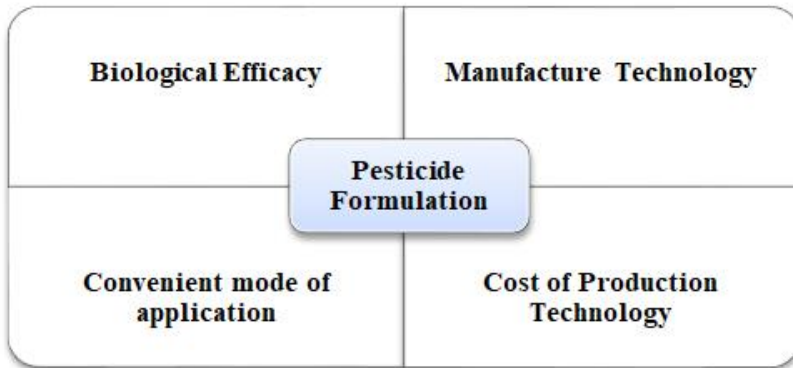




# NEWS LETTER

## THEME ARTICLE



## SPECIAL EVENTS



## WHAT'S INSIDE

### TOPIC/ ARTICLE

### PAGES

Theme Article	3 - 8
Around the World	9
Trainings	10 - 44
Special Events	45 - 50
Research & Development	51 - 55
Extension Activities	56
Other Activities	56 - 58
Hindi Report	59





## From the Director General's Desk

Pesticides are used in modern agriculture and their use is considered as an effective and economical way to enhance the yield. It is estimated that, without the use of pesticides in crop protection, more than half of the crops would be lost to pests and diseases. The annual world crop production loses due to weeds, pests and diseases are estimated between 26 to 40 per cent. Therefore agrochemical play an important role in crop protection and it is one of the components in the integrated pest management strategy. The other alternative available for pest management includes application of various bio-pesticides and preservation of natural predators, parasitoids etc. But application of chemical pesticides still plays an important role in protection of crops from yield loss especially when the infestation is severe; arresting further crops losses is of emergent requirement.

The increased uses of agricultural inputs led to many serious issues in the human health and environment. Injudicious use of pesticides and other persistent organic pollutants in agricultural soils have led to unintended consequences. The persistent nature of various agriculture-based pesticides and other organic pollutants results in bio-accumulation. Some of the old generation pesticides are known to hinder the normal functioning of endocrine and reproductive systems in living organisms. Hence, new pesticide molecules are now developed for higher selectivity to target pests, minimal impact on non-targeted organisms and to the environmental system. They target on specific biochemical reactions within the target organism, e.g., an enzyme necessary for photosynthesis within a plant or a hormone required for normal development in an insect.

The conventional pesticide formulations are most popular, cost effective, fast in action and efficacy. However, the conventional pesticide formulations needs to be applied in high dosages and leaves residual effect to the environment. Hence, new eco-friendly pesticide formulations are coming up to meet the needs for operator as well as environmental safety or to improve the bio efficacy.

The theme article is about different types of pesticide formulation. Due to the inherent disadvantages of the conventional pesticide formulations, new generation pesticide formulations have been preferred by different farming communities across the world. The advantages of new pesticide formulation include safety to the applicator, more coverage of applied surface area, reduce wastage etc., leading to the minimal residues in crops and environment. Further, research and new advances in pesticide formulation technology also requires effective release of pesticides to the target area, thus minimising contamination or hazards to the other components of environment. Combination of new generation pesticides with new generation formulations and effective application techniques are key factors to ensure safety and optimized pesticide efficacy for sustainable crop protection and environmental management.

आधुनिक कृषि में पीड़कनाशियों का उपयोग किया जाता है एवं इसके उपयोग को फसल पैदावार बढ़ाने का एक प्रभावी और किफायती तरीका माना जाता है। यह अनुमान लगाया गया है कि फसल सुरक्षा में पीड़कनाशियों के उपयोग के बिना आधी से अधिक फसल पीड़कों और बीमारियों से नष्ट हो जाएगी। वर्ष में खरपतवार, पीड़क एवं बीमारियों के कारण विश्व फसल उत्पादन का 26 से 40 प्रतिशत तक नुकसान माना जाता है। इसलिए कृषि रसायनिक एक महत्वपूर्ण भूमिका निभाता है और यह एकीकृत पीड़क प्रबंधन प्रक्रिया के घटकों में से एक है। पीड़क प्रबंधन के लिए उपलब्ध अन्य विकल्प में विभिन्न जैव पीड़कनाशियों का उपयोग और प्राकृतिक परभक्षियों एवं परजीवों का संरक्षण शामिल है। लेकिन, रसायनिक पीड़कनाशियों का उपयोग अभी भी फसलों को उपज नुकसान से बचाने में महत्वपूर्ण भूमिका निभाता है, खासकर जब संक्रमण गंभीर हो; आगे की फसलों के नुकसान को रोकना अति आवश्यक है।

कृषि उत्पादक सामग्री बढ़ते उपयोग ने मानव स्वास्थ्य एवं पर्यावरण में कई गंभीर मुद्दों को जन्म दिया है। कृषि में पीड़कनाशियों और अन्य लगातार जैविक प्रदूषकों के अविवेकपूर्ण उपयोग के अनपेक्षित परिणाम सामने आए हैं। विभिन्न कृषि-आधारित पीड़कनाशियों और अन्य जैविक प्रदूषकों की निरंतर प्रकृति के परिणामस्वरूप जैव संचयन होता है। पुरानी पीढ़ी के कुछ पीड़कनाशी जीवित जीवों में अंतःस्रावी और प्रजनन प्रणाली के सामान्य कामकाज में बाधा डालने के लिए जाने जाते हैं। इसलिए, नए पीड़कनाशी अणु अब लक्षित पीड़कों के लिए उच्च चयनात्मकता, गैर-लक्षित जीवों पर न्यूनतम प्रभाव और पर्यावरण प्रणाली के लिए विकसित किए गए हैं वे लक्ष्य जीव के भीतर विशिष्ट जैव रसायनिक प्रतिक्रियाओं को लक्षित करते हैं। उदाहरण के लिए, पौधे के भीतर प्रकाश संश्लेषण के लिए आवश्यक एंजाइम या पीड़क में सामान्य विकास के लिए आवश्यक हार्मोन।

पारंपरिक पीड़कनाशी सूत्रीकरण सबसे लोकप्रिय, लागत प्रभावी, तेजी से कार्रवाई एवं प्रभावी हैं। हालांकि, पारंपरिक पीड़कनाशी सूत्रीकरण को उच्च मात्रा में लागू करने की आवश्यकता है और पर्यावरण पर अवशिष्ट प्रभाव छोड़ता है। इसलिए, ऑपरेटर के साथ-साथ पर्यावरण सुरक्षा या जैव-प्रभावकारिता में सुधार के लिए जरूरतों को पूरा करने के लिए नए पर्यावरण-अनुकूल पीड़कनाशी सूत्रीकरण आ रहे हैं।

यह लेख विभिन्न प्रकार के पीड़कनाशी सूत्रीकरण के बारे में है। पारंपरिक पीड़कनाशी सूत्रीकरण के अंतर्निहित नुकसान के कारण, दुनिया भर में विभिन्न कृषक समुदायों द्वारा नई पीढ़ी के पीड़कनाशी सूत्रीकरण को प्राथमिकता दी गई है। नए पीड़कनाशी सूत्रीकरण में उपयोगकर्ता की सुरक्षा, लागू सतह क्षेत्र का अधिक कवरेज, कम अपव्यय आदि शामिल हैं, जिससे फसलों और पर्यावरण में न्यूनतम अवशेष होते हैं। इसके अलावा, पीड़कनाशियों के प्रभावी तरीके से इस्तेमाल करने के लिए पीड़कनाशी सूत्रीकरण प्रौद्योगिकी में अनुसंधान एवं नये उन्नत तकनीक/प्रणाली की आवश्यकता होती है जिससे पर्यावरण के अन्य घटकों के लिए संदूषण या खतरों को कम किया जा सके। नई पीढ़ी के पीड़कनाशियों का संयोजन नई पीढ़ी के सूत्रीकरण और प्रभावी उपयोग तकनीकों के साथ टिकाऊ फसल सुरक्षा और पर्यावरण प्रबंधन के लिए सुरक्षा सुनिश्चित करने एवं पीड़कनाशी प्रभावकारिता के अनुकूलन में महत्वपूर्ण कारक हैं।

(Dr. Sagar Hanuman Singh IPoS)  
Director General

## PESTICIDE FORMULATIONS: PAST PRESENT & FUTURE PROSPECTS

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### Introduction:

Worldwide pest causes damage of 40 – 70 % of agriculture produce and pesticide is the economical, quick, easy and effective way of protecting crops from this damage to meet the demand of ever growing human and animal population. Hence, use of synthetic pesticides in appropriate way is also an important component for pest management.

### A Brief History of Pesticides:

Use of arsenic to kill insects was well known since 70 A.D., use of arsenic sulphide by Chinese in the later part of sixteenth century is also documented. In-organic compounds like lead arsenate, paris green (copper acetoarsenite), sodium fluorosilicate, zinc phosphide etc. have been used as insecticides since the early nineteenth century. These inorganic compounds were effective to wide spectrum of insect pests, and persist in the environment for almost up to four decades. Toxicity of inorganic compounds towards the mammals (humans) and their long persistence in the environment pushed the demand for their alternatives.

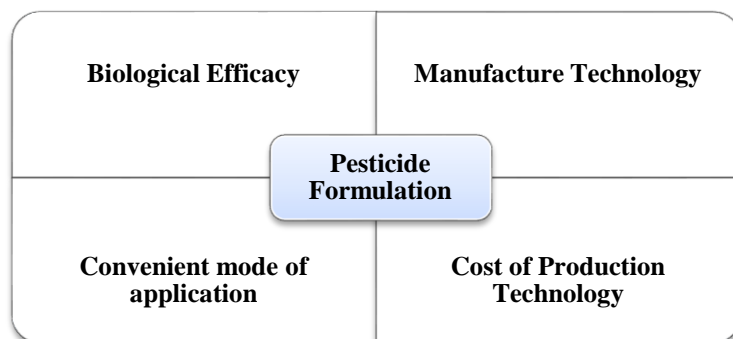
In early 1930 the discovery of insecticidal and fungicidal properties of chemical compounds containing the thiocyanates and dithiocarbamates functional groups respectively lead the onset of synthetic organic pesticides. Organochlorine class of pesticides *viz.*, DDT, Aldrin, Dieldrin, Lindane, etc. were the first class of synthetic pesticides which were commercially produced in mass scale. Amongst these DDT was the most successful and wonder molecule to eradicate the broad spectrum of pests and plant diseases. However, its overuse/ non-judicious use and persistent nature started creating the problems to the living beings and their environment. Stockholm convention put the organochlorine-based pesticides in the persistent organic pollutants (POPs) and controlled its production, distribution and use thereof.

A second generation of pesticides (Organophosphorus group) were developed during the year 1945 to 1955. The appearance of pyrethroids, sulfonylureas, during the year 1970-1980 marked the arrival of third generation of pesticides. They are more potent at low dosages and have the least persistence in environment.

### Pesticide Formulation:

Pure synthetic pesticide technical materials have very high purity (>95%) and physiochemically are not suitable for application. Pesticide technical are formulated along with various non-toxic inert materials (adjuvants, diluents, fillers, preservatives, colors etc.) to enable the homogenous delivery of the pesticides in appropriate doses along with the safety of the applicator. Various forms of the pesticide formulations are available which are being used in the agriculture field, commercial establishments and household.

Choice of the pesticide formulation by an industry depend upon the certain factors like availability of the manufacturing technology, mode of application, cost of production technology, and biological efficacy (**Figure 1**). Genesis of the development of new pesticide formulation begins from the conceptualization of the idea or search for seeking the solutions for the problems of the formulations in use. Various developments stages are preliminary studies, Laboratory scale development of formulation and testing of chemical, biological quality parameters such as shelf life, bio-efficacy, analytical test method development, physiochemical studies. The final stage is the scale-up study where laboratory method is optimized for scale-up to the pilot plant and finally to the manufacturing plant level.



**Figure 1: Important factors to decide for the choice of pesticide formulation (Industry perspective)**

Formulations varies from solid (GR, RB, DT, BR, etc.), powder (DP, WP, DS, etc.), Semi-solid (GL, GW, GS, etc.), liquid (EC, SL, EW, etc.), aerosol (AE), & fumigants (HN, GA). Collaborative International Pesticides Analytical Council (CIPAC) proposes 65 numbers of formulation types and their coding system is presented in **Table 1**.

**Table 1: Types of pesticide formulation and international coding system**

Code	Formulation	Code	Formulation
AE	Aerosol dispenser	MC	Mosquito coil
AL	Other liquids to applied undiluted	ME	Micro-emulsion
AP	All other products to be applied undiluted	MR	Matrix Release
BR	Briquette	OD	Oil dispersion
CB	Bait concentrate	OF	Oil miscible Flowable concentrate
CP	Contact powder	OL	Oil miscible liquid
CS	Capsule suspension	OP	Oil dispersible powder
DC	Dispersible concentrate	PA	Paste
DP	Dustable powder	PR	Plant Rodlet
DS	Powder for dry seed treatment	RB	Bait (ready for use)
DT	Tablets for direct application	SC	Suspension concentrate (= flowable concentrate)
EC	Emulsifiable concentrate	SD	Suspension concentrate for direct application
EG	Emulsifiable granule	SE	Suspo-emulsion
EO	Emulsion, water in oil	SG	Water soluble granule
EP	Emulsifiable powder	SL	Soluble concentrate
ES	Emulsion for seed treatment	SO	Spreading oil
EW	Emulsion, oil in water	SP	Water soluble powder
FS	Flowable concentrate for seed treatment	ST	Water soluble tablets
FU	Smoke generator	SU	Ultralow volume (ULV) suspension

GA	Gas	TB	Tablet
GD	Gel for direct application	TC	Technical material
GE	Gas generating product	TK	Technical concentrate
GL	Emulsifiable gel	UL	Ultra-low volume (ULV) liquid
GR	Granule	VP	Vapour releasing product
GS	Grease	WG	Water dispersible granule
GW	Water soluble gel	WP	Wettable powder
HN	Hot fogging concentrate	WS	Water dispersible powder for slurry treatment
KK	Combi-pack solid/ liquid*	WT	Water dispersible tablets
KL	Combi-pack liquid/ liquid*	XX	Others
KN	Cold fogging concentrate	ZC	A mixed formulation of CS en SC
LB	Long-lasting storage bag	ZE	A mixed formulation of CS en SE
LN	Long-lasting insecticidal net	ZW	A mixed formulation of CS en EW

\* **Special two-letter for twin packs.**

Broadly pesticide formulations can be categorized into the two categories on the basis of their time of genesis, one is conventional which has been in used from the past and still are very cost effective and other is new generation pesticide formulations which are of higher efficacy in pest management and safer for environment and human health

### Conventional Formulations:

Conventional pesticides formulations are among the most popular, cost effective because they are readily available, fast in action, and have proven their efficacy in due course of time. Conventional formulations include Dustable Powder (DP), Emulsifiable concentrate (EC), Wettable powder (WP), Soluble (liquid) concentrate (SL), Soluble powder (SP), etc.

### New Generation Formulations:

Pesticide formulations which were developed considering the disadvantages of the conventional formulations and which are more user & environment friendly, target specific and have controlled dose delivery system are basically termed as the New Generation Formulations. A whole new range of the New Generation Formulations *viz.* suspension concentrate (SC), Emulsion in Water (EW), Wettable Dispersible Granules (WDG), Capsule Suspension (CS) & Combination formulations & Mixed Formulation (ZC, ZE & ZW), are some examples of the new generation formulations which are available to farmers. The correlation between the conventional and new generation formulation is presented in **Table 2**.

**Table 2: Correlation between conventional and new generation formulations:**

Conventional Formulations	Issues with Conventional Formulations	New Generation Formulation	New features/advantages of the New Generation Formulations
Dustable Powder (DP)	Dustiness, Drift Excessive loss of Pesticide	Wettable Powder (WP)	No dry application, no drift and dustiness during application, spot application of the pesticide possible
Wettable Powder (WP)	Dustiness (during production), low bulk density, sedimentation after some time	Water Dispersible Granules (WDG) or Dry Flowables (DF)	Zero dustiness, ease in a handling and during application, least residue to container.
Emulsifiable Concentrate (EC)	Biological incompatibility due to solvents, safety of the applicator & physical in-compatibility with polymeric parts of the sprayers	Suspension Concentrate (SC)	No solvent in the formulation removes the biological and physical incompatibility, improved bio-efficacy,
Single Component System	Single pesticide requires multiple application for different pests, or Separate spray application for other agrochemicals (Fertilizers), Tank mix incompatibility	Combination Formulation & Mixed Formulation	Two agrochemicals (insecticide/ weedicide/ fungicide / herbicide combined in a single formulation, Single application reduced time and money

**Microencapsulated Suspension Formulations (CS):** Microencapsulation of the pesticide by a polymeric membrane (polyurea, polyamide etc.) is designed to slow down the release of the pesticide into environment and its degradation and overall enhance the availability of the pesticide for the target pest (**Figure 2**). Microencapsulation enhances the safety to the applicator and biological compatibility of the pesticide with crop Singh, A. *et.al.* 2020 &, 2018.

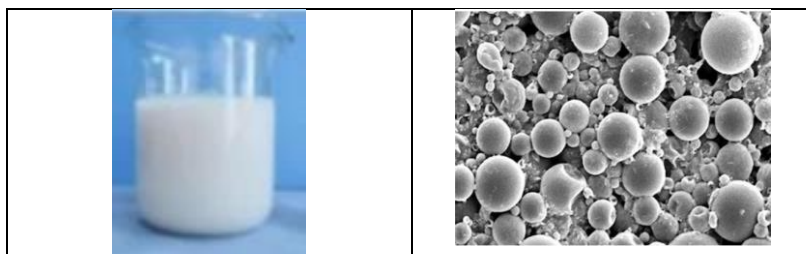


Figure 2: CS formulation (Left) Microcapsules of CS formulations (Right)

**Microemulsion formulation (ME):** Microemulsion formulations are clear transparent solution (True solution) due to extremely small size of micelle upto  $\sim 0.01 \mu\text{m}$  (**Figure 3**). Smaller size micelle is considered to have better

penetration of the pesticide into the pest. ME formulations are relatively costly because of higher intake of the emulsifier and co-surfactant. It has been demonstrated that ME formulation of a pesticide (pyrimethanil & fenpropimorph) considerably reduces the pesticide volatilization in comparison with their EC formulations Houbraken *et.al.*, 2018.



Figure 3: Microemulsion formulation, ME (Left), Micelle size (Right)

**Emulsion in Water (EW) / Concentrated Emulsion:** EW formulations reduce the quantity of the solvent required to dissolve the hydrophobic pesticide. They are concentrated emulsion because formulation product is in the emulsion form which simply requires dilution prior to application. Their significant benefits are cost effective, designed for lesser drift, lower odour, less phytotoxic, non-inflammable, less dermal toxicity compare to EC formulation (Liu Y.*et.al.*, 2011).

**Nano emulsions:** Nano-emulsions have a particle size of < 200 nm and considerably more environmentally friendly and cost effective.

**Mixed formulations:** These mixed formulations have the user and environment-friendly applications over conventional formulations. Eg. ZW, ZC, **Suspoemulsion**.

**ZW formulation:** This formulation is the combination of two formulations with two different pesticides in water medium viz. Capsulated Suspension (CS) + Emulsion in water (EW). In this, one pesticide is encapsulated inside the polymeric coating and other is in emulsified droplet form and this combination is termed as ZW. Main advancement of this formulation is that it is the combination of two pesticides in two different formulations, one broad-spectrum pesticide formulation for quick action and other for controlled release and will be effective for extended period of time.

**ZC formulation:** Capsulated formulation (CS) + Suspension Concentrates (SC) is the stable aqueous suspension of polymeric-encapsulated microcapsules and solid-suspended fine particles of two different pesticides. Both formulations are homogeneously mixed by wet milling and gentle shear mixing. This combination formulation has fast and quick knockdown and extended control of foliar insect pest. The combined pesticide provides improved and synergistic activity. Moreover this formulation is suitable for immediate as well as for prolonged pest control practices.

**Suspoemulsion:** Suspoemulsion (SE) is the combination of two active ingredients one in suspension concentrate (SC) and concentrated aqueous emulsion (EW). Suspoemulsion is the stable colloidal suspension of fine droplets of oil having active ingredient and insoluble solid active ingredient suspending in continuous aqueous phase. Incorporation of more than one active ingredient expands the scope of the application and eliminates the risks of the incompatibility during the tank mix Hazra *et.al.*, 2019 and Memula, S. *et.al.* 1996.

### Recent Trending in Pesticides and Future Prospects of Pesticide Formulations:

New pesticide molecules are now designed for higher selectivity to target pests, having the minimal impact on non-targeted organisms and to the environmental system. The uniqueness in their selectivity depends upon their unique mode of action. They target specific biochemical reactions within the target organism, e.g., an enzyme necessary for photosynthesis within a plant or a hormone required for normal development in an insect. New pesticides are now required at very low dosage, leaves least residues in crops and environment and are friendly to environment in a way to cause no toxicity to beneficial insects. Common dose for conventional pesticide are at 1-10 kg of active ingredient per hectare, however new generation pesticides are applied at  $\leq 10$  g of the active ingredient per hectare. New chemical class have now been arrived to the market such as the triketone, triazolopyrimidine and isoxazole herbicides, the azolone and strobilurin fungicides and fiprole, chloronicotinyl, spinosyn, and diacylhydrazine insecticides.

It has been demonstrated and shown that nanoparticle (NP) coated pesticides and the nutrient has remarkable better penetration property in comparison with non-coated ones. Researchers from Carnegie Mellon University have been creating an AuNP coating which will enhance the nutrient uptake efficiency upto 99 %. Nano encapsulated pesticide formulation aims to reduce the pesticide requirement, residue, solubility, permeability and stability. Water based mPEG-PLGA nanoparticle formulation loaded with metalochlor reduces the use of the organic solvent and surfactants, making formulation more environment friendly. Similarly, lignin modified nano capsules loaded with pyraclostrobin showed higher absorption of the pesticide by pathogenic fungi, Nair, R. et.al. 2010.

With growing concern of the food safety, pesticide and pesticide formulation industry requires safer solution for the pesticide. Amalgamation of the other technologies like IT, ICT, IoT and AI with the agrochemical formulation design and application technology is revolutionizing the progress. Futuristic formulations are aiming for the smart pesticide formulations and application technologies which have sensing, processing and actuating features and reduce the cost, material, time and manpower during the application.

### References:

1. Memula, S., Berger P, Chellappa C. (1996) Suspoemulsions with improved stability and correlation of long term stability with the zeta potential. Pesticide Formulations and Application Systems: 15th Volume ed. H. Collins, F. Hall, and M. Hopkinson (West Conshohocken, PA: ASTM International, 1996), 132-144. 10.1520/STP16038S.
2. Nair, R., Varghese, S.H., Nair, B.G., Maekawa, T., Yoshida, Y. and Kumar, D.S. (2010). Nano particulate material delivery to plants. *Plant Science*, 179: 154-163.
3. Liu, Y., Wei, F.L., Wang, Y.Y., Zhu, G.N. (2011). Studies on the formation of bifenthrin oil-in-water nano-emulsions prepared with mixed surfactants. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*. 2011; 389:90-96.
4. Hazra, D.K., Purkait A. (2019); Role of pesticide formulations for sustainable crop protection and environment management: A review. *Journal of Pharmacognosy and Phytochemistry*. 8:686-693
5. Houbraken, M., Senaeve D., Dávila, E.L., Habimana, V., De Cauwer, B., Spanoghe, P. (2018). Formulation approaches to reduce post-application pesticide volatilization from glass surfaces. *Science of the Total Environment*. 2018; 15:728-737. DOI: 10.1016/j.scitotenv.2018.03.186
6. Singh, A., Dhiman, N., Kar, A.K., Singh, D., Purohit, M.P., Ghosh, D., Patnaik, S., (2020). Advances in controlled release pesticide formulations: prospects to safer integrated pest management and sustainable agriculture. vol. 385, <https://doi.org/10.1016/j.jhazmat.2019.121525>.



## **Around the World**

- JOINT FAO/WHO meeting on pesticide residues was held on 13 to 22 September 2022. The Meeting evaluated 34 pesticides and estimated maximum residue levels, which it recommended for use as maximum residue limits (MRLs) by the Codex Committee on Pesticide Residues. Supervised trials median residue (STMR) and highest residue (HR) levels are estimated as a basis for estimation of the dietary exposure to residues of the pesticides reviewed.
- The eighteenth meeting of the Chemical Review Committee under the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade was held at the headquarters of the Food and Agriculture Organization of the United Nations (FAO), Rome, from 19 to 23 September 2022. The committee adopted draft decision guidance documents for Iprodione and terbufos and decided to forward to the next meeting of the conference of the parties, together with recommendation to list these chemicals in Annex III of the convention.
- The Pesticides Manufacturers & Formulators Association of India (PMFAI) is organizing the “**17th Edition of International Crop Science Conference & Exhibition (ICSCE 2023)**” from 16 to 17 February, 2023 in Dubai to promote agri inputs industry at global level and to bring manufacturers, traders, researchers from global agrochemical and allied industry under one platform, providing opportunity to meet and network with buyers & sellers from all over the world
- U.S. Environmental Protection Agency (EPA) proposed measures to improve protections for human health and the environment, including endangered species, from exposures to carbaryl, an insecticide that is used on a wide variety of food and feed crops, as well as in turf management, ornamental production, rangeland and residential settings (1<sup>st</sup> Dec.2022).
- 318 Insecticides / Pesticides are registered under section 9(3) of the Insecticides Act, 1968 and 46 Pesticides are banned for manufacture, import and use as on 01.10.2022 in India.

## Training Programs

### Plant BioSecurity Division

The Plant Biosecurity Division has organized following training programmes during the months of **October-December, 2022**.

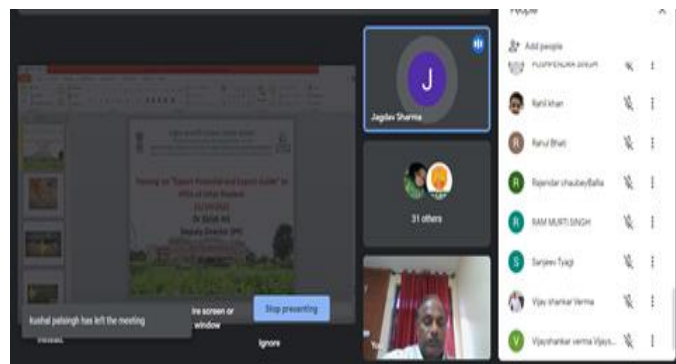
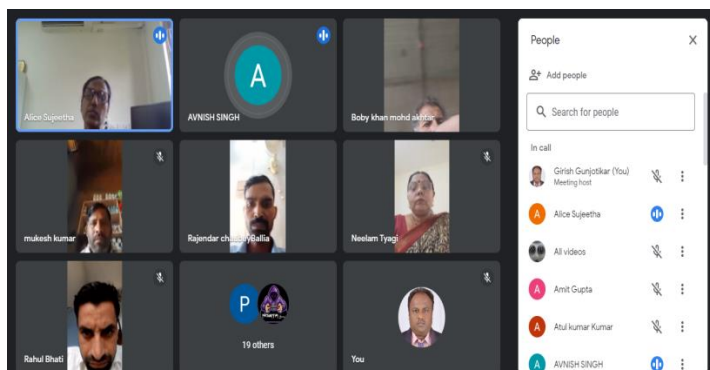
#### CAPACITY BUILDING PROGRAMMES:

S. No.	Name of The Programme	Duration	Date	
			From	To
<b>Plant Biosecurity Division (PBD)</b>				
1.	Export promotion of agri commodities for Uttar Pradesh FPOs	1 Day	21.10.2022	21.10.2022
2.	Invasive Alien Species: Introduced and Emerging Pests	3 Day	09.11.2022	11.11.2022
3.	Fumigation as a Phytosanitary Treatment(MBr & Alp )	15 Days	14.11.2022	28.11.2022
4.	Advanced Techniques for Identification of Quarantine Pests	5 Days	14.11.2022	18.11.2022
5.	Plant Biosecurity and Plant Quarantine Approaches in India	1 Day	29.11.2022	29.11.2022
6.	Forced Hot Air Treatment	5 Days	05.12.2022	09.12.2022
7.	Forced Hot Air Treatment	5 Days	12.12.2022	16.12.2022
8.	Awareness workshop on Export and Import of tissue culture plants and planting material	1 Day	14.12.2022	14.12.2022
<b>PBD Farmers Programme</b>				
9.	Farmers training on Plant health management	1Day	20.10.2022	20.10.2022
10.	stored grain pest management, Madanapuram, Vanaparti district	1Day	27.10.2022	27.10.2022
11.	Export potential and export procedure for Agricultural commodities for FPOs of Sikkim	1Day	2.11.2022	2.11.2022
12.	Export potential and export procedure for Agricultural commodities for the farmers of Madhya Pradesh	1Day	3.11.2022	3.11.2022
13.	Export Potential and Export Procedures for FPOs of Andhra Pradesh	1Day	15.11.2022	15.11.2022
<b>Vertebrate Pest Management (VPM)</b>				
14.	Vertebrate Pest Management – wild boar, monkey and birds	3 Days	11.10.2022	13.10.2022
15.	Certificate Course on Urban Integrated Pest Management	15Days	01.12.2022	15.12.2022

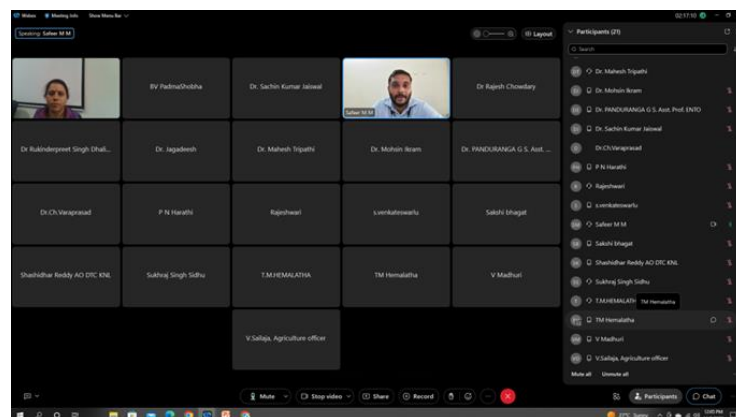
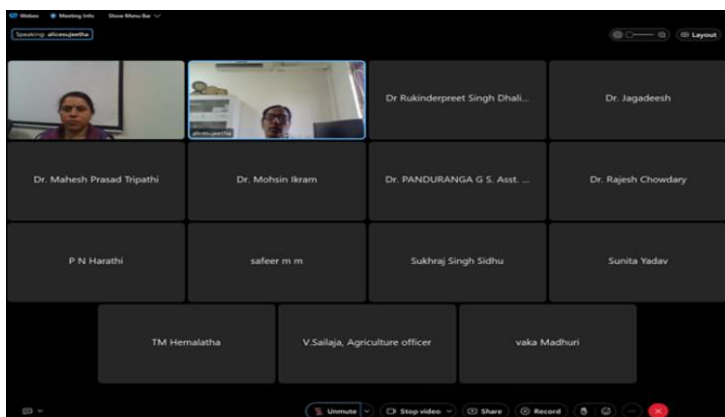
## PLANT BIOSECURITY DIVISION

### I. DETAILS OF TRAINING PROGRAMMES (Govt. Officials & Private sector)

- Export promotion of agri commodities for Uttar Pradesh FPOs:** The trade in food grains, seeds, vegetables fruits and plants for propagation and various traded commodities among the countries. Uttar Pradesh, India is the fifth largest and the most populous state in the area of industrial development. Uttar Pradesh during last few years achieved remarkable growth in exports. As of 2018-19 export data Uttar Pradesh exporting around 5 % of the total Country's share in exports. This 5% share is very less as and the efforts to be made to increase this share in export. Hence, one day training on export promotion and guide to export has conducted on 21.10.2022 for 34 FPOs of Badaun, Ballia and Pilbhit district of Uttar Pradesh. Uttar Pradesh's total production of grains is 14% which is largest share in India's total production in which wheat, Basmati rice and non-basmati rice has demand in international trade. During the training it was observed that FPOs are not aware of export procedures hence the export procedure is explained to them which will help in finding the export way to them from UP. This training programme was structured to impart skills and competency in performance of effective trade from UP.



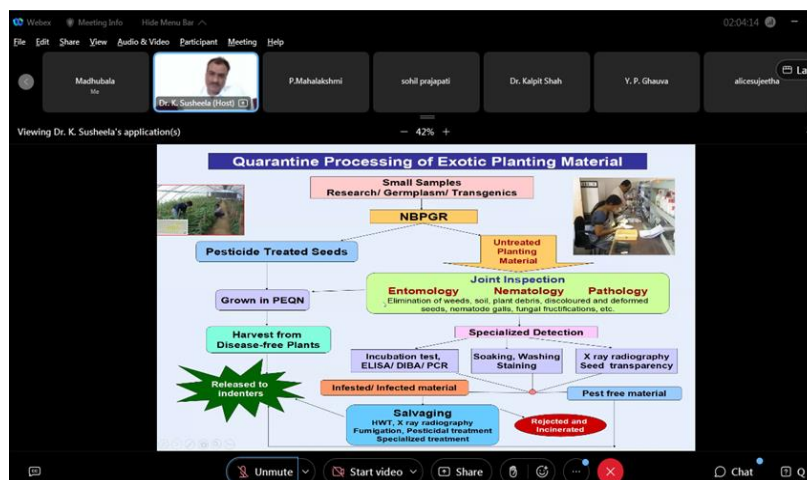
- Invasive Alien Species: Introduced and Emerging Pests:** Invasive pests are causing huge damage to biodiversity and the valuable natural agricultural systems upon which we depend. Direct and indirect health effects are increasing and the damage to nature and environment is often irreversible. Nowadays, due to increasing global trade and a changing climate, plant pests and diseases pose a greater threat to food security than ever before. To create awareness on Plant Biosecurity and Emerging Challenges, National Institute of Plant Health Management, Hyderabad, Telangana has organised an online training programme from 09th-11th November, 2022. A total of 27 officers from State departments & Universities were attended the programme.



- Fumigation as a Phytosanitary Treatment (MBr & Alp):** The trade in food grains, seeds, plants for propagation and various wood packaging materials are the primary pathways for global spread of plant pests. Fumigation is one of the approved Phytosanitary treatments to facilitate import and export of agricultural commodities. National Institute of Plant Health Management is a notified Institute for organizing 15 days training programme on Phytosanitary Treatments (Methyl Bromide and Aluminium Phosphide fumigation). As per NSPM 11, 12 and 22, the eligible operators shall be required to undergo the above training for the accreditation of Fumigation Agencies for undertaking Methyl bromide and Aluminium Phosphide Fumigation. The programme was organized from 14th-28th November, 2022 and total 20 participants were attended the programme.

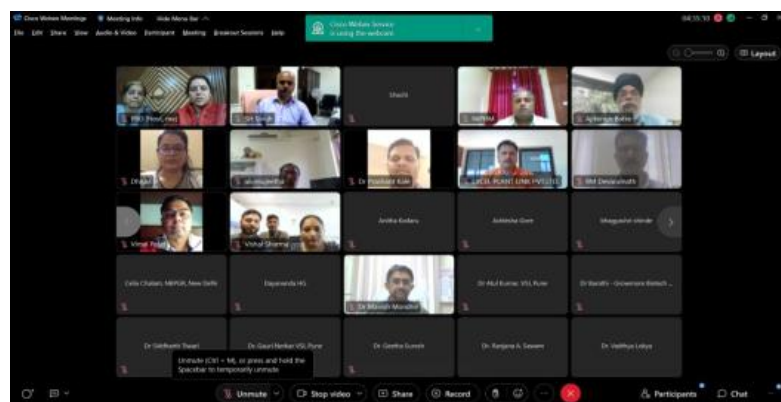


- Advanced Techniques for Identification of Quarantine Pests:** Detection and accurate identification of harmful pests is very essential to prevent the entry, establishment and spread of exotic pests. The techniques will help for early detection and identification of plant pests by increasing the efficacy, accuracy and speed of diagnosis. In order to create awareness about the detection techniques available for various quarantine pests, the Plant Biosecurity Division has organized 5 days online training programme from 14th -18th November, 2022. Twenty three officers have attended the programme.



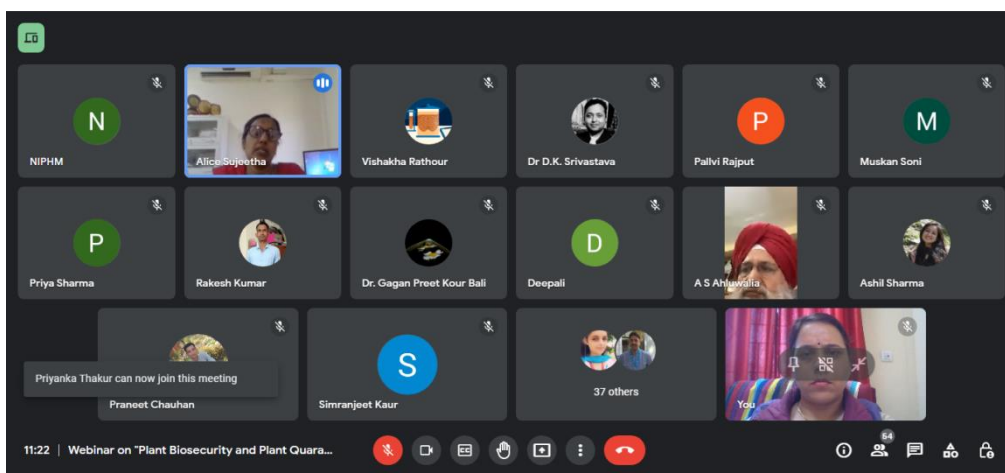
- Awareness workshop on Export and Import of tissue culture plants and planting material:** Awareness Workshop on was organized on 14.12.2022 for various stakeholders on virtual mode. The workshop was attended by 102 participants working in DBT accredited tissue culture laboratories, certification agencies, export/ import houses etc. who are actively involve in international trade of planting material and tissue culture plants.

The programme was graced by Director General (NIPHM), Dr. SH Singh, IPoS along with Director (PB), Dr. Alice RP Sujeetha. Resource persons were invited from the pertinent organizations playing crucial role in implementation of phytosanitary regulations pertaining to import and export of planting material, inspection and certification of tissue culture plants. During the technical session detailed deliberations and discussions were held among the stakeholders and resource persons.



- Plant Biosecurity and Plant Quarantine Approaches in India:** Online programme was organized for Professors/ Associate Professors/ Assistant Professors and students of Eternal University, Baru Sahib, Solan, Himachal Pradesh on 29.11.2022. As we are aware, there is a dire need of creating awareness on plant biosecurity and significance of plant quarantine to safeguard our biodiversity. NIPHM has organized this virtual programme to address the various issues emerging due to domestic pests of serious concern and protection of native agricultural biodiversity from the incursion threats of exotic pests. Details about various training programmes viz.

PGDHM, DPHM, MOOCs courses on plant Biosecurity and Rodent Pest Management and other programmes being conducted by NIPHM were provided to the students. Total 52 participants (Professors/Associate Professor/Assistant Professors and students) from university were attended the said programme.



- Forced Hot Air Treatment-Payment programme:** NIPHM is the only Institute in India to offer a specialized training programme on Forced Hot Air Treatment (FHAT) for industry stakeholders. In this regard, two programmes of 5- Days were conducted from 5<sup>th</sup>-9<sup>th</sup> December and 12<sup>th</sup>-16<sup>th</sup> December, 2022 at NIPHM, Hyderabad. The participants learnt the critical requirements for establishing FHAT facilities, calibration of sensors, placement of sensors, identification of coolest point, safety precautions, conducting the treatments, use of appropriate mark, audit protocols and record keeping in accordance with ISPM – 15 and NSPM – 9. The programme was attended by 21 and 40 participants respectively from different states across the country.



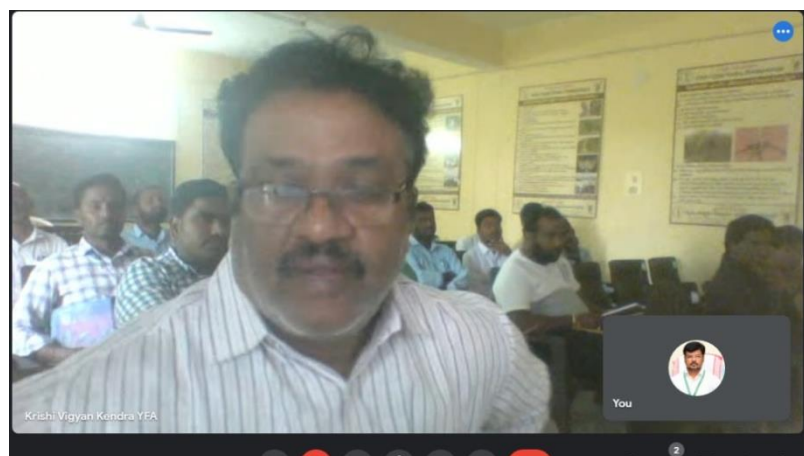
### PBD (FARMERS PROGRAMMES)

- Farmers Training on Plant Health Management:** Plant Health Clinic has been established by NIPHM at Amdapur village in 2019. Since then continuous monitoring related to plant health issues, field visits and interaction with farmers is in process. The Amdapur farmers are getting time to time guide/advisory for their crops. Some farmers contacted to NIPHM for their crop inspection. Hence, a visit was made on 20<sup>th</sup> October,

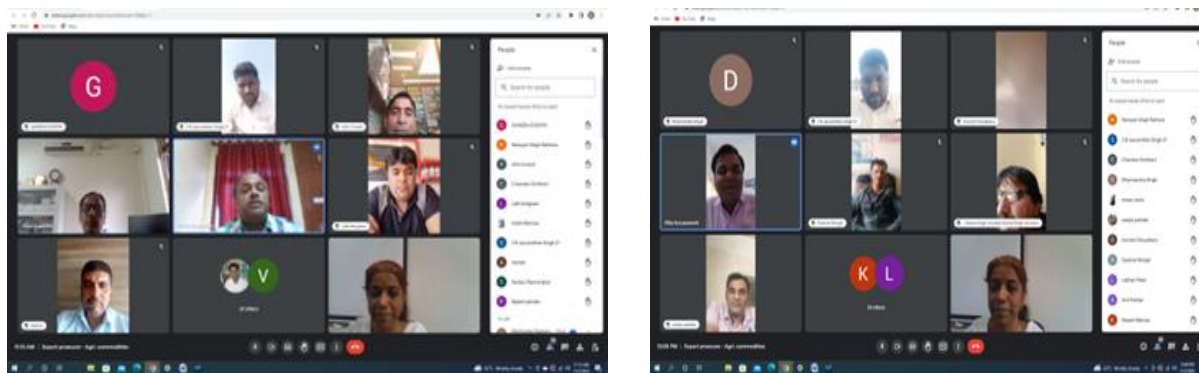
2022 to discuss the plant health problems. Faculty discussed about the crop health in kharif season crops like paddy, rose, lily and other flowers. During the field visit it was observed that brown plant hopper in paddy and black leaf spot and cercospora leaf spot in rose and other flower crops showing wilting symptoms. Farmers were trained to identify the symptoms of the diseases symptoms so that they can send the symptoms to the NIPHM staff for proper plant protection measures. The integrated crop protection measures were suggested to tackle the disease problem. Farmers were advised to procure Trichoderma from NIPHM as it is working well to manage against the diseases. Total 17 farmers have joined the program and provided with the related advisory of the crops grown in their field.



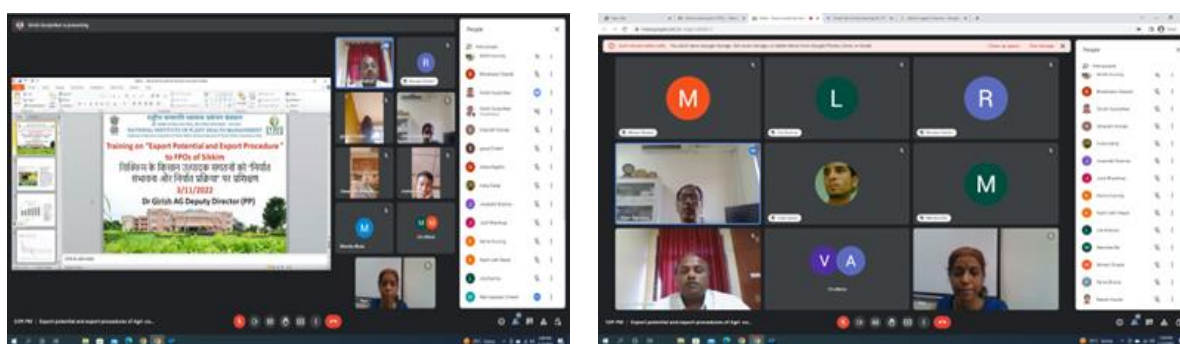
- Stored Grain Pest Management, Madanapuram, Vanaparti District:** The programme was conducted on 27<sup>th</sup> October, 2022 and was attended by 25 farmers.



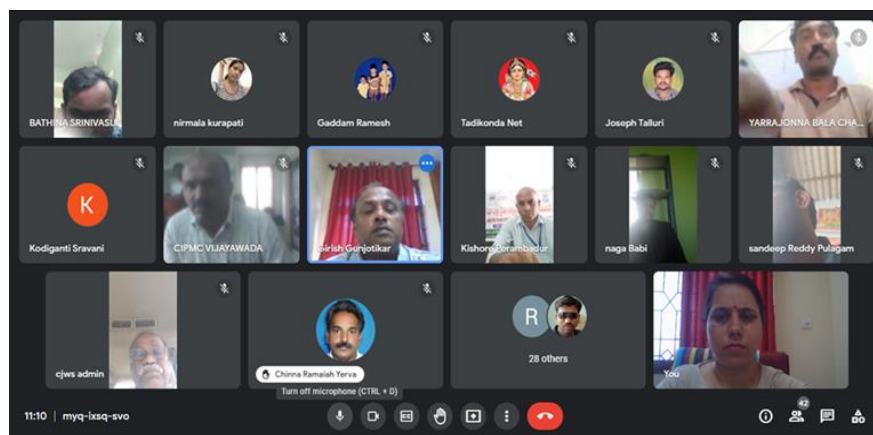
- Export potential and export procedure for Agricultural commodities to the farmers of Madhya Pradesh:** The virtual programme was organized on 2<sup>nd</sup> November, 2022 and 48 participants attended the programme.



- Export potential and export procedure for Agricultural commodities for FPOs of Sikkim:** The virtual programme was organized on 3<sup>rd</sup> November, 2022 and 34 participants attended the programme.



- Export Potential and Export Procedures for FPOs of Andhra Pradesh:** National Institute of Plant Health Management, Hyderabad, Telangana has collaborated with Central Integrated Pest Management Centre (CIPMC) Vijayawada, Andhra Pradesh and organized a virtual program for FPOs of Andhra Pradesh” on 15<sup>th</sup> November, 2022. Fifty three participants attended the programme.

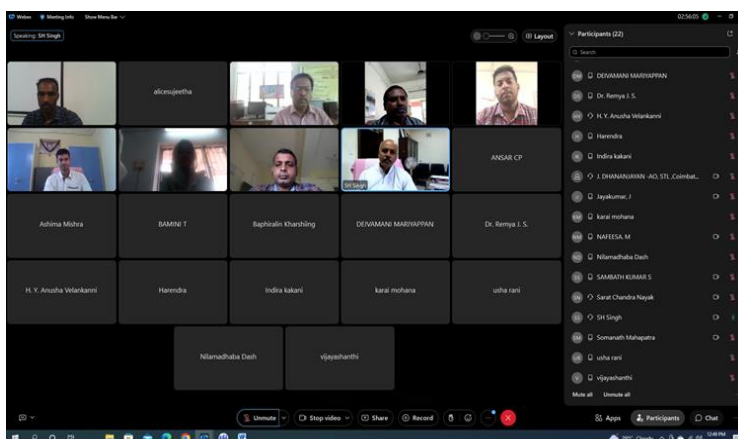


## VERTEBRATE PEST MANAGEMENT DIVISION

- Vertebrate Pest Management – Wild Boar, Monkey and Birds:** A three days training was organised from 11<sup>th</sup> -13<sup>th</sup> October, 2022. Total 20 officers / scientist attended the training programme on virtual mode. The main objective of the programme was to create the trained manpower and to create awareness about the major



vertebrate pests and their management techniques to the extension functionaries. The participants were imparted the knowledge on various management practices against the wild boar, monkey, birds, nilgai, birds, and elephant in agricultural crops including their management techniques; and the important aspects of Indian wild life, 1972.



- Certificate Course on Urban Integrated Pest Management- Payment Programme:** A fifteen days programme was organized for the structural pest management professionals from 1<sup>st</sup> - 15<sup>th</sup> December, 2022. Total 36 participants were attended the training from various states of the country. The topics covered were; Ecology and ethology of rodents, mosquitos, termites, cockroaches, bedbug and flies including their management practices. In addition other important aspects like; safe and judicious use of pesticides care in handling and maintenance of pesticide application equipment, food safety & standards in food processing industries, urban weed management, Start-up in Pest control, etc. were also covered to give the in-depth sight of the pest management.



## OTHER SIGNIFICANT ACTIVITIES:

### FORTHCOMING PROGRAMMES OF PBD & VPM (JANUARY-MARCH, 2023)

Division	Name of the programme	No. of Days	From	To
<b>PBD</b>	Phytosanitary Inspection Training	30 Days	02.01.2023	31.01.2023
	Fruit fly: Surveillance and Management	05 Days	16.01.2023	20.01.2023
	Refresher course for fumigation (Aluminium Phosphide and Methyl Bromide)	06Days	30.01.2023	04.02.2023
	Awareness workshop on ISPM 15 & NSPM 9	02 Days	02.02.2023	03.02.2023
	Plant Bio Security & Incursion Management (PBIM)	12 Days	06.02.2023	17.02.2023
	Introduction to Plant Biosecurity and Plant Quarantine	05 Days	06.02.2023	10.02.2023
	Pest Risk Analysis	05 Days	13.02.2023	17.02.2023
	Fumigation as a Phytosanitary Treatment (Methyl Bromide and Aluminium Phosphide)	15 Days	27.02.2023	13.03.2023
	Stored Grain Pest Detection, Identification and Management	05 Days	13.03.2023	17.03.2023
	Pest Surveillance	05 Days	27.03.2023	31.03.2023
<b>VPM</b>	Risk assessment and management of vertebrate pests in agriculture and horticulture ecosystem	10 Days	08.02.2023	17.02.2023

## Plant Health Management Division

### Training programmes

S No	Name of the programme	No. of Days	From	To
<b>I.</b>	<b>Officers programme</b>			
1.	IPM for Agricultural Officers of Meghalaya	03	17.10.2022	19.10.2022
2.	Training programme on Good Agricultural practices in Spice crops	05	17.10.2022	21.10.2022
3.	Sustainable Pest Management Programme for Districts Levels	03	26.10.2022	28.10.2022
4.	Quality Control of Microbial Biopesticides	10	09.11.2022	18.11.2022

5.	Plant Health Management in FCV Tobacco	02	17.11.2022	18.11.2022
6.	Orientation training program on 'Plant Health Management' for newly recruited officials of DPPQ&S	30	10.11.2022	09.12.2022
7.	Off-campus Training on Plant Health Management in FCV Tobacco	02	27.12.2022	28.12.2022
<b>II. Farmers training programme</b>				
1.	Farmers Training programme on Integrated Pest and Nutrient Management in Mango	01	01.10.2022	--
2.	On-farm production of different biocontrol agents	01	27.10.2022	--
3.	On-farm production of bio-control agents' under TNIAM project	03	31.10.2022	02.11.2022
4.	On-farm production of different biocontrol agents	01	07.11.2022	--
5.	Good Agricultural Practices in Cumin and Coriander(under IG-AMD)	03	06.12.2022	08.12.2022
6.	On-farm production of bio-control agents	03	12.12.2022	14.12.2022
7.	On-farm production of bio-control agents'	03	13.12.2022	15.12.2022
8.	Good Agricultural Practices in Ginger and Turmeric (under IG-AMD)	03	14.12.2022	16.12.2022
9.	Good Agricultural Practices in Mango & Chilli and (under IG-AMD)	03	20.12.2022	22.12.2022
<b>III. Webinars/Workshop</b>				
	Nil			
<b>IV. Certificate course</b>				
1	Certificate course on PHM in Organic farming(Part-I)	21	01.12.2022	21.12.2022

### Training programme report (officers)

- IPM for Agricultural Officers of Meghalaya**

A special training program of 3 days, was conducted from 17<sup>th</sup> to 19<sup>th</sup> October, 2022 at NIPHM as a part of 15 days training program at MANAGE for Agriculture Officers of Meghalaya. A total of 85 participants from Department of Agriculture, Meghalaya attended the training program. As a part of the training, classes on Principles and concept of IPM, Biological control of pests and diseases, Agro-ecosystem analysis based IPM, Ecological engineering, vertebrate pest management, fruit fly management and use of botanicals in pest management was conducted.



- Training programme on Good Agricultural practices in Spice crops**

In collaboration with Spices board, a special training programme on Good Agricultural practices in Spice crops (With special reference to Cardamom (large), Chilli, Ginger, Garlic, Pepper & Turmeric) has been organized from 17-21<sup>st</sup> October 2022 (5 days). In this programme, a total of 27 officials from different places of Spices Board, India were attended. This training is helpful to the participants to knowledge on Good Agricultural practices for soil health and plant health management in different spices crops.





- Sustainable Pest Management Programme for Districts Levels**

An online training program on “Sustainable Pest Management Programme for Districts Levels” has been scheduled from 26<sup>th</sup> Oct to 28<sup>th</sup> Oct, 2022 (3 days). For this training program 34 officers from various govt. institutes like, ICAR, SAU, KVK and SAD nominated.

- Quality Control of Microbial Biopesticides**

As scheduled in NIPHM training calendar 2022-23, training programme on “Quality Control of Microbial Biopesticides” was organized from 09.11.2022 to 18.11.2022 (10 days) in physical mode. In this programme total 11 officers/scientists from different states and organizations participated.





- Plant Health Management in FCV Tobacco**

As scheduled, an off-campus training program on “Plant Health Management in FCV Tobacco” was organized at the conference hall, Koyyalagudem Auction platform on 18.11.2022. In this program 32 staff (Senior Grading officers/Auction Superintendents/Field officers/Senior Field Assistants/Field Assistants) from different auction platforms of the NLS region, Tobacco Board, Andhra Pradesh participated.



- Orientation training program on ‘Plant Health Management’ for newly recruited officials of DPPQ&S.**  
 Orientation Training Program on ‘Plant Health Management’ for Newly Recruited Officials of DPPQ&S was conducted from 10.11.2022 to 09.12.2022 (30 days). In this training programme a total of 24 participants from

DPPQ&S working at various (Central Integrated Pest Management Centres (CIPMC) Plant Quarantine Station (PQS) attended the training program.



- Off-campus Training on Plant Health Management in FCV Tobacco**

As scheduled, off-campus training on “*Plant Health Management in FCV Tobacco*” was organized at Regional Manger office, Ongole, A.P on 27.12.2022 to 28.12.2022. In this program total of 71 staff (Senior Grading officers/Auction Superintendents/Field officers/Senior Field Assistants/Field Assistants) from different auction platforms of the SBS/SLS region, Tobacco Board, Andhra Pradesh have participated. This training covered different session topics such as Integrated Nutrient Management in FCV tobacco, the role of biofertilizers in INM and applications methods, an insect pest of FCV tobacco and management practices, the role of biopesticides in disease control, on-farm production of biofertilizers, *Trichoderma* and *Pseudomonas fluorescens* was discussed.





## Farmers training programmes

- Farmers Training programme on Integrated Pest and Nutrient Management in Mango**

As approved by the competent authority, the staff of NIPHM deputed to Chittoor, AP on 01.10.2022 and created awareness on biofertilizers and Biopesticides usage in Mango and on –farm production process of bio-agents. The programme organized by Chittoor Mango Producers Company (FPC) and state Horticultural department at Kanipakam, Chittoor dist. In this programme FPC chairman, group members, DDH, ADH, HO’s and a total of 135 progressive mango growers from district were attended. In this programme, other resource persons from Dr.YSR Horticultural University also participated and delivered sessions on pest and disease management in Mango.



- On-farm production of different biocontrol agents**

One day farmer training on 27<sup>th</sup> October was conducted in collaboration with Deshpande foundation. In this training program 36 farmers from Telangana participated.

- On-farm production of bio-control agents’ under TNIAM project**

A 3 days special Tamil Nadu farmer training programme on ‘On-farm production of bio-control agents’ under TNIAM project was organized at NIPHM from 31.10.2022 to 02.11.2022 (3 days). In this program total of 42 farmers from Tamil Nadu from different districts viz., Madurai, Kancheepuram and Chengalpattu participated.





- **On-farm production of different biocontrol agents**

One day farmer training on 7<sup>th</sup> November was conducted in collaboration with Deshpande foundation. In this training program 38 farmers from Telangana participated .



• **Good Agricultural Practices in Cumin and Coriander(under IG-AMD)**

In collaboration with Indo-German project an off campus training programme on “**Good Agricultural Practices in Coriander and Cumin**” from **06-12-2022 to 08-12-2022 (3 days)** was conducted at Jaisalmer district of Rajasthan. In this training programme a total of 30 farmers from 4 FPOs of Rajasthan state were participated. For the first two days lectures on GAP in coriander and cumin crop, Role of bioagents in IPM in cumin and coriander, role of biopesticides in disease management, use of biofertilizers in coriander and cumin crops and Integrated nematode management in coriander and cumin were given .On the third day there was a field visit to **Dabla village of Jaisalmer district**, where damping off disease was noticed in cumin crop and explained about the use of biopesticides for the management of disease.



• **On-farm production of bio-control agents**

An on campus farmer training program of three days duration on on-farm production of different biocontrol agents was conducted from 12<sup>th</sup> to 14<sup>th</sup> December, 2022 at NIPHM. In this training program 20 farmers from Tirunamalai district , Tamilnadu. In this program Ecological engineering in pest management, on farm production of predators, parasitoids, biopesticides, biofertilisers, EPF, EPN and NPV were explained. Hands practice on above mentioned topics was done and thereafter farmers were taken to AICRP- IFS at college farm of PJTSAU.





● **On-farm production of bio-control agents**

An on campus farmer training program of three days duration on on-farm production of different biocontrol agents was conducted from 13<sup>th</sup> to 15<sup>th</sup> December, 2022 at NIPHM. In this training program 20 farmers from Ranipet district, Tamilnadu. In this program Ecological engineering in pest management, on farm production of predators, parasitoids, biopesticides, biofertilisers, EPF, EPN and NPV were explained. Hands practice on above mentioned topics was done and thereafter farmers were taken to AICRP- IFS at college farm of PJTSAU to show different crops.



● **Good Agricultural Practices in Ginger and Turmeric (under IG-AMD)**

An off campus training in collaboration with Indo-German project on “Good Agricultural Practices in Ginger and turmeric” was conducted from 14-12-2022 to 16-12-2022 (3 days) in Odisha. In this training programme a total of 31 farmers from 7 FPOs of Odisha state participated. As a part of Good agricultural practises in ginger and turmeric were explained and the same was showed during the field visit.



- **Good Agricultural Practices in Mango & Chilli and (under IG-AMD)**

An off campus training in collaboration with Indo-German project on “Good Agricultural Practices in Ginger and turmeric” was conducted from 20.12.2022 to 22.12.2022 (3 days). In this training programme a total of 30 farmers from 5 FPOs of Uttar Pradesh state participated in the training program. The first two days of the training program was focused on principles of Good Agriculture Practices and phytosanitary treatments and a field visit program at the Central Institute for Subtropical Horticulture (CISH) institute was conducted on the third day.





- **Certificate course on Plant Health Management in Organic Farming.**

**Certificate Course on Plant Health Management in Organic Farming** is scheduled from 1st December, 2022 to 10<sup>th</sup> March, 2023. The part-I course has been completed from 01.12.2022 to 21.12.2022. Total 21 participants from AP, Telangana states have enrolled and participated for the course. During the part 1 of the course, both theory and practical aspects of plant health management in organic farming are covered including topic related organic produce certification, marketing and entrepreneurial skill.





### Forthcoming training programmes

S No	Name of the programme	No. of Days	From	To
<b>I. Officers training programmes</b>				
1.	Production Protocol for Biofertilizers	05	16.01.2023	20.01.2023
2.	Quarantine neamtodes of economic importance	03	23.01.2023	25.01.2023
3.	Plant health Management in Horticultural crops	05	31.01.2023	03.02.2023
4.	Production Protocol for Microbial Biopesticides	05	06.02.2023	10.02.2023
5.	Integrated Soil Nutrient and Rhizosphere Management	05	13.02.2023	17.02.2023
6.	Qaulity control of Microbial Biopesticides	10	22.02.2023	03.03.2023
7.	Production Protocol for Entomopathogenic Nematodes	5	13.03.2023	17.03.2023
8.	Role of Biofertilizers and Biocontrol agents in Agriculture	10	20.03.2023	29.03.2023
<b>II. Farmers training programmes</b>				
1.	On-farm production of Biocontrol agents	03	23.01.2023	25.01.2023
2.	Organic Farming methods for crop protection	03	22.02.2023	24.02.2023
3.	On-farm production of Biocontrol agents	03	08.03.2023	10.03.2023

## Pesticide Management Division

### Training Programme:

During **October to December** 2022, the division has conducted three offline and two online training.

Sl. No.	Name of the programme	No. of Days	From	To
1.	Laboratory Quality Management System and Internal Audit as per ISO/IEC 17025:2017	5	10.10.2022	14.10.2022
2.	Pesticide Residue Analysis	21	02.11.2022	22.11.2022
3.	Inspection, Sampling and Prosecution Procedures under Insecticide Act 1968	5	05.12.2022	09.12.2022
4.	Method validation and Measurement of Uncertainty in Pesticide Formulation and Residue Analysis	5	12.12.2022	16.12.2022
5.	Sampling of Fruits, Vegetables and other items for Pesticide Residues Analysis	2	19.12.2022	20.12.2022
6.	Sampling of Fruits, Vegetables and other items and Calibration of Laboratory equipment for Pesticide Residue Analysis	5	19.12.2022	23.12.2022

Sl. No.	Name of the programme	No. of Days	From	To
1.	Handling/operation of GC-MS/MS and LC-MS/MS for chemical (pesticide) analysis	5	21.11.2022	25.11.2022
2.	Method validation for Pesticide Residues Analysis	5	12.12.2022	16.12.2022
3.	Laboratory Quality Management System and Internal Audit as per ISO/IEC 17025:2017 (Online Mode)	4	20.12.2022	23.12.2022

- Laboratory Quality Management System and Internal Audit as per ISO/IEC 17025:2017:**  
 PMD has conducted 5 days training programme on “**Laboratory Quality Management System and Internal Audit as per ISO/IEC 17025:2017**” from 10.10.2022 to 14.10.2022. A total of **23 participants** are participated from State Agriculture Department of Tamil Nadu, Gujarat, Kashmir, Jarkhand, Odisha, Maharashtra and Telangana.

The trainees were trained on general requirement for the competence of testing and calibration laboratories in accordance with **ISO/IEC 17025:2017** and internal audit procedure. This training will be benefited to testing laboratories for Laboratory accreditation.



**Training programme on “Laboratory Quality Management System and Internal Audit as per ISO/IEC 17025:2017” (10.10.2022 to 14.10.2022)**

- Pesticide Residues Analysis:**

PMD has conducted 21 days training programme on **“Pesticide Residue Analysis”** from 02.11.2022 to 22.11.2022. A total of 11 participants are participated from State Agriculture Department of Karnataka, Punjab, Telangana, CCS Hisar Agriculture University -Haryana, ICAR-Central Institute of Subtropical Horticulture-Uttar Pradesh and RPQS, Chennai. Participants were trained on sample preparation methods for water, fruit, vegetables, cereals and pulses and estimation of pesticide residues by LC-MS/MS and GC-MS/MS. The trainees were also trained on basic requirements for establishment of Pesticide Residue Laboratory and importance of quality assurance in pesticide residue estimation.







**Fig: Training programme on “Pesticide Residues Analysis” (02.11.2022 to 22.11.2022)**

- **Inspection, Sampling and Prosecution Procedures under Insecticide Act 1968**

PMD has conducted 5 days training programme on “**Inspection, Sampling and Prosecution Procedures under Insecticide Act 1968 (ISPP)**” from 05.12.2022 to 09.12.2022. A total of 25 Officials/Insecticide Inspectors were participated from State Agriculture Department of Andhra Pradesh, Telangana, Punjab, Chhattisgarh and Kerala. The aim of the training programme is to build the capacity of Insecticide Inspectors. The Participants were trained on Insecticide Registration and licensing Procedure, Inspection and sampling of pesticide formulation and Prosecution Procedure under **Insecticide Act 1968**



**Fig: Inspection, Sampling and Prosecution Procedures under Insecticide Act, 1968**

- **Method validation and Measurement of Uncertainty in Pesticide Formulation and Residue Analysis:**

The division has conducted 5 days training programme on “**Method validation and Measurement of Uncertainty in Pesticide Formulation and Residues Analysis from 12.12.2022 to 16.12.2022**”. A total of 13 **officials/Analyst** were participated from State Agriculture Department of Gujarat, Maharashtra, Tamil Nadu, Telangana and Pvt. Laboratory. During the programme, participants were trained on method validation process in

pesticide residues analysis and pesticide formulation analysis. Analysts were also trained on Estimation of Measurement Uncertainty.



Fig: Method validation and Measurement of Uncertainty in Pesticide Formulation and Residue Analysis

- **Sampling of Fruits, Vegetables and other items for Pesticide Residues Analysis:**

The division has conducted 2 days programme on **Sampling of Fruits, Vegetables and other items for Pesticide Residues Analysis from 19.12.2022 to 20.12.2022**. A total of 5 participants were participated the training programme. The participants were from state Agriculture Department of Telangana, Central Agriculture University Jhansi, Uttar Pradesh and Private Laboratory from Tamil Nadu. Trainees were trained on Sampling guideline and procedure as per method of sampling for determination of Pesticide Residues (Codex Alimentarius Commission guideline).

- **Sampling of Fruits, Vegetables and other items and Calibration of Laboratory equipment for Pesticide Residue Analysis:**

The division has conducted 5 days programme on **Sampling of Fruits, Vegetables and other items and Calibration of Laboratory equipment for Pesticide Residues Analysis from 19.12.2022 to 23.12.2022**. A total of 4 participants from State Agriculture Department of Gujarat and Telangana were participated the training programme. Trainees were trained on Calibration of laboratory equipment and Sampling guideline and procedure as per method of sampling for determination of Pesticide Residues (Codex Alimentarius Commission guideline).

- **Handling/operation of GC-MS/MS and LC-MS/MS for chemical (pesticide) analysis:**

The division has conducted a training programme on “Handling/operation of GC-MS/MS and LC-MS/MS for chemical (pesticide) analysis on payment basis. One Participants from CSIR-IITR Lucknow, Uttar Pradesh has attended the programme.



• **Method validation for Pesticide Residues Analysis:**

A programme on “**Method validation for Pesticide Residues Analysis from 12.12.2022 to 16.12.2022**” was conducted for **5 days**. A total of **5 Analysts** were participated from Private Laboratories (Maharashtra and Tamil Nadu) and Spice Board, Kochi, Kerala. Participants were trained on method validation in pesticide residues analysis by verification of various parameters.

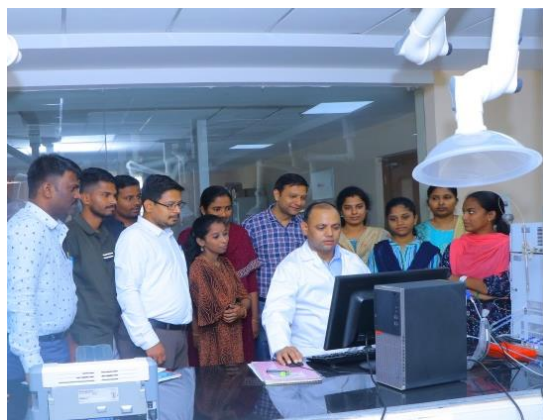


Fig: Method validation for Pesticide Residues Analysis from 12.12.2022 to 16.12.2022

• **Laboratory Quality Management System and Internal Audit as per ISO/IEC 17025:2017 (Online Mode)**

The Division has conducted 4 days online training programme on “**Laboratory Quality Management System and Internal Audit as per ISO/IEC 17025:2017**” from 20.12.2022 to 23.12.2022 for the officials of UPASI Tea Research Foundation, Regional Centre, Coonoor, Tamil Nadu. A total of 6 officials/Analysts were attended the training. The officials/Analysts were trained on general requirement for the competence of testing and calibration laboratories in accordance with **ISO/IEC 17025:2017** for generation of valid test result.

**Forthcoming training programmes:**

Sl. No.	Title of the Programme	Duration	From	To	Eligibility Criteria
1.	Laboratory Quality Management System and Internal Audit as per ISO/IEC 17025: 2017	5	16.01.2023	20.01.2023	Science Graduate with knowledge in laboratory activities, working in analytical Laboratories of state govt. / central govt. / ICAR / Govt. Universities

2.	Pesticide Formulation Analysis (PFA)	60	23.01.2023	23.03.2023	Analysts working at SPTLs / RPTLs/ CIL and other Government Labs engaged in Pesticide Formulation Analysis with educational qualification of Graduate in Chemistry / Agril / Hort.
3.	Documentation procedures for NABL accreditation for PTLs and PRLs	4	14.02.2023	17.02.2023	Science Graduate with knowledge in laboratory activities, working in analytical Laboratories of state govt. / central govt. / ICAR / Govt. Universities
	Laboratory Quality Management System and Internal Audit as per ISO/IEC 17025: 2017	5	13.03.2023	17.03.2023	Science Graduate with knowledge in laboratory activities, working in analytical Laboratories of state govt. / central govt. / ICAR / Govt. Universities

### Plant Health Engineering Division

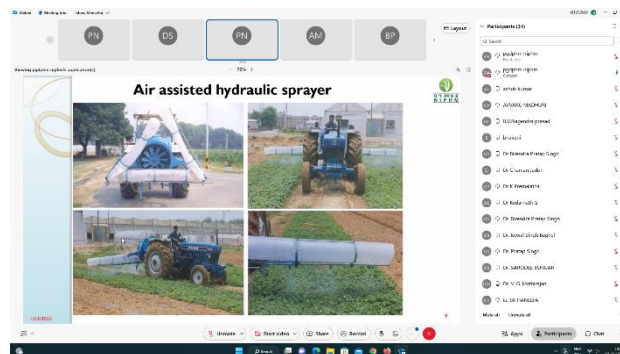
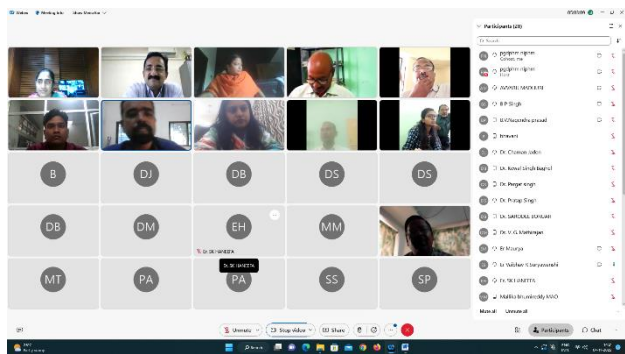
#### Training programmes

S No	Category	Name of the programme	No. of Days	From	To
1.	Officers	Pesticide Application Techniques and Safety Measures	05	31.10.2022	04.11.2022
2.	Officers	Remote Sensing and GIS applications in Plant Health Management	03	15.11.2022	17.11.2022
3.	Officers	Efficient use of water resources	03	22.11.2022	24.11.2022
4.	Officers	Plant Protection Techniques for Plant Health	05	21.11.2022	25.11.2022
5.	Officers	Plant Protection Techniques for Plant Health Management	21	02.12.2022	22.12.2022
6.	Farmers	Micro-Irrigation	01	27.10.2022	27.10.2022
7.	Farmers	Pesticide Application Techniques and Safety Measures	01	01.12.2022	01.12.2022

- Pesticide application Techniques and Safety Measures**

A 5-day virtual training programme on “Pesticide Application Techniques and Safety Measures” was organized from 31<sup>st</sup> October to 4<sup>th</sup> November 2022. Total 29 officers 14 Male and 15 Female participants from 13 states participated in the training programme. The participants were enriched with Principles of

pesticide application techniques, different spraying techniques, selection of sprayer, nozzles and its classification, calibration of sprayers and nozzles, pesticide formulations and compatibility, safety precautions and minor maintenance of pesticide application techniques and drone spraying. Pre and post evaluation along with assignments on various sessions were given to assess the knowledge transfer. Good appreciation received from the participants.

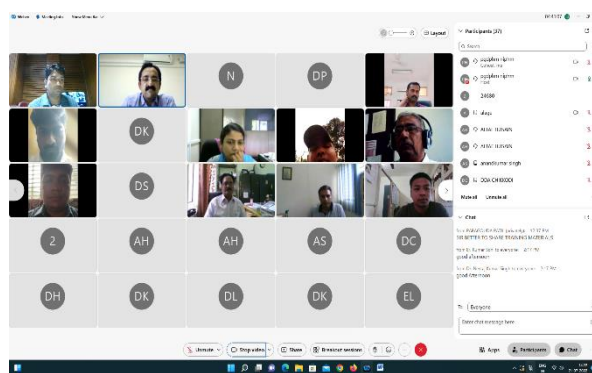
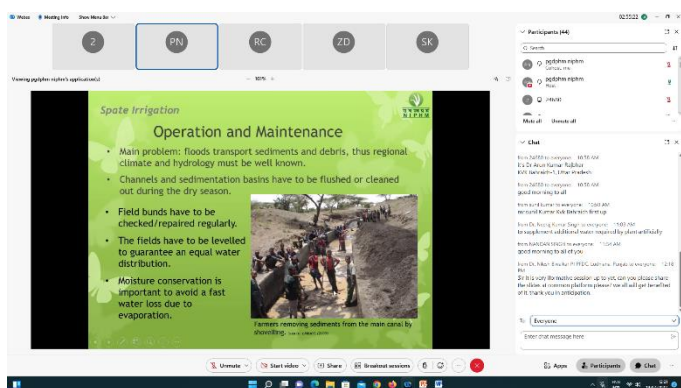


- **Remote Sensing and GIS applications in Plant Health Management**

A 3-day virtual training program on “Remote Sensing and GIS applications in Plant Health Management” was organized from 15<sup>t</sup> to 17<sup>th</sup> November 2022. Thirty two participants from 9 different states participated in the training program. Among them, 17 are Male and 15 are Female participants. The participants were enriched with basic principles of remote sensing, basic concepts of GIS, applications of RS & GIS in agriculture, different open source and commercial software available, and GPS applications. Two experts were invited to enhance participant’s knowledge on RS & GIS applications in disease/ pest management and Artificial Intelligence for crop production through Plantix. Based on the participants request, demonstration of GPS and open-source software QGIS were virtually taken up.

- **Efficient use of water resources**

A 3-day virtual training program on ‘Efficient use of water resources’ was organized from 22<sup>nd</sup> to 24<sup>th</sup> November 2022. The training contents emphasis on sustainable use of existing water resources, rainwater harvesting & ground water recharge. Three expertise for three sessions were invited from the reputed institutions like WALAMTARI, ANGRAU and ICRISAT. Total 21 participants (14 Male & 7 Female) attended the programme. The participants were enriched with Agriculture water resource system, Ground water recharge and management, Adoption strategies for agriculture water management, Watershed treatment in irrigation command area, Use of Modern tools for planning and management of water resources, methods and technologies to improve the efficiency of water use, Understanding catchment hydrology for sustainable agriculture and resource development, Water management in rain fed regions of India, Rain water harvesting in urb



● **Plant Protection Techniques for Plant Health**

A 5-day special training for Spices Board officials on “Plant protection techniques for plant health” was organized from 21.11.2022 to 25.11.2022. A total of 23 participants (Male-17 and Female-6) from 8 different states participated in the training program. The participants were enriched with Principles of pesticide application techniques, different spraying techniques, selection of sprayer, nozzles and its classification, calibration of sprayers, pesticide formulations and compatibility, Drone spraying techniques, safety precautions and minor maintenance of pesticide application techniques. Participants were able to get hands-on experience on various sprayers. Positive feedback was received from the participants.



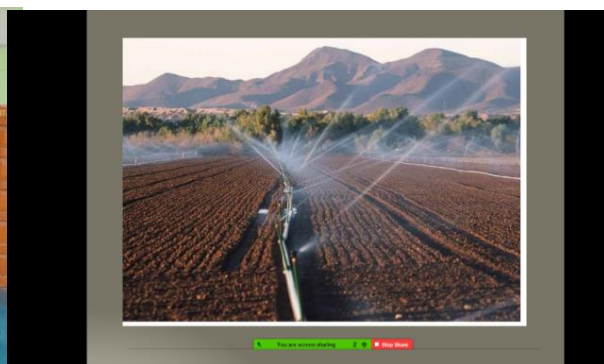
● **Plant Protection Techniques for Plant Health Management**

Plant Health Engineering division conducted a 21 days training programme on “Plant protection techniques for plant health management” from 02.12.2022 to 22.12.2022. Total 22 officers from 8 different states (Male – 20, Female – 2) had successfully completed the training programme. The participants were trained on different aspects such as principles of pesticide application techniques, spraying techniques like high volume, low volume and ultra-low volume, nozzles and their importance, calibration and measurement of drops and maintenance of sprayers and safety precautions while handling of pesticides, Geo spatial technology, sensor based plant protection techniques and drone technology. The participants were involved in practicals by forming into groups. All the sprayers were aquinted by the participants. At the end, comparison evaluation among different sprayers batch wise was presented and analysis was made on droplet distribution pattern and discharge rates. Institutional visits were also arranged to CRIDA, ICRISAT, COE, Mulugu, FCRI Mulugu, IIOR, IIMR and Agri. Hub, PJTSAU during the training programme.



● **Micro-Irrigation**

One day virtual training program on “Micro-Irrigation” was organized on 27<sup>th</sup> October 2022 at KVK, Bhagwanpur Hat of Bihar state farmers with the help of Dr Ravi Prakash Maurya, Scientist (retired). Total 31 farmers (Male-28, Female-03) attended the training program. In the training program, farmers were advised on different aspects such as Importance of irrigation, suitable time for irrigation, types of irrigation methods for different crops, Micro irrigation such as drip irrigation, sprinkler irrigation, rain guns and subsidy schemes on Micro irrigation were explained to the progressive farmers.



Inorder to encourage and promote Micro Irrigation among the country, Government took steps by providing subsidy on Drip Irrigation unit and Sprinkler Irrigation Unit for farmers. The procedure of getting Subsidy is briefly explained to farmers.

● **Pesticide Application Techniques and Safety Measures**

PHE division conducted an off campus training programme on “Pesticide Application Techniques and Safety Measures” at Devunayaravelli village, Chevella district, Telangana on 1<sup>st</sup> December 2022. Mr. Ravindranath Rao, Manager, WELSPUN helped in mobilizing the famers for this training program. Er. M Udaya Bhanu (Scientific Officer) has organized this training programme for thirty farmers at Devunayaravelli village. Shri. Sama Manikyareddy, Sarpanch and Mr. Sailaja Sathyanarayanareddy, MPTC have hosted the training program in the village. The training programme was moduled to cover the aspects of adverse impacts of spraying, basic spraying principles, selection of a sprayer, selection of nozzle and safety precautions. The farmers were also briefed about the types of nozzles and the importance in selecting a nozzle. They were also explained how to calibrate a nozzle and sprayer for efficient application of chemical on the target areas.

The importance of safety precautions while handling chemicals was demonstrated with the help of one farmer and the disposal of containers was explained. The Dos’ and Don’ts while handling chemicals was also explained. Total 30 farmers attended and got benefitted from the programme.



**Educational Programs:**

● **PGDPHM/DPHM:**

- Orientation programme was conducted to the students and students were exposed to various activities of the division and about different equipment developed by the division during the visit to Plant Health Engineering division.
- Regular classes as per schedule were organized.





## Forthcoming training programmes

S.No	Title of the Programme	Division	From	To	Eligibility criteria	Course Coordinator & e-mail
1.	Pesticide application techniques and safety measures	PHE	02.01.2023	06.01.2023	Extension officers from State Agriculture and Horticulture departments, Scientists of ICAR, SAUs and officials from KVKs, DPPQs	Dr. Vidhu Kampurath Joint Director (PHE) jdenggniphm-ap@nic.in
2.	Pesticide application techniques and safety measures	PHE	23.01.2023	25.01.2023	BAMETI, Bihar (On request basis)	Er. Govind Maurya Assistant Scientific Officer (PHE) asopheniphm1-ap@nic.in
3.	Pesticide application techniques and safety measures (Collaborative)	PHE	18.01.2023	20.01.2023	Extension officers from State Agriculture and Horticulture departments, Scientists of ICAR, SAUs and officials from KVKs, DPPQs	Er. M. Udaya Bhanu Scientific Officer (PHE) sopheniphm2-ap@nic.in
4.	Digital Agriculture	PHE	23.01.2023	25.01.2023	Extension officers from State Agriculture and Horticulture departments, Scientists of ICAR, SAUs and officials from KVKs, DPPQs	Sk. Liyakhat Ali Ahamed, Assistant Director (ICT) adict-niphmhyd@gov.in
5.	Farm equipment for plant health management	PHE	20.02.2023	22.02.2023	Extension officers from State Agriculture and Horticulture departments, Scientists of ICAR, SAUs and officials from KVKs, DPPQs.	Dr. Vidhu Kampurath Joint Director (PHE) jdenggniphm-ap@nic.in
6.	National workshop/webinar on Plant protection techniques	PHE	23.02.2023	24.02.2023	Extension officers from State Agriculture and Horticulture departments, Scientists of ICAR, SAUs and officials from KVKs, DPPQs	1. Dr. Vidhu Kampurath Joint Director (PHE) jdenggniphm-ap@nic.in 2. Er. Govind Maurya Assistant Scientific Officer (PHE) asopheniphm1-ap@nic.in

1.	Post-harvest management and storage techniques	PHE	13.03.2023	17.03.2023	Extension officers from State Agriculture and Horticulture departments, Scientists of ICAR, SAUs and officials from KVKs, DPPQs. NGOs	Er. Haneefa Begum Assistant Scientific Officer (PHE) asopheniphm2-ap@nic.in
2.	Pesticide application techniques and safety measures	PHE	20.03.2023	24.03.2023	Extension officers from State Agriculture and Horticulture departments, Scientists of ICAR, SAUs and officials from KVKs, DPPQs	Dr. Vidhu Kampurath P Joint Director (PHE) jdenggniphm-ap@nic.in
3.	Pesticide application techniques and safety measures	PHE	23.01.2023	23.01.2023	Farmers	Er. Govind Maurya Assistant Scientific Officer (PHE) asopheniphm1-ap@nic.in
4.	Pesticide application techniques and safety measures	PHE	14.02.2023	14.02.2023	Farmers	Er. Govind Maurya Assistant Scientific Officer (PHE) asopheniphm1-ap@nic.in

### Faculty achievements (Publications / trainings / webinar-seminar / Awards etc)

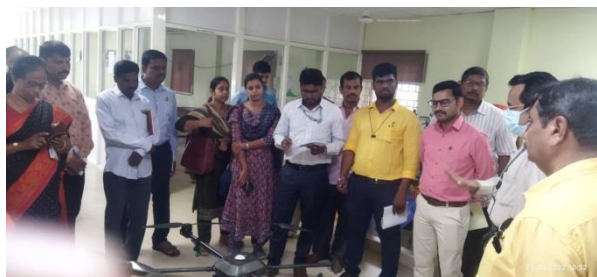
- **Trainings**

- Dr. Vidhu Kampurath, JD(PHE), attended the BoS meeting of B.Sc Ag programme of VFSTR University, as an expert member.
- Dr. Vidhu Kampurath, JD (PHE) delivered a special lecture on Use of drones in Agricultural operations at Drone mela conducted by VFSTR University.
- Dr. Vidhu Kampurath participated as an expert member in School of Research Board meeting of VFSTR University.
- All staff attended a presentation cum discussion of Rheometer and tribology for spray particle flow measurement, by M/s Anton Par Ltd.

- **Visitors:**

- **Officials: (Govt./Private/NGO)**

Twenty officer trainees from EEI visited the division. Two sessions were arranged, one on advanced irrigation techniques and another on Drone techniques in agriculture, were dealt with practical demonstrations.



○ **Students:**

- Fifty students from Forest college and Research Institute, Mulugu, Telangana visited PHE workshop, and got acquainted with Sprayers and nozzles.



- Forty seven students from Kelappaji College of Agricultural Engineering and Technology, Tavanur in Malappuram district, Kerala along with two faculty visited PHE workshop and automated irrigation system in poly house, got acquainted with sprayers different facilities of the Institute.



○ **Farmers**

- Thirty six field facilitators from DeshPande foundation (Better Cotton Initiative), Telangana visited PHE workshop, and got acquainted with Sprayers and nozzles.



- Thirty-Nine field facilitators from Deshpande foundation (Better cotton Initiative), Telangana visited PHE workshop, and got acquainted with Sprayers and nozzles.



- Seventy eight members from ATMA, Sangareddy visited PHE workshop, and got acquainted with Sprayers and nozzles.



## Special Events

- **World soil day**

World Soil Day is observed every year on December 5 to raise awareness of the importance of soil to the sustenance of life on earth. The quality of soil is getting degraded, which has led to environmental issues. So, to manage the soil issues, humankind has come together to maintain the well-being and sustainability of life on earth. NIPHM celebrated World Soil Day - 2022 on the Theme - “Soils: Where food begins”. On this special day, NIPHM organized a guest lecture on Soil testing and its significance. On this day, an expert from Krishitantra visited NIPHM and demonstrated the use of Rapid Automated Soil testing Agronomy Advisory device and its operation. Under the chairmanship of Dr. Sagar Hanuman Singh, Director General, NIPHM, all the faculty of NIPHM and trainees have participated.



- **MoU with APMAS**

A memorandum of agreement (MoU) was signed between NIPHM and APMAS (Mahila Abhidvudhi Society) with the purpose of covering the activities for “development of co-operation, collaboration in research, capacity building and sharing of the technical know-how in the area of FPO’s/SHG promotion, and enhancing the farm-based livelihoods for ensuring and overall economic growth.

In this meeting, Dr.Sagar Hanuman Singh, Director General, NIPHM, Dr.Alice R.P.Sujeetha, Director-PBD & PHM (I/c), Dr.Vidhu Kampurath, Registrar (NIPHM) and Dr.Damodara Chari, ASO-Microbiology, Shri N. Madhu Murthy, Executive Director, APMAS, Shri S.Likitha, Project Manager, APMAS have been participated. Under chairmanship of Director General, NIPHM, the Registrar of NIPHM and Executive Director signed MoU. During this MoU meeting, both parties shared future views on collaboration.



● **15<sup>th</sup> NIPHM Foundation Day Celebrations**

NIPHM has completed 14 years by 24<sup>th</sup> October 2022. The Occasion was graced by Dr. Sagar Hanuman Singh, IPoS as Chief Guest/Director General, NIPHM. The Staff, Trainees, PGDPHM Students and retired employees of this institute have participated in the celebrations. On this occasion, the various competitions i.e. Table tennis, Chess, Carroms etc. were conducted for the Regular and Contractual/outsourced staff.



- NIPHM is observing Special Campaign for disposal of pending matters during the period from 2<sup>nd</sup> October to 31<sup>st</sup> October, 2022 as per the directions of DA&FW. The activities w.r.t to the Special Campaign are uploading in the concerned portal on daily/regular basis.
- Observance of Rashtriya Ekta Diwas (National Unity Day)  
NIPHM is being celebrated the ‘Rashtriya Ekta Diwas (National Unity Day) on 31-10-2022 to commemorate the birth anniversary of Sardar Vallabhbhai Patel.
- NIPHM is observing Vigilance Awareness Week from 31.10.2022 to 06.11.2022 by conducting various competitions i.e. Essay writing, Elocution etc. for the Regular and Contractual staff/trainees.
- Vigilance Awareness Week was observed from 31.10.2022 to 06.11.2022 by conducting various competitions i.e. Essay writing, Elocution etc. for the Regular and Contractual staff/trainees.



- NIPHM observed “Samvidhan Divas (Constitution Day) on 26-11-2022” to commemorate the adoption of the Constitution of India on 26-11-1949 in the Constituent Assembly of India.
- The preamble of the Constitution of India was read out by all the staff in NIPHM office on 26-11-2022 at 11.00 a.m. and banners were also displayed at appropriate places in NIPHM campus.



- **Swachhta Pakwada camp activity at Tolkatta village:**

The team of PHE Division, Er. M. Udaya Bhanu, Scientific Officer (PHE), Er. Sk Haneefa Begum, Assistant Scientific Officer (PHE) organized a camp at Zilla Parishad High School in Tolkotta Village, Moinabad Mandal. A total of 150 students from class 6th to 10th were involved in the programme. The students were briefed on the requirement of keeping the surroundings clean, plastic pollution, open defecation, deforestation, water wastage, and dust/smoke-free air through posters. All these problems can be addressed with simple solutions that can be initiated at the school level by students themselves, which were explained to them. Special emphasis was given on “Small changes for Healthy life”. A quiz and a pencil drawing competition was conducted for students on the theme “Swatch Bharat – Clean India.



- NIPHM observed ‘Swachhta Pakhwada’ from 16<sup>th</sup> to 31<sup>st</sup> December, 2022. The following activities were carried out during the above period.
  - Tree plantation drive conducted in the campus
  - Cleaning water tanks of various buildings of the campus
  - Display of banners and uploading of material regarding observance of Swachhta Pakhwada in NIPHM website and creating awareness / publicity by use of social media
  - Cleaning of main entrance outside gate on both sides.
  - Identification and recommendations exercise for weeding out of old files/records (beyond preservation period), Old furniture, equipment, Stationery etc., for final disposal by all divisions.
  - Organizing village camps to address the local communities on swachhata with special focus on sustainable toilet uses and taking up waste management work in their area, awareness of water conservation and proper disposal of insecticide containers by PM division under the overall supervision and monitoring of the Director (PMD) I/c.
  - Organizing of ‘Swachhta Shapath’/Pledge function at NIPHM office premises. Observance of ‘Kisan Diwas (Farmer’s Day)’. Shramadan activity by all the Staff at NIPHM from 03:30 PM onwards.
  - Cleaning of terrace of Silent Spring Building (Hostel-II) and Hostel-I.
  - Cleaning water tanks in NIPHM Quarters.
  - Organizing camp activities at nearby villages to promote behavioral changes to keep surroundings clean with special focus on awareness regarding curbing the use of Single-Use Plastic, open defecation, deforestation, water wastage, dust/smoke free air and other anti-environmental practices by PHE Division under the overall supervision and monitoring of the JD (PHE).
  - Cleaning water tanks in Hostels



- Cleaning of terrace of LBS building
- Cleaning of terrace and surrounding areas of old DG chamber, Bio-Fertilizer lab, Bio-Control lab, PHE Workshop, Fumigation Chamber.
- Cleaning water tanks in Silent Spring Building (Hostel-II)
- Cleaning of terrace of MG Block building





**Research & Development****Research & Development (PHM)**

- **AICRP on Biological Control of Crop Pests (ICAR-AICRP-BC)-NIPHM, Hyderabad (Volunteer Centre)**

**Evaluation of NIPHM white media for the production of *Nomuraea rileyi* (*Metarhizium rileyi*) NIPHM MRF-1 strain for management of Maize Fall Army worm (*Spodoptera frugiperda*)**

This project aimed for the production of *Metarhizium rileyi* two media viz. NIPHM White media and broken rice were used. To standardize the production technology, the media under test were made into six treatments (Broken rice (without yeast extract), Broken rice (with yeast extract), 1% NIPHM white media, 2% NIPHM white media, 3% NIPHM white media, 4% NIPHM white media) and for each treatment two replications were maintained.

**Project progress during this quarter:** Preparation of SMAY media and performed sub culturing of *Metarhizium rileyi* (EPF) on SMAY media. The work on bioassay is under progress.

- **Pesticide Formulation and Residue Analytical Centre (PFRAC):**

The Pesticide Formulation and Residue Analytical Centre (PFRAC), Pesticide Management Division, is an accredited laboratory in accordance to ISO/IEC 17025:2017. During the period the laboratory has collected 270 samples (Fruits, vegetables, cereals, pulses, milk and water) from Banjarahill Hyderabad, Medchal/Malkajigiri, and Saidabad under Central Sector Scheme “Monitoring of Pesticide Residues at National Level (MPRNL)” and analyzed samples for pesticide residues. A total of 175 samples (fruit and vegetables) were received from ANGRAU and analyzed under MPRNL scheme. The Laboratory also received 105 water samples from CSIR-NEERI for pesticide residues analysis by LC-MS/MS under MPRNL scheme. All the samples were analyzed and the reports were submitted.

The division has also received 100 tobacco samples from Tobacco Board, Guntur. All the samples were analyzed and reports were submitted.

A total of 61 botanical/bio-pesticides samples were received from Tamil Nadu (04 samples), Bihar (12 samples), Gujarat (06 samples), Karnataka (1 sample), Kerala (22 samples), Madhya Pradesh (03 sample), Maharashtra (05 samples), Odisha (1 sample) and Telangana (7 samples). The samples were tested for pesticide contaminants/adulteration by GC-MS/MS and LC-MS/MS.

Seven pesticides formulation samples were received from National Seed Corporation, Raichur, Karnataka for quality test. The samples were analyzed and submitted the reports. Two samples received from FCI, Bhopal were also analyzed for active ingredient content in the formulation sample.



Fig: Sample preparation and analysis of samples

### Proficiency Testing Center (PTC):

- Proficiency Testing programme on Pesticide Residues Analysis**

The final report for Proficiency Testing programme on Pesticide Residues Analysis in Mango (PTC/PR/ 01/22-23) for the pesticides Dimethoate, Fenpropathrin, Imidacloprid, Lambda Cyhalothrin, Quinalphos, Thiamethaxom and Wheat (PTC/PR/ 02/22-23) for the pesticides Alpha Cypermethrin, Buprofezin, Chlorpyrifos, Deltamethrin, Dimethoate, Quinalphos, Tricyclazole conducted in the month of May 2022 were prepared and sent to 35 Participants during the period. PTC, PMD has organized Proficiency Testing programme on Pesticide Residues Analysis in Brinjal (PTC/PR/04/22-23) in the month of December 2022. Sample were prepared, packed and labeled for dispatched. After homogeneity study, Brinjal samples (PTC/PR/04/22-23) were dispatched to 27 participants.





Fig: Sample preparation process for Brinjal (PTC/PR/04/22-23)

• **Proficiency Testing programme on Pesticide Formulation Analysis**

PTC, PMD initiates PT PFA programme on Acetamiprid Technical, Deltamethrin EC, Atrazine WP (PTC/PF/04,05 & 06/2022-23) in the month of November 2022. Pre-analysis studies of these items were carried out. Samples homogenization, labelling and packaging of Acetamiprid Technical, Deltamethrin EC, and Atrazine WP were performed during the month. After homogeneity studies, Acetamiprid Technical, Deltamethrin EC and Atrazine WP samples were dispatched to 54 laboratories including two Private laboratories.



Fig: Sample packaging process of Acetamiprid Technical (PTC/PF/04/2022-23)

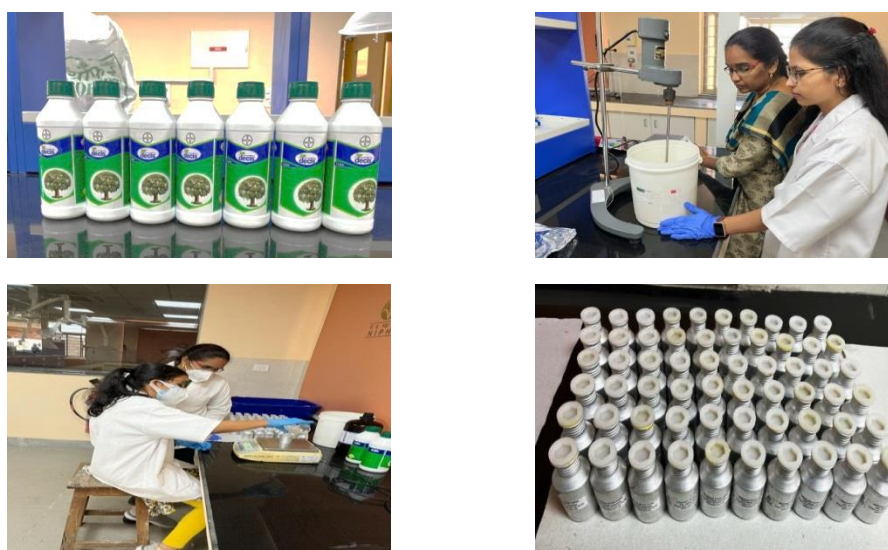


Fig : Sample preparation process of Deltamethrin EC (PTC/PF/05/2022-23)



Fig: Sample preparation process of Atrazine WP (PTC/PF/0/2022-23)

- Construction and Evaluation of Zero energy cool chamber**

Zero Energy Cool Chamber is an eco-friendly storage system that doesn't require any type of energy to be adopted. A cool chamber was designed and constructed for the purpose of demonstration to trainees.

The performance evaluation of ZECC is under process to optimize the parameters of the chamber. The parameters such as outside temperature and RH are measured to evaluate the ZECC.

Inside temperature and RH: For performance evaluation of ZECC, to know the shelf life of different commodities, material purchased from local market were taken to evaluate the shelf of commodities in three different storage conditions were selected like control, refrigeration and ZECC. The commodity selected was Ivy gaurd. In ZECC, the trays were placed 1 in row, 2 in a row and 3 in a row to study the shelf life of commodities with different conditions.



Ivy guard stored in ZECC

- **FEASIBILITY STUDIES ON USES OF TREATED SEWAGE WATER ON SPINACH (*Spinacia oleracea*):**

Experiments were conducted in the NIPHM experimental fields to study the effect of treated sewage water on Spinach crop. Some of the finds drawn from the study are:

- Soil physical characteristics have been improved in treatment T3 i.e Single filter treated water. It might be due to heavy load of organic matters in single treated water.
- Vegetable produce was maximum observed in T3 (Single filter treated water) i.e 103kg. The highest produce was observed due to the heavy load of nutrients.
- Total microbial and fungal counts showed maximum in T3 (single treated water).
- In treatment (T1) micro and macro elements were absorbed maximum in soil followed by T3.
- The maximum uptake in crop for treatment (T1) Zn and Magnesium, In treatment (T2) Iron and Manganese and (T3) Copper and potassium. It might be due to the antagonistic effects and synergistic effects.

Based on the above findings, re analysis is proposed.

**Extension Activities / Village Adoptions****Farmer Advisory Cell Activities:**

Under farmers advisory cell, faculty are interacted farmers about their queries related to plant protection, bioinputs usage etc. Almost 300 farmers are approached NIPHM through telephonic communication.

**Other activities****• NIPHM Instructional farm:**

During this quarter Rabi 2022-23, sowing of cucurbits (ridge gourd, bottle gourd, bitter gourd), maize, , Ground nut, onion was done. Transplanted paddy, tomato. timely irrigation and weeding was done. Insect pest data collected and IPM measures were taken. Installed pheromone traps and sticky traps. Fields were monitored regularly and data on pests and natural enemies recording going on.

**• Polyhouse (Protected cultivation)**

During this quarter Rabi 2022, the following activities are performed under protected cultivation. The cabbage, cauliflower and broccoli were grown. Irrigation and weeding in broccoli, cabbage and cauliflower. Installed pheromone traps and sticky traps. Collected and destroyed leaf eating caterpillars. Irrigation, weeding and staking was done.

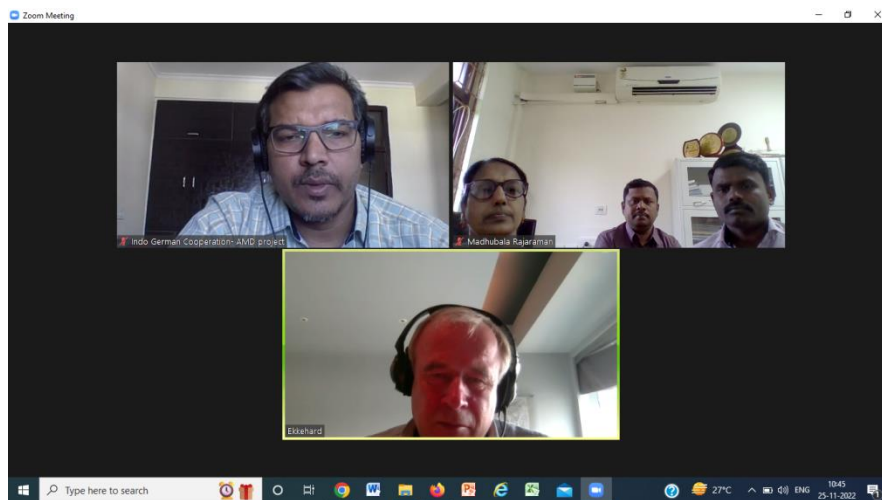


Other Activities

- Lab Activities:
  - i. Maintaining/Rearing of stored grain insect cultures
  - ii. Rearing of fruit fly culture
  - iii. Fruit fly lure preparation
- Maintenance of vermicompost unit at NIPHM and Staff Quarters
- Indo German Cooperation meeting was organized at NIPHM on 23.11.2022 to discuss about the export promotion to Uttar Pradesh, Odisha and Rajasthan states. Further follow up meeting was scheduled through online on 25.11.2022.

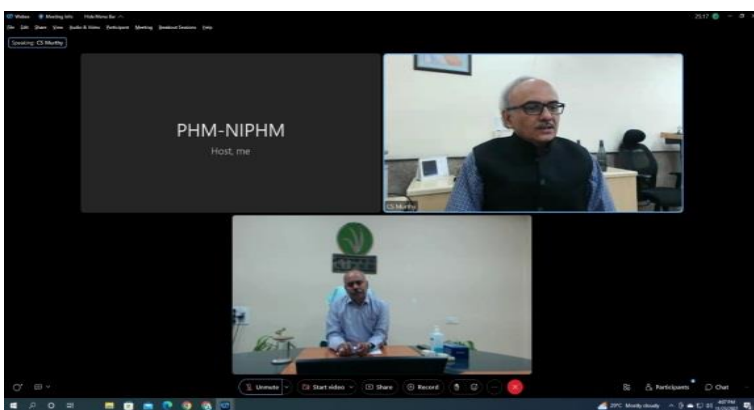


Indo German meeting on 23.11.2022



Indo German Cooperation virtual meeting on 25.11.2022

- Virtual meeting held with Director, Mahalanobis National Crop Forecast Centre (MNCFC) to explore out the feasible collaboration in pest forecasting and early warning system.



Director General, NIPHM, Dr. C. S. Murthy, Director, MNCFC and Officers from NIPHM

- Faculty attended the training on Advocacy programme on competition on Law and Public Procurement on 20.12.2022 conducted by Competition Commission of India (CCI), Hyderabad.
- DD (PP) attended the workshop organized by Indian Patent Office and Institution of Engineers, Khairatabad, Hyderabad and given a talk on NIPHM IP technologies for commercialization.
- ASO (VPM) delivered a lecture on vermitechnology to the trainees of NIRD&PR on 06.12.2022 and explained the vermicompost preparation procedure during their visit to NIPHM.
- Faculty has participated in Swachta Pakhwada activities organized in Institute.
- DD (PP) has given a talk/recording of DD Kisan on 16<sup>th</sup> December, 2022 pertaining to the capacity programmes being conducted at NIPHM for different stakeholders especially for the farmers.
- Visits of students, trainees from other institutes and farmers were taken care by the deputed faculty of the division.
- Input dealer courses being conducted across various states.



## वर्ष 2022-23 हेतु राजभाषा कार्यान्वयन समिति की तृतीय बैठक संपन्न

राजभाषा कार्यान्वयन समिति (राकास) की तृतीय बैठक वर्ष 2022-23 हेतु दिनांक 11-01-2023 को डॉ. सागर हनुमान सिंह, भा.डा.से., महानिदेशक, एनआईपीएचएम की अध्यक्षता में हुई। बैठक में महानिदेशक के समक्ष अक्टूबर - दिसंबर, 2022 की तिमाही हिंदी प्रगति रिपोर्ट प्रस्तुत किया गया। उन्होंने उक्त रिपोर्ट की समीक्षा करते हुए संस्थान में आगे भी राजभाषा अधिनियम की धारा 3(3) का अनुपालन शत-प्रतिशत किये जाने के निदेश दिये। उन्होंने एनआईपीएचएम के सभी प्रौद्योगिकी वीडियो को हिंदी में बनाकर एनआईपीएचएम वेबसाइट पर अपलोड करने के निदेश दिये। साथ ही किसानों से संबंधित अन्य प्रौद्योगिकी वीडियो एवं उपयोगी तकनीकी वीडियो का भी हिंदी में अनुवाद किया जाए।

इस तिमाही के दौरान एनआईपीएचएम के वार्षिक प्रतिवेदन 2021-22, वार्षिक लेखा 2021-22 का हिंदी में अनुवाद किया गया एवं "लोक सभा/राज्य सभा" पर रखे जाने वाले पत्रों का भी अनुवाद किया गया और इसे संबंधित अनुभाग को भेज दिया गया। साथ ही फसल पीड़क प्रबंधन में पारिस्थिति अभियांत्रिकी हिंदी वीडियो को एनआईपीएचएम के वेबसाइट पर अपलोड किया गया। पीएचएम प्रभाग से प्राप्त "भारत-जर्मन प्रशिक्षण कार्यक्रम" से संबंधित सभी अंग्रेजी पीपीटी एवं पाठ्यक्रम सामग्रियों को हिंदी में अनुवाद किया गया। महानिदेशक ने निदेश दिया कि अगामी तिमाही (जनवरी से मार्च 2023) में एनआईपीएचएम के अधिकारियों एवं कर्मचारियों के लिए एक दिवसीय हिंदी कार्यशाला का आयोजन किया जाए जिससे कर्मचारियों को हिंदी में कार्य करने के प्रति रुचि एवं कार्यालयीन कामकाज में राजभाषा हिंदी के उपयोग को बढ़ावा दिया जा सके।



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