2017	12.07.2017 22.09.2017
4	Plant Parasitic Nematodes of Quarantine Importance & their Management	5	08.08.2017	12.08.2017
5	On-farm production of Bio-control Agents and Microbial Bio-pesticides to promote AESA based plant health management in conjunction with Ecological Engineering for pest management for Andhra Pradesh tobacco growers	3	16.08.2017	18.08.2017
6	Training to pest monitors on field diagnosis for IPM under CROPSAP (Maharashtra)	5	21.08.2017 28.08.2017	25.08.2017 01.09.2017
7	Farmer Field School Methodology	5	28.08.2017	01.09.2017
8	On-farm production of Biocontrol Agents and Microbial Bio-pesticides	10	05.09.2017	14.09.2017
9	Advances in Weed Management	3	18.08.2017 27.08.2017	20.08.2017 29.08.2017

Capacity Building Training Programmes on Pesticide Management

NIPHM is one of the designated institutions for offering the mandatory training programme in pesticide formulation analysis as per the Insecticide Act. The Analysts of Central and State Pesticide Testing Laboratories have to undergo the 66 days training programme offered by NPHM to be qualified as analysts. NIPHM is also entrusted with the mandate of capacity building of all the stake holders for effective Pesticide Management. In view of this, Pesticide Management Division organized following training programmes during July - September, 2017.

Sl.No	Name of the Programme	Duration	Date	
			From	To
1	Pesticide Formulation Analysis	66	10.07.2017	07.09.2017
2	Sampling for Pesticide Residue Analysis	2	17.07.2017	18.07.2017
3	Sampling and Pesticide Residue Analysis for Fruits and Vegetable samples	13	17.07.2017	29.07.2017
4	Laboratory Quality System Management and Internal Audit as per ISO/IEC 17025:2005	5	28.08.2017	01.09.2017

Capacity Building Training Programmes on Plant Health Engineering

Application of pesticides continues to play a significant role in reducing crop losses due to pests even under IPM as a last resort. The success of pest management operations depends on proper technique of application of pesticide and the equipment used. Selecting the right equipment for pesticide application is vital for successful pest control to ensure safe and judicious use of pesticides. In view of this, Plant Health Engineering Division organized following training programmes during July - September, 2017.

Sl.No	Name of the Programme	Duration	Date	
			From	To
1	Training on Post-harvest management and storage techniques	5	24.08.2017	28.08.2017
2	Training on Farm machinery and post-harvest management for B.Tech Agricultural Engineering students	31	01.08.2017	31.08.2017
3	Training on Selection of plant protection equipment and farmers safety	1	07.09.2017	
4	Training on Pesticide Application Techniques and Safety Measures	5	11.09.2017	15.09.2017
5	Training on Plant protection techniques	1	19.09.2017	

Visit to Regional Plant Quarantine Station (RPQS), Chennai, Tamil Nadu by Director General and faculty of Plant Biosecurity

The Director General, NIPHM and Director and faculty of Plant Biosecurity Division visited Regional Plant Quarantine Station (RPQS), Chennai on 17th and 18th July, 2017 in order to learn the plant quarantine activities in detail. The office in-charge, Dr. T.A. Usmani, Joint Director, RPQS Chennai welcomed the staff of NIPHM and introduced all the staff of RPQS, Chennai.

Officer from RPQS, Chennai briefly explained about the plant quarantine activities carried out at various levels and also explained different activities such as inspection of the consignments, laboratory tests, fumigation, phytosanitary certification (PSC) and issuance of PSC. The demonstration of Aluminum phosphide (AlP) fumigation in groundnut consignment in the godowns of Redhill/Concor area near Seaport, Chennai and inspection procedure carried out by RPQS staff in container having apple fruits imported from New Zealand. was shown to to faculty NIPHM.

In the second day, faculty NIPHM visited the different labs in RPQS, Chennai (Entomology, Plant Pathology, Weed Science, Seed Pathology and Pesticide residue analysis & Post Entry Quarantine facilities and respective laboratory in-charges explained the procedure of detection and diagnosis of plant pathogens, insects and weeds and Phytosanitary measures carried out in their laboratories. The Air Cargo Complex (International Arrival Hall) was also visited and observed the inspection procedure in the imported consignments of Strawberry fruit and other Orchids.

Visit to NIPHM by Adviser, FSSAI and Director, EU-RL, Netherland

FSSAI notified Pesticide Management Division, NIPHM as a Referral Laboratory in the field of Pesticide Residue Analysis for FSSAI, considering the capabilities, facilities and accreditation of laboratory subsequent visit to NIPHM by Dr. N. Bhaskar, Advisor, Food Safety and Standards Authority of India (FSSAI) in coordination with an expert, Dr. Leen Van Ginkel, Director, EU-RL, Wageningen University, RIKILT laboratories, Netherlands on 04.07.2017 for exploring the facilities available at NIPHM.

DAC Project on "Impact of Indiscriminate use of chemical fertilizers and pesticides"

A Project entitled "Indiscriminate use of chemical fertilizers and pesticides is being taken up at National institute of Plant Health Management with a sanctioned Budget outlay of Rs.617 lakhs for a period of three years from 2016-17 to 2018-19. A review meeting was organized at NIPHM during the end of June to review the results of the project study taken up by the project implementing universities during Rabi, 2017. The annual progress reports were prepared by all the centres duly incorporating the deficiencies that were pointed out in review meeting. The budget for Kharif, 2017 was worked out and after getting the AUC and progress reports, the project budget was released to the universities to take up the studies. The Senior Consultants have visited Parbhani, Jagtial, Adilabad, Tamil Nadu and West Bengal centres and the progress of the project is being monitored regularly.

Inauguration of Plant Health Engineering Workshop

Plant Health Engineering division is engaged in organizing capacity building programme for extension personnel from state agriculture, horticulture departments and other stakeholders. During the capacity building training programmes, participants are imparted practical training in spraying techniques including selection of proper PP equipment, selection of right type of nozzle, sprayers calibration, spray droplet distribution etc. to achieve highest efficacy of the pesticides on target pest. Pesticide application techniques also include operator's safety before, after and during spraying of pesticides. The uses of appropriate safety measures ensure minimum exposure of operator to toxic chemicals.

To conduct the practical sessions on Plant Health Engineering aspects, the existing engineering workshop has been renovated recently. The renovated PHE workshop was inaugurated by Smt. Upma Srivastava, IAS, Additional Secretary, DAC & FW in the presence of Smt. G Jayalakshmi, IAS, Director General, NIPHM on 18.09.2017 and also released a brochure on NIPHM low cost equipment.

District Pest Management Plan (DPMP) 2017-2018

District Pest Management Plan (DPMP) is being implemented in Warangal Urban and Warangal Rural districts. This project is taken up by NIPHM with the partnership of MANAGE and State Agriculture department of Warangal Urban and Rural districts. Five villages have been adopted for the implementation of this project. Under this project five initial meetings have been conducted in the adopted villages and four mid-term technical meetings were conducted in paddy, cotton and Chilli villages to educate the farmers regarding the pest problems in the field in the mid-season. Distribution and demonstrations on field use of Trichoderma (750 litters) and Pseudomonas (1000 Litres) at the five adopted villages was done. Five farmers from each of the selected villages were identified and all recommended IPM practices have been implemented in the above farmer's fields. 42 Field visits have been conducted and necessary advisories have been given to the farmers on various pest management practices adopted in three crops. 80 Weekly messages have been sent as per the prevailing field situation to all the farmers of selected villages in a span of 12 weeks. The messages have also been forwarded to the All India Radio, with a request to broadcast the same for the benefit of farmers at large. Radio talk through All India Radio was done by Mr. J. RamchanderRao, Senior Consultant on 14th September, 2017 on the integrated pest management on Paddy crop. Daily bulletin/Scripts are being prepared to educate/equip farming community under programme title Polam Kaburlu through All India Radio.Participating in the other pest awareness programmes conducted by ATMA and Agriculture department to educate the farmers in all the possible ways.

Trainees / Farmers / Students visit to NIPHM

- 20 farmers from Kerala state visited NIPHM on 07.07.2017 and 47 farmers from Tamil Nadu visited NIPHM on 14.07.2017.
- Visit of 32 participants from Extension Education Institute (EEI), Rajendranagar, Hyderabad on 14.09.2017.
- Visit of 37 students and two faculty from Bharathiar University, Coimbatore, Tamilnadu on 20.09.2017

- Visit of 15 Participants who were undergoing the MANAGE sponsored training on “Module II Certified Farm Advisor Programme” at ICAR-IIRR, Hyderabad on 22.09.2017.
- Visit on 04.09.2017 10 farmers from ATMA Tamil Nadu
- Visit on 13.09.2017 14 farmers from Tamil Nadu
- Visit of 78 students B.Sc. (Agril.) Students on 22.09.2017 from College of Horticulture (SKLTSHU),Mojarla Village, Mahaboobnagar district.
- Visit of 51 students from J.K.KM College of Agricultural Science, Tamil Nadu on 11-9-2017
- Visit of 46 students from Don Bosco College of Agricultural Science, Tamil Nadu on 15-9-2017.

Executive Council Meeting

The 21st meeting of the Executive Council of National Institute of Plant Health Management, Hyderabad was convened by Ms. G. Jayalakshmi, IAS, Director General, NIPHM on 18-09-2017 under the Chairmanship of Ms. Upma Srivastava, IAS Additional Secretary (PP), Ministry of Agriculture, Cooperation & Farmers Welfare, DAC & FW, Govt. of India. Other EC members Dr. A. K. Sinha, Plant Protection Advisor (DPPQ&S), Dr. P. K. Chakrabarty, Asst. Director General (PP), ICAR and non-official member Shri. Mohini Mohan Mishra have attended the meeting. The activities of NIPHM were reviewed and the status of ongoing projects was noted.

Swachhta Hi Sewa Campaign from 15th September to 2nd October, 2017

National Institute of Plant Health Management (NIPHM), Hyderabad has observed "Swachhta Hi Seva" campaign from 15th September to 2nd October, 2017 in accordance with the guidelines communicated by DAC &FW, Govt. of India. As Part of the Campaign, three (03) awareness programmes were organised on topics "Waste decomposition mechanism", "De-centralized Solid Waste Management", "Recycling of Wet, Dry, Paper & Plastic waste". Further Shramdhan & Tree Plantation activity taken up by Director General, NIPHM along with staff for four days at NIPHM Office & Residential Campus. On 18.09.2017, Ms. Upma Srivastava, IAS, Additional Secretary to GoI, DAC & FW, Ms. G. Jayalakshmi, IAS, Director General and Staff of NIPHM have participated in the Shramdhan & Tree plantation activity.

Plant Health
News Letter

Independence Day celebrations at NIPHM

Independence Day was celebrated by NIPHM officers and staff with great excitement. G. Jayalakshmi, IAS, Director General, NIPHM hoisted the National flag on this occasion.

राजभाषा कार्यान्यवन समिति की द्वितीय बैठक एवं हिंदी कार्यशाला आयोजित

राजभाषा कार्यान्यवन समिति (राकास) की द्वितीय बैठक वर्ष 2017-18 हेतु दिनांक 04-10-2017 को श्रीमती जी.जयलक्ष्मी, भा.प्र.से., महानिदेशक, रावस्वाप्रसं की अध्यक्षता में हुई। बैठक में महानिदेशक के समक्ष अप्रैल-जून, 2017 की तिमाही हिंदी प्रगति रिपोर्ट प्रस्तुत किया गया। उक्त रिपोर्ट की समीक्षा करते हुए उन्होंने आगे भी संस्थान में राजभाषा अधिनियम की धारा 3(3) के पूर्णत: अनुपालन किये जाने हेतु निदेश दिये। बैठक में सूचित किया गया कि हिंदी अनुवादित ट्राइकोग्रमा वीडियो एनआईपीएचएम वेबसाइट पर अपलोड कर दिया गया है। उन्होंने आगे निदेश दिया कि अन्य प्रौद्योगिकी वीडियो को भी प्राथमिकता देते हुए हिंदी में अनुवाद किया जाए एवं वे कर्मचारी एवं अधिकारी जो हिंदी प्रशिक्षण प्राप्त कर चुके हैं या हिंदी में कार्यसाधक ज्ञान हो, नोटिंग फाइल में कम से कम अंतिम पंक्ति हिंदी में अवश्य लिखे, ताकि हिंदी में नोटिंग एवं मसौदा लेखन का बढ़ावा दिया जा सके। इस संस्थान में दिनांक 14-10-2017 को 'हिंदी दिवस' मनाया गया एवं दिनांक 20-07-2017 से 05-10-2017 तक 'हिंदी पखवाड़ा' मनाया गया। पखवाड़ा के दौरान विभिन्न हिंदी प्रतियोगिताओं का आयोजन किया गया एवं सभी आयोजित प्रतियोगिताओं में संस्थान के कर्मचारियों एवं अधिकारियों ने बढ़-चढ़कर भाग लिये। 'हिंदी दिवस' के अवसर पर पारंगत पाठ्यक्रम प्रशिक्षण में सफल प्रतिभागियों को प्रमाणपत्र वितरित किये गये। दिनांक 19-09-2017 को नगर राजभाषा कार्यान्वयन समिति-2, हैदराबाद की बैठक में रावस्वाप्रसं को राजभाषा हिंदी में उत्कृष्ट कार्य के लिए द्वितीय पुरस्कार से नवाजा गया। रजिस्ट्रार डी. चंचला देवी ने एनआईआरडी-हैदराबाद के महानिदेशक के कर-कमलों से राजभाषा शील्ड पुरस्कार ग्रहण की। दिनांक 26-09-2017 को संस्थान के कर्मचारियों एवं अधिकारियों के लिए एकदिवसीय हिंदी कार्यशाला आयोजित की गई। कार्यशाला के अतिथि वक्ता मोहम्मद कमालुद्दीन, हिंदी प्राध्यापक, केन्द्रीय हिंदी प्रशिक्षण उप संस्थान-सिकंदराबाद थें।

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