



रा व स्वा प्र सं
NIPHM

राष्ट्रीय वनस्पति स्वास्थ्य प्रबंधन संस्थान
National Institute of Plant Health Management

<http://niphm.gov.in>

Promoting Plant Health Management
since 2008...

QUARTERLY
Plant Health

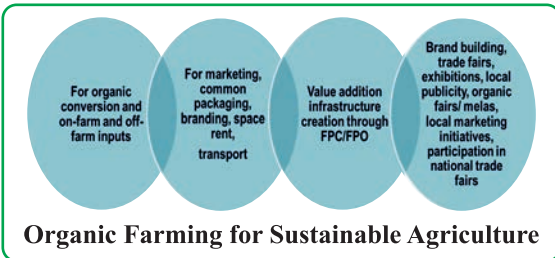
Volume : 10

Issue : 01

NEWS LETTER

January - March, 2020

Theme Article



Special Event



WHAT'S INSIDE

- 3-7 Theme Article on “Organic Farming for Sustainable Agriculture”
- 8-9 Around the World
- 10-13 Special Events at NIPHM
- 14-30 Capacity Building Programmes, Project Activities & Workshops
- 31-32 राजभाषा हिंदी के क्रियान्वयन से संबंधित क्रियाकलाप



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



From the Director General's Desk

Indiscriminate use of synthetic insecticides leads to numerous problems unforeseen at the time of their introduction like acute and chronic poisoning of applicators, farmworkers, and even consumers; destruction of fish, birds, and other wildlife, disruption of natural biological control and pollination, extensive groundwater contamination, potentially threatening human and environmental health, and the evolution of resistance to pesticides in pest populations. Organic farming is one of the effective farming for this millennium which generally goes with the ecologically based pest management practices excluding chemicals in crop production. Organic farming works in harmony with nature. This technique improves the productivity and yield without harming the natural environment as well as the people who live and work in it.

Growing concern among common people for pesticide free food has made growers to shift towards organic farming. Organic farming is gaining importance globally and in India. Globally, 69.8 million hectares is under organic farming with market of \$97 billion dollars. In India organic farming is gaining impetuous in the last two decades. Among the three million organic producers globally, India ranks first with 8.35 lakhs registered producers for export. Around 5.50 lakh hectare is under organic farming for domestic organic certified marketing.

Organic farming mainly emphasizes on use of various organic inputs for plant nutrition and biological agents for pest management with no use of chemicals however, the productivity stands at low compared of fertilizer-pesticide intensive farming. Hence, there is a need to emphasize for synergistic use of complementary management practices to promote soil fertility and plant health through Agroecosystem analysis (AES), Ecological Engineering (EE), Integrated Nutrient Management (INM) and on-farm production of biofertilizers and biopesticides.

COVID-19 pandemic has halted many lives across the world and impact will be multifold on many aspects of human life. Not only industrial sector but also Agriculture and food are also at the brink of huge losses. Amidst the Covid-19 India is the country which is self-sufficient in food grains and the agriculture sector. The economic crisis aroused due to this pandemic will further cause difficulty in the agriculture economy. In this dire situation the technology which we provide for sustainable production is most important. Organic farming, a way of farming where farmers can be self-reliant without depending on external inputs, thus helping in the economic crisis of the farmers. The current issue deals with the importance of organic farming for sustainable agriculture.

महानिदेशक का संदेश

सिंथेटिक कीटनाशक के अंधाधुंध इस्तेमाल होने से कई समस्याएँ जैसे : उपयोगकर्ताओं, खेत में काम करने वाले कामगारों एवं यहां तक की उपभोक्ताओं का तीव्र विषाक्त होना, मछलियों, पक्षियों एवं वन्यजीवों का विनाश, प्राकृतिक जैविक नियंत्रण एवं परागसन में बाधा पहुंचना, व्यापक स्तर पर भूमिगतजल का संदूषित होना, मानव एवं पर्यावरणीय स्वास्थ्य के लिए खतरा एवं कीट आबादी में कीटनाशकों के प्रतिरोध का विकास होता है। इस सहस्राब्दी के लिए जैविक खेती प्रभावी खेती में से एक है जो आम तौर पर फसल उत्पादन में रसायनों को छोड़कर पारिस्थितिक स्तर पर आधारित कीट प्रबंधन प्रणालियों के साथ अनुकूल होती है। जैविक खेती प्रकृति के अनुरूप काम करती है। यह तकनीक प्राकृतिक पर्यावरण के साथ इसमें रहने और काम करने वाले लोगों को नुकसान पहुंचाए बिना उत्पादकता और उपज में सुधार करती है।

कीटनाशक मुक्त भोजन के लिए आम लोगों में बढ़ती चिंता ने उत्पादकों को जैविक खेती की ओर ध्यान केन्द्रित कर दिया है। जैविक खेती विश्व स्तर पर और भारत में महत्व प्राप्त कर रही है। विश्व स्तर पर 69.8 मिलियन हेक्टेयर में 97 बिलियन डॉलर के बाजार के साथ जैविक खेती है। भारत में पिछले दो दशकों में जैविक खेती में तेजी आ रही है। वैश्विक स्तर पर तीन मिलियन जैविक उत्पादकों में, भारत निर्यात के लिए 8.35 लाख पंजीकृत उत्पादकों के साथ पहले स्थान पर है। घरेलू जैविक प्रमाणित विपणन के लिए लगभग 5.50 लाख हेक्टेयर में जैविक खेती होती है।

जैविक खेती मुख्य रूप से रसायनों के उपयोग के बिना पीड़क प्रबंधन के लिए पादप पोषण और जैविक एजेंटों के लिए विभिन्न कार्बनिक आदानों के उपयोग पर जोर देती है, हालांकि उत्पादकता के मुकाबले में उर्वरक-पीड़कनाशी गहन खेती की तुलना में कम है। इसलिए, कृषि परिस्थितिकी तंत्र विश्लेषण (एईएसए), पारिस्थितिक अभियांत्रिकी (ईई), एकीकृत पोषकतत्व प्रबंधन (आईएनएम) और जैव-उर्वरक और जैव-कीटनाशकों के कृषि उत्पादन के माध्यम से मिट्टी की उर्वरता और पौधों के स्वास्थ्य को बढ़ावा देने के लिए पूरक प्रबंधन प्रथाओं के सहक्रियाशील उपयोग पर जोर देने की आवश्यकता है।

कोविड -19 महामारी दुनिया भर में कई लोगों के सामान्य जनजीवन को रोक दिया है और जिससे मानव जीवन के कई पहलुओं पर प्रभाव कई गुना होगा। न केवल औद्योगिक क्षेत्र बल्कि, कृषि और खाद्य भी भारी नुकसान के कगार पर हैं। कोविड -19 के बीच भारत ऐसा देश है जो खाद्यान्न और कृषि क्षेत्र में आत्मनिर्भर है। इस महामारी के कारण पैदा हुआ आर्थिक संकट आगे चलकर कृषि अर्थव्यवस्था में कठिनाई उत्पन्न करेगा। इस विकट स्थिति में प्रौद्योगिकी जो हमें स्थायी उत्पादन के लिए प्रदान करते हैं वह सबसे महत्वपूर्ण है। जैविक खेती, कृषि का एक तरीका है जहां बाहरी आदानों के आधार पर किसान आत्मनिर्भर हो सकते हैं। इस प्रकार किसानों के आर्थिक संकट में मदद मिलती है। वर्तमान मुद्दा में सतत कृषि के लिए जैविक खेती के महत्व से संबंधित है।

Sd/-
(G. Jayalakshmi, IAS)
Director General

Organic Farming for Sustainable Agriculture

-Dr.SreeLathaEdpuganti

Assistant Director-PHM

Dr.SreeLatha E, Assistant Director-PHM, National Institute of Plant Health Management (NIPHM), (An Organization of Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture, Govt. of India), Rajendranagar, Hyderabad - 500 030 (T. S.) INDIA. Ph. No: 9010327879, E Mail: sreelatha.e@gov.in

Organic agriculture has been inspiring people with its ability to create a positive relationship between human beings and the surrounding environment. People have been sensitized towards the preservation of the environment and the importance of quality food for healthy living. The concept of modern organic farming is well defined from its historical origin; modern organic farming is regulated with policies and principles for healthy soil, healthy food, and healthy people. It is focussing on strict monitoring and traceability to protect the rights of all stake holders that include producers and consumers. It excludes the use of synthetic fertilizers, pesticides, and other chemicals and solely depends on the use of organic sources of crop rotation, crop residues, organic wastes, animal manures, bio-fertilizers, bio pesticides, etc., to maintain soil health and crop productivity. An organic production method is supportive of ecological principles and encourages a balanced Pest: Defender relationship through conservation and augmentation of the beneficial insect population to manage pests.

Organic agricultural methods by different nations are regulated and legally controlled based on the standards set by the International Federation of Organic Agriculture Movements (IFOAM), an international organization established in 1972. In a strict sense, there is no one universally accepted definition of organic farming, many international and national organizations defined it for a better understanding of the concept. In 1980, the USDA defined “organic farming as a production system, which avoids or largely excludes the use of synthetic fertilizers, pesticides, growth regulators and livestock feed additives”. FAO defined “Organic agriculture is a production management system, which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and biological activity”. The broad principle of organic farming is the promotion of organic sources for the production and processing of commodities while excluding synthetic chemicals during the entire process.

In India, there are different methods of well documented organic agriculture production systems since ancient times. **Rishi Krishi**, mentioned in Vedas (the religious texts of ancient India) focuses on soil enrichment through the use of Rishi Krishi formulations known as “Amritpani” and virgin soil. **Homa Farming** also has its origin from Vedas and it believes the principle of “healed atmosphere will heal you” and it is an entirely spiritual practice of chanting Sanskrit mantras before a holy fire during “Agnihotra” puja at specific times in the day. **PanchgavyaKrishi** is a farming practice using a special bio-enhancer prepared with main ingredients of five products viz., cow dung, cow urine, cow milk, cow curd, and cow ghee. Panchagavya contains many useful microorganisms to enrich the soil, enhance plant vigor, and to induce resistance towards pests. **Natural farming** emphasizes the use of plant biostimulant “Jivamruta” to ensure high soil biological activity and “Bijamruta” for bio priming of seeds, seedlings, and planting material to raise the healthy crop. **Natueco Farming’s** focus is on ‘Neighborhood Resource Enrichment’ by regeneration of soil with on-farm inputs, improving the root system of plants for maximum absorption of water and nutrients, and maximum harvest of sunlight with stratified layers of plant canopy; it is entirely based on internal management system and excludes external inputs. **Biodynamic Agriculture** aims to treat the farm as a living system that interacts with the environment. The principle of biodynamics is making lively microorganism’s rich compost out of dead material of animals and some special plants that are rich in micronutrients. The biodynamic formulations are very good compost inoculants, bio-stimulants, and immunity boosters.

Even though there were different names but the “Organic farming has its origin in India” and since the “Vedic period” Indian farmers were having “Indigenous Technology Knowledge (ITK)” of healthy soil maintenance and sustainable plant health management. It is the accumulated scientific knowledge passed through generations and practiced in their farms over 40 centuries. Sir Albert Howard, a British botanist was recognized as the father of modern organic farming came to India to study the rich heritage of organic farming in India. He worked at Pusa, Bihar in India, and documented traditional Indian farming practices and regarded them as superior to conventional agriculture. He developed the aerobic composting technique called Indore method at the agricultural research station, Indore. He wrote two well-renowned books “An Agricultural Testament” in 1940 and “The Soil and Health, A Study of Organic Agriculture” in 1947. Since then the concept of well-defined modern organic farming started simultaneously in Asia and Europe and then it has spread worldwide with the efforts of many experts in this field.

The Principles of Organic Agriculture: IFOAM’s definition of organic agriculture is based on four ethical principles to inspire action. Each principle is to be used as a whole as it is articulated through a statement followed by an explanation. **Principle of health** states that organic agriculture should sustain and enhance the health of soil, plant, animal, human, and planet as one and indivisible. **Principle of ecology** states that organic agriculture should be based on living ecological systems and cycles, work with them, emulate them, and help to sustain them. It should attain ecological balance through the design of farming systems, establishment of habitats and maintenance of genetic and agricultural diversity. **The principle of fairness** states the organic agriculture should build on relationships that ensure fairness concerning the common environment and life opportunities. It should be held in trust for future generations and fairness requires systems of production, distribution, and trade that are open and equitable and account for real environmental and social costs. **The principle of care** states that organic agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment.

Components of organic farming: Growing soil organically and keeping it alive with diverse microorganisms through effective management of natural resources is important in organic farming. To **enrich the soil** natural resources that include crop residue, organic and biological fertilizers, and crop rotation are to be used regularly. Pesticide-free habitat enhances biodiversity so abandon the use of chemicals. Avoid excessive tilling and keep the soil covered with a green cover or biological mulch; plant trees and bushes on the bund to **manage the temperature**. Contour bunds, farm ponds, and harvesting water along the slope are important to **conserve rainwater**. Multiple cropping and intercropping that include row crops, bushes, and trees to maintain greenery throughout the year and to **harvest maximum energy from the sun** is a key factor to increase productivity in organic farming. Gaining knowledge on productions of own seed that suits organic production system, and on-farm production of compost, vermicompost, vermivash, liquid manures, biofertilizers, botanical extracts, pest traps, bio control agents and microbial biopesticides for **Self-reliance on inputs** is an important task. **An integrated farming system** with animals, apiculture, and aquaculture provides animal products and also help in ecosystem services through the provision of feces to enrich the soil and other biological activities. The use of **renewable energy sources** such as solar energy, gobar gas, bio-gas, and other eco-friendly mechanisms are important for the sustainability of the organic production system.

Global organic agriculture status and India’s position: The area under organic farming is increasing globally day by day, it was only 11 Mha in 1999 then gradually increased and recorded an area of 69.8 Mha in 2017; i.e. 1% of the total global agricultural land is under organic farming (Fig 1). Globally 181 countries have data on organic agriculture in 2018 whereas only 77 countries were having data in 1999. As per the available statistics, India occupies 8th rank in terms of the area under the world’s organic agricultural land and it is in 1st place among global producers with 8,35,000 registered producers (Table 1 & 2). Globally 2.9 million organic producers were reported in 2018 and the number is increasing every year; among the global producers more than three quarters are in developing countries (Source: FiBL & IFOAM Year Book 2019). The country with the largest land under organic cultivation i.e. Australia has been not placed in the top 10 countries concerning the number of produces because of its greater landholding size of the individual producer. The marketing share of organic products in many countries is about 1% of total food sales, but the organic share of fruit sales in most countries is 35%. Consumers prepared to pay more than 20% over conventional products to organic products. The global organic fruits and vegetable market is estimated to be worth 62.97 billion USD by 2020 (Source: FiBL& IFOAM, 2016).

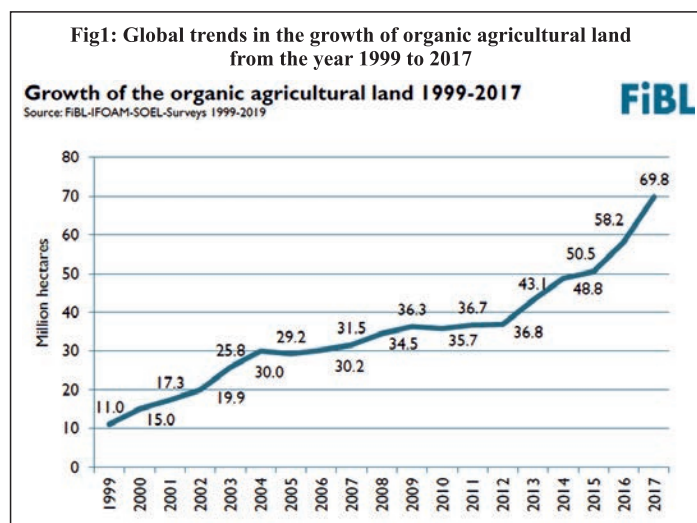


Table 1: Area (M ha) under organic cultivation in the top 10 countries of the world

S.No	Country	2015	2016	2017	2018
1	Australia	22.67	27.15	35.65	35.7
2	Argentina	3.07	3.01	3.39	3.6
3	China	1.61	2.28	3.02	3.1
4	USA	2.03	2.03	2.03	2.6
5	Spain	1.97	2.02	2.08	NA
6	Italy	1.49	1.80	1.9	NA
7	Uruguay	1.31	1.66	1.88	NA
8	India	1.18	1.49	1.78	1.94
9	France	1.38	1.54	1.74	NA
10	Germany	1.09	1.25	1.37	NA

Table 2: Number of producers registered under organic cultivation in the top 10 countries of the world in the year 2017

S.No	Country	Total No. of producers
1	India	8,35,000
2	Uganda	2,10,354
3	Mexico	2,10,000
4	Ethiopia	2,03,602
5	The Philippines	1,65,994
6	Tanzania	1,48,610
7	Peru	91,771
8	Turkey	67,879
9	Italy	64,210
10	Paraguay	58,258

Source: The world of organic Agricultural Statistics and emerging trend, 2019 (FiBL and IFOAM organics International)

Table 3: Global vs. Indian Organic exports during the years 2011 to 2018.

Year	Global export (US\$ billion)	Indian Export (Crores)
2011	5.4	699
2012	65.0	1866
2013	71.5	2107
2014	79.0	2428
2015	88.1	2099
2016	89.7	1976
2017	88.0	2478
2018	90.0	3453
2019	97.0	5151

The organic products exports from India are increasing constantly and it has reached INR 5,151 crores in 2019.

In India total area registered with the National Programme for Organic Production for organic cultivation as of 31st March 2019 is 3.56 million hectares. This includes 1.94 million hectares of cultivable area and 1.49 million hectares for the collection of wild harvest. As of 31st March 2018, the total area under organic certification process is 3.36 million hectares for the year 2017-18. This includes a 50% cultivable area and another 50% for wild harvest collection. There is an increase in the cultivable area of 0.16 Mha from 2018 to 2019. Among all the states, Madhya Pradesh is on the top of the list with the largest area under the cultivation of certified organic farming followed by the Maharashtra, Karnataka, Uttar Pradesh, and Rajasthan. In 2016, Sikkim set the record of converting its entire cultivable land for the production of organic food products.

The Government of India initiated the National Programme for Organic Production (NPOP) in the year 2001. It is being implemented by Agricultural and Processed Food Products Export Development Authority (APEDA), Ministry of Commerce and Industry, Government of India, under the Foreign Trade & Development Act (FTDR Act). APEDA acts as the secretariat of NPOP with various activities of surveillance, and monitoring of certification bodies, review of standards, thrive for harmonization and conformity assessment with importing countries, promotion of India organic logo, and export. The NPOP standards were recognized by the European Commission, Switzerland, and USDA for unprocessed plant products as equivalent to their country standards. NPOP is applicable for individual farmers, groups of farmers under the Internal Control System (ICS), processor, trader, handler, and exporter. It Provides end-to-end traceability backed with transaction certificate whenever the material changes hands among multiple operators. It starts from the farm and traces with unique ID until the product is packed and supplied to the consumer.

The 3 years export statement by APEDA indicates the constant growth in organic products exports from India (Source: Statement generated from APEDA).

Table 5: Three Year Statement of Products Exported From India by APEDA

S.No	PRODUCT	2016-17		2017-18		2018-19		% age growth on previous year in (₹)	%age share in 2018-19
		Qty MT	Rs. Crore	Qty MT	Rs. Crore	Qty MT	Rs. Crore		
1	FLORICULTURE	33308.95	1069.46	35166.59	1178.21	35877.71	1420.64	20.58	1.09
2	FRESH FRUITS & VEGETABLES	4058842.43	9795.92	2899525.38	8928.38	3588423.09	10237.2	14.66	7.85
3	PROCESSED FRUITS AND VEGETABLES	958103.91	7833.74	1055893.85	8291.83	1196039.92	9196.35	10.91	7.05
4	ANIMAL PRODUCTS	1886691.27	29369.31	944514.44	29813.69	1999084.45	30632.97	2.75	23.49
5	OTHER PROCESSED FOODS	2578113.64	20041.92	476365.95	19570.02	2747773.54	22059.39	12.72	16.92
6	CEREALS	11756393.7	40316.41	13891169.2	52064.52	13517491.7	56841.28	9.17	43.59
	Grand Total	21271453.9	108426.7	22302635.4	119846.7	23084690.4	130387.8	8.8	100

(Source: DGCIS annual data three year export statement of APEDA products)

Table 4. The area under organic registration in India

Year	Cultivated area (m ha)	Wild harvested area (M ha)	Total area (m ha)
2017-18	1.78	1.78	3.36
2018-19	1.94	1.49	3.56

(Source: APEDA)

Fig2: Organic products exports from India during the years 2011 to 2018.



Rashtriya Krishi Vikas Yojana (RKVY) was launched as a central sector scheme in 2007 to to achieve 4% annual growth in agriculture and it provides support to various kinds of interventions in the agricultural sector including organic farming. **The mission for Integrated Development of Horticulture (MIDH)** is a centrally sponsored scheme for the holistic growth of the horticulture sector covering fruits, vegetables, root & tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashew, cocoa, and bamboo. Under MIDH, the Government of India (GOI) contributes 60%, of the total outlay for developmental programs and 40% share is contributed by State Governments. In the case of the North-Eastern States and the Himalayan States, GOI contributes 90%. **National Horticulture Mission (NHM)** Scheme was launched to assist the farmers and farmer groups for the adoption of organic farming, setting up vermicomposting units, and to produce certified organic products. **Macro-management of Agriculture (MMA)** is meant for support of integrated nutrient management in conjunction with organic sources of nutrients Farm Yard Manure (FYM), compost, vermicomposting, bio fertilizers, etc. **National Project on Management of Soil Health and Fertility (NPMSHF)** assists in promoting the use of Integrated Nutrient Management (INM) through organic manures under the project. **Macro-management of Agriculture (MMA)** creating awareness about organic farming through various extension activities such as exhibitions and fairs, Agri-Clinic and Agri-Business Centers (ACABCs), mass media support activities, radio talks, Kisan Melas, etc. **Initiative for Nutritional Security through Intensive Millets Promotion (INSIMP)** programme apart from promoting millets it is also promoting Phosphate Solubilising Bacteria (PSB) and *Azotobacter* culture as part of a technology demonstration.

Paramparagat Krishi Vikas Yojana (PKVY): Government of India launched PKVY in 2015, as an extension of Soil Health Management (SHM) under the Centrally Sponsored Scheme (CSS) of National Mission on Sustainable Agriculture (NMSA) with funding pattern in the ratio of 60:40 by the Central and State Governments respectively. In the case of North Eastern and the Himalayan States, Central Assistance is provided in the ratio of 90:10 (Center: State) and for Union Territories, the assistance is 100%. It operates at the national level under the chairmanship of Secretary, Agriculture, Cooperation & Farmers Welfare (AC&FW). The Executive Committee (EC) is under the chairmanship of additional secretary (INM), DAC&FW. INM Division in DAC&FW implements along with the National Center of Organic Farming (NCOF). NCOF main centre at Ghaziabad and its eight Regional Centers at Bangalore, Bhubaneswar, Panchkula, Ghaziabad, Imphal, Jabalpur, Nagpur, and Patna conducts technical training to state government officers, monitor the functioning of support agencies and group activities of PGS certification. National Project Management Team (NPMT) constituted at the National level will function under the leadership of the JS (INM) for proper functioning.

State department of agriculture or an agency nominated by the state government shall implement this scheme at the state level. The State Level Executive Committee (SLEC) works under the chairmanship of Agriculture Commissioner/Principal Secretary of the state government. State Project Management Team (SPMT) includes consultants and technical assistants work at the state and district level for cluster formation and management of the entire program. They also work for PGS certification endorsement, physical verification, and issue of certificates including sample collection and analysis for residue analysis.

District level executive committee works under the chairmanship of the district collector. District level project management team (DPMT) will monitor the program. INM division intimate to state by end of February every year, then the state government will submit applications by the first week of April every year. Funds will be released to states by 1st week of May every year. Incentives to farmers will be provided as Direct Benefit Transfer (DBT). “JaiVik Kheti Portal” is a dedicated portal for organic farming acting as both a piece of knowledge as well as a marketing platform. It is in convergence with other Central Sector Schemes that include Mission for Integrated Development of Horticulture (MIDH), National Food Security Mission (NFSM) and with schemes of other ministries viz., Ministry of Food Processing Industries (MOFPI), Small and mid-size enterprises SMEs, Ministry of rural development, etc.

Participatory Guarantee Systems (PGS-India) secretariat is the National Center of Organic Farming. PGS certification is only applicable to the domestic market as an alternative to NPOP. It applies to only groups for farm operations. PGS-India covers standards for crop production, animal production, food processing, handling, and storage, etc. The area under PGS India certification has raised from 6,064 ha in 2012-13 to 1,43,817 ha by the end of March 2017. In the year 2017 the PKVY scheme aimed to form 10000 clusters and to cover an area of 5 lakh ha over a period of the next three years. It has achieved the target with 813919 approved farmers for certification with an area of 549968.6 Ha offered for organic farming as of April 2020. (<https://pgsindia-ncof.gov.in/>).

The government of India is also promoting Organic farming by Village Producers’ Organisations (VPOs) in large clusters, preferably of 1,000 hectares each. Women’s Self Help Groups (SHGs) will also be encouraged to take up organic agriculture in clusters under the National Rural Livelihood Programme. A group shall comprise minimum 20 farmers and 25-50 such groups covering 500-1000 ha area shall constitute one “Cluster” and the individual farmers, farmer producer companies (FPCs) and Farmer producer organizations (FPOs) shall be eligible for the following incentives as per their eligibility:

The success of organic cultivation depends on efficient plant health management by using seeds and planting material suitable for organic farming; diversified crop production using multi-cropping and intercrops; water conservation through judicious use of water and harvesting rainwater; recycling of biomass to maintain soil fertility; proper nutrient management with biodegradable materials of plant, animal and microbial origin; Pest and disease management with preventive methods such as the use of trap crops and cover crops, physical, mechanical and biological methods. National Institute of Plant Health Management (NIPHM), under the Department of Agriculture & Co-operation, Government of India aims to develop a committed and competent cadre of professionals to promote sustainable plant health management in India.

Plant health in any farming system is influenced by several biotic and abiotic factors such as soil, nutrients, insect pests, diseases, weeds, climate, etc. Particularly in organic farming, the chemical fertilizers and pesticides are excluded so there should be more focus on non-synthetic sources of nutrition and pest management. NIPHM is emphasizing for synergistic use of complementary management practices to promote soil fertility and plant health through universally recognized sustainable strategies of agroecosystem analysis and ecological engineering, integrated nutrient management, and rhizosphere engineering. NIPHM is offering capacity-building programs intending to update the knowledge, skills, and management strategies of recent trends in farming. The curriculum was developed for training participants from various international and national organizations viz., government officials, ICAR scientists, KVK officials, state agriculture universities teachers and scientists, agriculture department officials to gain knowledge through hands-on training in lab and field to take it further for adoption in their respective areas.



The training offered on on-farm production of permitted and recommended bio fertilizers in organic farming that include *Azolla*, blue-green algae, Vesicular-Arbuscular Mycorrhiza (VAM), *Rhizobium* for inoculation of legumes, phosphate solubilizing bacteria, potash mobilizing bacteria, and zinc solubilizers are highly useful in the organic farming system. Organic farming excludes chemical pesticides to control pests, so alternate strategies available in organic farming are ecological pest management and the use of biological control agents including microbial bio pesticides.

The training programs organized for Plant Health Management (PHM) by NIPHM mainly focus on the promotion of non-pesticidal management of insect pests prioritizing the suppression of insect pests by using bio-control agents and cultural practices that favour the conservation of the bio-control agents. NIPHM maintains its farm as state of art organically maintained ecological engineering field for demonstration and training of conservation of natural enemies for pest management. In Agro Ecosystem Analysis (AES) based PHM the whole Agro-Ecosystem, plant health at different stages, built-in-compensation abilities of the plants, pest and defender population dynamics, soil conditions, climatic factors, and farmer's experience were also considered for decision making on pest management. The training on on-farm production of biocontrol agents and microbial bio pesticides includes the production of various biocontrol agents' viz., parasitoids and predators, and biopesticides for disease management like *Trichoderma* and *Pseudomonas*, for insect pest the entomopathogenic fungi *Beauveria bassiana*, *Metarhiziumanisopliae* and *lecanicillium lecanii*, nuclear polyhedrosisvirus and entomopathogenic nematodes that are useful for pest management in organic agriculture.

All the training programs of production protocols and quality assessment are knowledge and skill-oriented and the trainees get hands-on training in laboratories. NIPHM is involved in multiparous activities like capacity building programs, on-campus/off-campus education programs, adaptive research, workshops, consultancy services, brainstorming sessions, village adoption programs, plant health clinics, biocontrol agents production and mother culture supply, bio fertilizers production and mother culture supply, pest diagnostic center, to promote sustainable agriculture through popularising production methodology, and entrepreneurship development in biocontrol agents production that are most helpful in organic farming.

NIPHM is also conducting an exclusive certificate course on "Plant Health Management in Organic Farming" that is conducted in three parts as lectures, practical and hands-on experience in a farmer's field for project report preparation and evaluation on **Plant Health Management aspects of Organic Farming**.

Challenges to promote organic farming in India: Non-availability of organic inputs is the main hurdle for adopting organic farming, while chemical inputs are easily available in the markets. Lack of knowledge on rules and regulations of organic farming, certification procedures, and market information are constraints. Lack of awareness on organic production procedures and terminology used for online documentation is also a constraint

Way forward for the increasing area under organic farming: Identification of crops for cultivation by organic farmers in an area and guidance on suitable varieties and production procedures is the most important task. Training farmers on on-farm production technologies of permitted inputs to attain self-sufficiency and to reduce the cost of cultivation. Guidance to farmers on certification procedure and making available the applications for certification and literature in local language for easy and better understanding is also important. Capacity building programs for plant health management in organic production systems to improve productivity and sustainability is of prime importance.

References:

- <https://www.ifoam.bio/en/news/2019/02/13/world-organic-agriculture-2019>
- <https://www.ifoam.bio/en/system/files/fibl-press-release-world-2019-02-13-english.pdf>
- http://apeda.gov.in/apedawebsite/organic/Organic_Products.htm
- <https://www.downtoearth.org.in/news/agriculture/survey-pegs-1-5-of-world-s-farmland-under-organic-cultivation-69350>
- <https://www.globenewswire.com/news-release/2018/10/16/1621990/0/en/U-S-Boasts-6-5-Million-Acres-of-Organic-Certified-Land-with-460-New-Operations-in-2018.html>
- https://www.business-standard.com/article/economy-policy/organic-food-exports-surge-certification-remains-a-major-issue-118032800261_1.html
- <https://www.organic-world.net/yearbook/yearbook-2020/press-releases.html>
- <https://niphm.gov.in/>

ORGANIC CERTIFICATION AND PROMOTION STRATEGIES

Dr. Jesu Rajan S (SO-ENTO), Dr. K. Damodara Chari (ASO-MICRO) and Dr. Vijaya Raghavendra SRF

Organic farming based on "Nature can provide for everyone's need but not for greed"

-Mahatma Gandhi

Organic farming: Organic farming is mostly defined as the stoppage of synthetic inputs and their replacement by organic alternatives *i.e.* use of organic manures and natural methods of plant protection instead of using synthetic fertilizers/pesticides. But this is not true. However, organic farming may be a far deeper concept than a mere non-chemical approach. In a real sense, it refers to a comprehensive approach towards improvement of both health of underlying productivity of the soil and plant resulting in the enrichment of the surrounding ecology; which may be a pre-requisite criterion for sustainable agriculture.

Organic farming Vs. conventional farming: Organic farming is comparatively small-scale, with independent operations, will not use purchased fertilizers and other inputs; low mechanization of growing and harvesting process often local, direct to consumer. Conventional farming is large-scale, often owned by or economically tied to major food corporations intensive chemical programs and reliance on mechanized production, using specialized equipment and facilities extensive, with products distributed across large areas and sold through high-volume outlets. It relies primarily on local, renewable resources.

Types of organic farming :

- **Pure organic farming:** It includes the use of organic manures, organic preparations, biofertilizers & biopesticides with complete avoidance of inorganic chemicals and pesticides.
- **Integrated Farming:** It involves Integrated Nutrient Management (INM) and Integrated Pest Management (IPM).
- **Integrated Farming Systems:** In this type, local resources are effectively recycled by involving other components such as poultry, fish pond, mushroom, goat rearing, etc. apart from crop components. It is a low input of organic farming.

Accreditation of organic products in India: The national program for organic production (NPOP) was implemented by agricultural and processed food products export development authority (APEDA) in 2001. The standards made by NPOP have been developed under guidelines of international organic production standards such as CODEX and the International Federation of Organic Agricultural Movements (IFOAM). The NPOP standards for production and accreditation system are recognized by the Commission and Switzerland as like their country standards

Certification: Certification through these boards and agencies has been made compulsory, particularly for the export market, as the Government of India has issued a public notice according to which no organic products may be exported unless they are certified by inspection and certifying agency duly accredited by one of the accreditation agencies designated by the Government of India. Problems related to certification, as an example, a delay of three-years (conversion stage), often constrain small landholders from adopting organic farming. The certification is important to authenticate organic produce and to validate the worth margin within the market.

List of accredited certifying and inspection agencies in India

- Association for promotion of Organic Farming (APOF) Bangalore
- Indian Society for Certification of organic production (ISCOP)- Tamil Nadu
- Indian Organic Certification Agency (INDOCERT)- Cochin, Kerala
- Skal Inspection and Certification Agency- Bangalore
- IMO Control Pvt. Ltd.- Bangalore
- Ecocert International -Aurangabad
- Bioinspectra -Cochin, Kerala
- SGS India Pvt Ltd- Gurgaon
- International Resources for Fair Trade (IRFD)- Mumbai
- National Organic Certification Association (NOCA)- Pune

Constraints faced by the Indian organic growers

In spite of efforts from government and other agencies, subsidies and other schemes, area under organic farming is still less than 1% of total cultivated area in India.

1. **Nonexistence of supportive policy** - The most important constraint felt in the progress of organic farming is the inability of the government to take a firm decision to promote organic agriculture.
2. **Loss of crop yield** - Farmers adopting conventional organic farming face huge losses *i.e.* up to 71%, in the initial years (Savage, 2016). Also, the time required to achieve crop sustainability under the present organic cultivation system is still unknown and thereby resulting in high cultivation cost and economic unviability.
3. **Non-achievement of the expected quality** - Most of the organic produce fail to achieve the desired intrinsic and extrinsic qualities as expected under organic cultivation, and thereby lose the consumer base.
4. **Failure of organic pest management** - Following the conventional approach of pest management utilizing weaker organic pesticides cannot resolve the pest/disease issues in organic agriculture. And this forms the major reason for crop failure under organic.

5. **Shortage of biomass and livestock** - Conventional farming practices increased mechanization and decreasing per capita land holding has led to the scarcity of bioresources for compost production that forms a major bottleneck towards large scale organic conversion.
6. **Lack of quality seeds** - There is a large vacuum in the availability of quality organic seeds and forms a major constraint for the farmers willing to adopt organic farming.
7. **Lack of storage, transport & organized organic marketing facilities** - The challenge posed by inadequate agricultural infrastructure and cold storage facilities translates to a loss of productivity due to spoilage. Additionally, poor road infrastructure, especially in the hilly States, results in poor and delayed connectivity to farmer markets.
8. **Lack of awareness and guideline for organic farming** - There is a lack of adequate research and development backup as well as training related to Organic Farming in India.
9. **Inability to meet the export demand** - According to a study by Garibay and Jyoti (2013), Indian organic exports face different constraints viz. high price expectations concerning quality, inconsistent quality, and residues, time-consuming and complicated paperwork, etc. as a result of the export demand is left unattended.
10. **Complexity and high cost of the organic certification system** - Complexity regarding organic certification, high cost, as well as time frame (3 years in most cases), forms one of the major constraints for small landholders.
11. **Scarcity and high cost for quality analysis** - Economic facilities are scarce for the quality assessment of organic inputs and organic produce. As a result, there is a lack of quality mapping of most of the organic produce (especially for the domestic market), which opens up the scope for spurious products in the niche organic market and thereby leads to a decrease in the consumer interest towards organic products.

Strategies for Promoting Organic Farming

- **Development of cropping system/intercropping/mixed farming based on organic farming:** Development of suitable organic farming system and practices in different agro-climatic and farming situation. There should be region-specific particularly in rainfed areas because in rainfed areas are the limited scope of chemical fertilizer. Development of packaging and practices of various cropping system/intercropping/mixed cropping with high-value crops based on organic inputs
- **Technology for the promotion of organic farming:** Recent development technology like an efficient use of crop residue, recycling of residue of dual-purpose legume, use of biomass of some of nonconventional shrubs and tree, biogas slurry and vermicompost for nutrient supply and use of bio-agent and predators for controlling pest and disease make organic farming comfortable promotion in selected areas and high-value crops.
- **Accreditation of certified agencies:** Certification is a process of labeling in a term that denotes products that have been produced following standards during food production, handling, processing & marketing stages and certified duly by a certification body. Certification and regulatory mechanism intended to assure quality and prevent fraud. For organic producers, certification identifies suppliers of products approved for use in certified operations.

Role of the Institute in promoting Organic Agriculture: NIPHM is having an area of 3.5-acre cultivable land which is used as an instructional farm for the trainee officers and farmers to strengthen the farm and demonstration activities like farm layout for IPM demonstration and display of IPM and non-IPM model blocks, display, and demonstration of micro irrigation systems known, IPM practices like cultural, physical, mechanical, behavioral and biocontrol in sustainable crop management. Demonstration of soil health management through addition of organic amendments, use of compatible green manure crops, use of waste decomposer to maintain bio decomposing block for recycling of farm waste, use of microbial consortia as crop booster and protector. Laying out for demonstration model of ecological Engineering, Agro Ecosystem Based Plant Health Management for crops.

NIPHM has planned and implemented courses with objectives of development of skills in rural youths in areas of organic farming to create awareness and promotion of sustainable organic farming, to empower rural youths at village level with professional skill and knowledge for organic farming, to develop a pool of master trainers to train the farmers in organic farming at the village level. to impart knowledge and skills to organic growers, stakeholders, and entrepreneurs for organic certification, packaging, marketing economics analysis. The course will be conducted with inputs of theory, practical and hands-on experience in a farmer's field on plant health management aspects of organic farming.

References :

- P. Meena, V. D. Meena, M. L. Dotania and N. K. Sinha. 2013. Potential Areas and Strategies for Promoting Organic Farming. *Popular Kheti*. Volume -1, Issue-4 (October-December).
- Garibay, S.V., Jyoti, K., 2013. Market Opportunities and Challenges for Indian Organic Products. Research Institute of Organic Agriculture (FIBL) and ACNielsen ORG-MARG. Available at <http://www.orgprints.org/2684/1/garibay-2003-Market-Study-India.pdf>.
- Savage, S., 2016. USDA data on 370 crops: Why organic farming has lower yields. https://www.vajiramandravi.com/pdf_upload/new/Kurukshetra-Summary-May-2019.pdf.
- https://www.ijrrjournal.com/IJRR_Vol.7_Issue.2_Feb2020/IJRR005.pdf.
- <https://www.organicwithoutboundaries.bio/2019/02/28/organic-agriculture-statistics-book-2019/>.
- <https://www.ifoam.bio/en/news/2019/02/13/world-organic-agriculture-2019>.

1. International Workshop (GCRF):

Second meeting sponsored by GCRF Networking grants was organized at United Kingdom from 7th to 11th January, 2020 and three officers from NIPHM, namely Smt. G. Jayalakshmi, Director General, NIPHM, Dr. Alice R P Sujeetha, Director-Plant Biosecurity and Dr. K. Susheela, Scientific Officer (PRA), Plant Biosecurity have attended the same. The delegates visited three institutions: Fera Science Ltd., York, England; Science Advice for Scottish Agriculture (SASA), Edinburgh, Scotland; and the Faculty of Natural Sciences, University of Stirling, Stirling, Scotland.



2. Workshop on “Plant Health Management in Fruit and Vegetable Crops: Advances & Challenges”

A two days workshop on “Plant Health Management in fruit and Vegetable Crops: Advances & Challenges” was organized at National Institute of Plant Health Management, Hyderabad from 4th -5th March, 2020. This workshop was assisted/ sponsored by National Horticulture Board under the component of Organization/Participation in Seminar/symposia/ workshop for promotion of horticulture in the scheme on “Technology Development and Transfer for promotion of Horticulture”. The programme was conducted for NHB/NHM, Farmers/Growers dealing with Horticulture crops. Total 101 NHB beneficiaries/ growers/framers and 13 horticulture officers have attended the workshop.



3. National Workshop on Farm Mechanization

A two day workshop on 'Farm Mechanization for small and marginal farmers was organized by PHE division during 5th and 6th March 2020. Around 30 participants across the country participated in the programme. The intention of the programme was to find the mechanization level of various farming activities, gaps in mechanization in area / crop, need of popularization of machines in specific crops and areas and to arrive at various strategies in improving the mechanization level. Director of Southern Farm machinery Testing and Training Institute (SRFMPTI),

Dr. P. P. Rao was the Chief Guest during the workshop. In his lecture on farm mechanization strategies, he emphasized the need of proper testing of machinery for monitoring and up keeping the quality of machines. He elaborated the testing facilities across India and emphasized the need of more testing centers to cater the need.

There were 6 sessions of presentations by participants, where the various machines developed and promoted across India were depicted. It was seen that some of the machines though found suitable in some areas are not tried and tested other areas. Hence it was decided to identify a few machines, which are ideal in operation for the purpose of promotion and adoption by farmers in areas where they are not popular. NIPHM shall collaborate with the concerned Institute / University to



National Workshop on Farm Mechanization

coordinate and popularize the machines through their village adoption programmes / farmers outreach. Machines were identified crop wise and area wise and it was agreed to spare the machines by various centers for demonstration cum custom hiring. A follow up workshop will analyse the actions planned and based on which additional machines would be identified for popularization.

4. Projects:

1.DAC Project (Study on impact of indiscriminate use of chemical fertilizers and pesticides)

Proceedings of the 8th Review meeting of the project were communicated through email to all the Principal Investigators of the project. Compilation of EIQ data for the pesticides used in paddy in all four centres during 3 *rabi* seasons was done. Financial statement till 31.1.2020 of the budget released during *khariif* 2019-20 to all the Universities was obtained and forwarded to the Accounts section. Compilation of EIQ data for the pesticides used in Brinjal at two centres during 3 *rabi* seasons was done and communicated to Dr. TVK. Singh. Tables on fertilisers dosage used by the farmers in paddy and Brinjal during 3 *rabi* seasons was compiled and communicated to Dr. TVK. Singh. Compilation of EIQ data for the pesticides used in cabbage in two centres during 3 *rabi* seasons was done and communicated to Dr. TVK. Singh. Tables on fertilisers dosage, insect pests of *rabi* 2016-17, varieties table in cabbage in two centres during 3 *rabi* seasons was done and communicated to Dr. TVK. Singh. Compilation of EIQ data for the pesticides used in tomato in one centre during 3 *rabi* seasons was done and communicated to Dr. TVK. Singh. Tables on fertilisers dosage, insect pests of *rabi* 2016-17, varieties table in tomato in one centre during 3 *rabi* seasons was done and communicated to Dr. TVK. Singh. Ppt of DAC project activities was prepared and communicated for EC meeting. Compilation of EIQ data for the pesticides used in paddy crop during 2 *khariif* seasons at 6 centres was compiled. Compilation of EIQ data for the pesticides used in Brinjal crop during 2 *khariif* seasons at 2 centres was compiled. Brief report on DAC project progress during *Khariif* 2019-20 was prepared and submitted. General correspondence with the PIs of the project regarding the missing data in all the reports sent during 3 *rabi* seasons.

5. AICRP Biocontrol :

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

1. Name of the project: Studies on biodiversity of natural enemies in Maize ecosystem

In-Charge: **Dr.Jesurajan, SO (Ento)**

Salient achievements during the reporting period: observation on Biodiversity of Natural Enemies is in progress. Observed: 1.stem borer incidence. 2. FAW damage in Maize field. 3. Predatory coccinellid beetles, spiders, Hoverflies, etc.

2. Name of the Project: Evaluation of NIPHM white media for the production of *Nomuraearileyi* (*Metarhiziumrileyi*) NIPHM MRF-1 strain for management of Maize Fall Armyworm (*Spodopterafrugiperda*)

In-charge: **Mrs.N.Lavanya, SO(BP&BC)**

- Observation of *Nomuraea rileyi* inoculated in NIPHM white media and SMYB media
- Results of the quality analysis of *Nomuraea rileyi* produced in 2% NIPHM white media were taken
- Observation of *Nomuraea rileyi* inoculated in NIPHM white media and SMYB media
- Results of the quality analysis of *Nomuraea rileyi* produced in 2% NIPHM white media were taken
- Microscopic observation of colonies formed in CFU plates
- Quality analysis of *Nomuraea rileyi* inoculated in NIPHM white media in petri plates
- Microscopic observation of colonies formed in CFU plates

3. DPMP Project :

- The report of post-project evaluation data from MANAGE is checked, submitted to the competent authority and has got approved for printing by MANAGE and the reports from NIPHM are being worked on for compilation. The final detail report of project was being worked. DPMP books printed were submitted to competent authority.

6. Exhibitions /Fairs:

1. NATIONAL HORTICULTURAL FAIR (NHF) - 2020 AT ICAR-IIHR, BANGALORE FROM 05.02.2020 TO 08.02.2020

NIPHM participated in NHF – 2020 at ICAR-IIHR, Bangalore during 05.02.2020 to 08.02.2020. In this exhibition exhibited technologies developed by NIPHM and activities of institute in the stall are mentioned below:

AESA Poster, Ecological Engineering Poster and Model, *Corcyra* & Parasitoids specimens Biofertilizers samples, *Trichoderma* & *Pseudomonas* samples, Predators specimens, Fruit fly traps, Engineering Divisions Posters , Plant biosecurity Divisions Poster, VPM Divisions Posters Pesticide Management Divisions Posters, NIPHM Folders and Pamphlets of NIPHM technologies. In the exhibition explained technologies to visitor's viz., delegates, scientist, farmers, school students, DESI training members, women farmers and different organization members.



7. Polyhouse :

- For the demonstration of the Polyhouse disease and insect management in different vegetables and flower plant cultivation, NIPHM proposed the Polyhouse construction. For the polyhouse construction at NIPHM, a committee was formed with the experts from IIHR, IIOR, and NIPHM. The specifications of polyhouse were finalized and the tender was called for the construction work. Alice Biotech Pvt. Ltd. has got the approval for construction of polyhouse and the construction was completed. The NIPHM staff (SO-ENTO, AD-PHM) and committee members inspected the polyhouse and discussed the material to be required for the polyhouse management.
- The polyhouse constructed was checked by PJTSAU Dr. ManoharRao Head. Dept of Horticulture for the certification along with the committee members of polyhouse and later the beds were prepared in the polyhouse in one bay total 7 beds prepared and the sowing of vegetable seeds palak, amaranthus, coriander was done in the polyhouse.



Newly constructed polyhouse at NIPHM

Plant BioSecurity Division:

The Plant Biosecurity Division has organized following training programmes during the month of **January - March, 2020**.

Name of The Programme	Duration	Date	
		From	To
On campus training programmes (Officers)			
Stored Grain Pest Detection, Identification, & Management	5 Days	27.01.2020	31.01.2020
Phytosanitary treatments (MBr& ALP)	15 Days	03.02.2020	17.02.2020
Integrated Vertebrate Pest Management	21 Days	06.02.2020	26.02.2020
Fruitfly: Surveillance and Management	5 Days	17.02.2020	21.02.2020
Plant Quarantine National Regulations & Procedures	5 Days	24.02.2020	28.02.2020
Online tools for Plant Protection	3 Days	02.03.2020	04.03.2020
Forced Hot Air Treatment (FHAT)	5 Days	09. 03.2020	13.03.2020
Off campus Training programmes (Farmers/Officers)			
Rodent Pest Management at Veppanthattai, Perambalur District, Tamil Nadu	1 Day	25.01.2020	
Farmers training at KVK, Latur , Maharastra	2 Days	27 th -28 th January, 2020	
Plant Quarantine Procedures for Export of Agricultural Commodities at Dharmapuri, Tamil Nadu	1 Day	30.01.2020	
Stored grain pest identification and management, Srikakulam, JDA office, FTC, Andhra Pradesh	1 Day	03.02.2020	
Rodent Management, Srikakulam , Andhra Pradesh	1 Day	04.02.2020	
Fruitfly management in Mango, Rajam, Srikakulam, Andhra Pradesh	1 Day	05.02.2020	
Low cost bottle trap for fruit fly management in citrus and guava orchards, Etawa , Kota, Rajasthan	1 Day	17.02.2020	
Low cost bottle trap for fruit fly management in citrus and guava orchards, Bhawani Mandi, Kota, Rajasthan	1 Day	18.02.2020	
Low cost bottle trap for fruit fly management in citrus and guava orchards, KVK, Jhalawar, Kota, Rajasthan	1 Day	19.02.2020	
Low cost bottle trap for fruit fly management in citrus and guava orchards, KVK, Bundi, Kota, Rajasthan	1 Day	20.02.2020	
Safe Practices for Phosphine fumigation at Ongole, Andhra Pradesh	3 Days	27 th - 29 th February, 2020	
Vertebrate pest management for agricultural extension officers of Arunachal Pradesh	5 Days	02 nd - 6 th March, 2020	

1. DETAILS OF TRAINING PROGRAMMES (On Campus)

- a. Stored Grain Pest Detection, Identification, & Management:** A Five days training programme from 27th to 31st January, 2020 was organized and 59 participants from get trained in stored grain pest detection, their identification and management practices. The participants learnt inspection & sampling methods to detect insect pests & identification of different stored grain insect pests by using various identification keys and online tools. The participants get acquainted with importance of specific pests which hamper the exportable commodities from India and use of approved fumigants for quarantine purposes *i.e.* Methyl bromide and Phosphine.
- b. Phytosanitary Treatments (MBr& ALP):** Fifteen days programme during 3rd- 15th February, 2020 was organized and 39 participants from private sector attended the programme at NIPHM. The participants got familiarized with physical and chemical properties of Phosphine and Methyl bromide, safety precautions to be followed while handling fumigants, mode of action of fumigants, principles of fumigation, monitoring the fumigant concentration, appropriate use and maintenance of fumigants and safety equipments. The participants were made to understand the guidelines laid in NSPM-11, 12 (MBr fumigation) and NSPM-22 (Phosphine fumigation) to conduct appropriate fumigation procedures as well as the accreditation procedure of fumigation operators prescribed by the DPPQ&S. The trainees gained hands-on practical experience in creating gas-tight enclosure, laying gas supply and monitoring lines, use of vaporizer, fan, leak detector and gas concentration monitor.



Practical Session at NIPHM

- c. Integrated Vertebrate Pest Management:** A 21 days programme on Integrated Vertebrate Pest Management to practice different measure to manage at various levels was organized at NIPHM from 6th –26th February, 2020 .The programme was attended by 23 officers and they got skills in integrated vertebrate pest management practices. To give practical exposure the participants were also taken to field exposure to get accustomed with practices of preventive and integrated vertebrate pest management. The different management practices such as burning of dung smoke, fish net, treated coir rope, scaring of monkey through acoustic devices, repellents etc. for the wild boar. Followed by management practices for the monkey also explained to the farmers with demonstration of Monkey gun to the farmers. NIPHM Faculty has explained the mass production of decomposer (NCOF) and application methods.
- d. Fruit fly: Surveillance and Management:** A five days' training programme on Fruit fly was conducted from 17th -21st February, 2020 at NIPHM. The programme was attended by 21 officers. During the training period the participants got well conversant with identification & detection of fruit fly species, lure preparation and other different aspects of fruit fly surveillance and management. Beside lectures trainees were also given hands-on experience for identification, taxonomy, exotic fruit flies and their pathway of entry and spread and fruit fly surveillance. Trainees got well conversant with pre harvest management through cultural control, biological control, trapping and sterile insect technique for management practices. Concrete sessions were given in laboratory and Mango orchard to prepare low cost bottle traps (Methyl Eugenol and Cue lure), their establishment in field, collection and identification of fruit flies.
- e. Plant Quarantine National Regulations & Procedures:** A five days programme on Plant Quarantine National Regulations & Procedures was organized at NIPHM from 24th – 28th February, 2020 and attended by 21 govt. Officials from different departments and states. . During the programme the trainees were given the exposure on SPS and Technical Barriers, International conventions, National Regulations, SOPs on imports and exports. Practical scenarios on procedures for on-line PQIS software use in import & export of seeds, plants, bulbs, grains, fruits, GMOs, and germplasm.
- f. Online tools for Plant Protection:** Three days training programme was organized on online tools for Plant Protection from 2nd –4th March, 2020. The introduction of online tools plays a vital role in agriculture sector; these include access to market information, weather information, monitoring plant health, education, other services etc. Twenty Officials got trained during the said programme.

g. Forced Hot Air Treatment: Five days training programme from 9- 13th March, 2020 on Forced Hot Air Treatment was organized at NIPHM. Twenty seven trainees have participated in the programme and training covered requisites associated with Solid wood packing material (SWPM), its associated pests (fungi, insects and nematodes), phytosanitary treatments, design and construction of FHAT, equipments and their specifications, accreditation and audit protocol and calibration of sensors and treatment procedures. NIPHM is the only resourceful institute specialized in offering training on FHAT in accordance with ISPM-15 and NSPM-9.

2. OFF CAMPUS TRAINING PROGRAMME: Total 12 off campus training programmes were conducted during the months from January to March and officers & farmers were trained for vertebrate pest management, low cost fruit fly traps, plant quarantine procedures and Safe Practices for Phosphine fumigation.

A. OFF CAMPUS FOR OFFICERS:

1. Plant Quarantine Procedures for Export of Agricultural Commodities: In collaboration with Department of, Agricultural Marketing and Agribusiness NIPHM has organized One day awareness programme on **Plant Quarantine Procedures for Export of Agricultural Commodities**, on 30.01.2020 at Dharmapuri, Tamil Nadu. Total 70 officers/exports have attended the programme and get familiarized with the procedures for export of different categories of agricultural commodities. Participants queries regarding the procedure for export of coconut, mango, vegetables, fruits and cereals, the organizations involved in export promotion, post-harvest management, plant quarantine procedure involved in export, importing country requirements and phytosanitary measures including treatments were taken in consideration during the sessions. The major and important components in plant quarantine procedure such as inspection and sampling, laboratory analysis, treatment, phytosanitary certificate were also discussed in detail.



One day awareness Programme at Dharmapuri

2. Safe Practices for Phosphine Fumigation: Three days programme on safe practices for phosphine fumigation was organized at Ongole, Andhra Pradesh from 27th – 29th February, 2020. Total 28 participants attended the programme and had hand on training on safe practices to be followed during phosphine fumigation. During the training program the information about the personal protective equipment, scientific procedure were given by NIPHM Staff and field phosphine fumigation demonstration at FCI godown, Ongole was also organized for the trainees.



Theory and Practical sessions at Ongole

3. **Vertebrate Pest Management for Agricultural Extension officers:** NIPHM organized a 5 day Training on Vertebrate Pest Management (Off-campus) for the officers of Department of Agriculture, Arunachal Pradesh from 2nd - 6th March, 2020. Twenty One (21) officials from different districts of the State were imparted in the training. The inaugural function was presided over by Shri. Anong Lego, Director of Agriculture, Government of Arunachal Pradesh and other senior delegates from the Department of Agriculture. The trainees were imparted on The rodent problems in NE states, Major rodent species, taxonomy and biology, rodent pest problem in rice ecosystem and importance of rodents in public health on rodent borne zoonotic diseases, Wild boar problems and their management in agri crops, Depredatory birds in agriculture and Integrated Bird Management in Agriculture and Horticultural ecosystem. The participants were taken to field to conduct the field oriented practical's viz, Identification of rodent species burrow, Damage assessment in rice, KAP analysis, Poison bait preparation and application techniques.



Field visit for the trainees: KAP Analysis & infestation measurements



Lecture session & group photograph of the participants

B. OFF CAMPUS (FARMERS):

1. **Rodent Pest Management:** Two programmes on rodent pest managements were organized at Veppanthattai, Perambalur District, Tamil Nadu on 25th January, 2020 attended by 60 farmers/officers and on 4th February, 2020 at Srikakulam, Andhra Pradesh attended by 50 farmers. Farmers were trained for effective management of rodents by following integrated approaches; management of rodents etc. Faculty has delivered lecture on the important rodent pest species, nature of damage, breeding potential, natural predators viz., snakes and owls, barrier method, local trapping method (*Tanjore kitty*) and chemical method. In addition to the rodents the higher vertebrates such as wild boar, deer and monkey management practices were also taught to farmers. Hands on demonstration on preparation of poison baits also carried out to the farmers.



Rodent Pest Management training at Perambalur District, Tamil Nadu

- Farmers training programme cum workshop:** A two day workshop cum training programme was organized by NIPHM, Hyderabad in collaboration with Manjara Charitable Trusts Krishi Vigyan Kendra, Latur and ATMA, Latur, Maharashtra on “**Least Cost Production of Biofertilisers & Biopesticides in Integrated Plant Health Management**”. The programme was held at Krishi Vigyan Kendra from 27th - 28th January 2020 and was presided by Mr. Gavsane D.S, District Superintended of Agriculture (DSAO), Latur in presence of Chief Guest Dr. R.P. Sujeetha, Director, Plant Biosecurity, NIPHM, Hyderabad. The programme was attended by 159 farmers of Latur Distt.

Dr. R.P. Sujeetha briefed on useful technologies developed by National Institute of Plant Health Management and urged the farmers to adopt the least cost technologies on large scale for minimizing cost of production. During the technical session Dr. G. Gunjotikar Deputy Director, NIPHM guided the farmers on least cost production technologies of bio fertilizers like Phosphorus Solubilising Bacterial (PSB), rhizobium, mycorrhiza and biopesticides like *Pseudomonas* and *Trichoderma*. The farmers were also given training cum demonstration on preparation of pheromone trap and lures at the field level.



Director PBD & DD/PP explaining the NIPHM technologies to farmers



Low Cost Production of Biofertilisers & Biopesticides in Integrated Plant Health Management workshop at Latur, Maharashtra

3. Stored grain pest identification and management: One day programme on stored grain pest management was organized at JDA office, FTC, Srikakulam, Andhra Pradesh and the training was attended by 50 participants / farmers.



Training programme at Srikakulam, Andhra Pradesh

4. Low cost bottle trap for fruit fly management: Total five programmes on fruit fly management were organized at Rajam, Srikakulam, Andhra Pradesh on 5th February, 2020 (50 farmers) and at Etawa (35 farmers), Bhawani Mandi (41 farmers), KVK Jhalawar (56 farmers), KVK Bundi (32 farmers), Kota, Rajasthan during 17th to 20th February, 2020. NIPHM Faculty has explained fruit fly problems in mango, guava and citrus orchards and management techniques through NIPHM low cost bottle trap. Demonstration on lure preparation and placement of lures for fruit fly management in fields were executed and was well explained to the gatherings.



Low cost fruit fly trap training at Rajasthan



Low cost fruit fly trap training at Rajam, Srikakulam, Andhra Pradesh

Plant Health Management Division:

I. Officer s training programme

S.No	Name of Training Program	From	To	Duration (days)	Total Trainees
1.	Production Protocol for Biofertilizers	06.01.2020	10.01.2020	05	31
2.	Production protocol for predators and parasitoides	20.01.2020	24.01.2020	5	21
3.	Production protocol for Microbial Biopseticides	27.01.2020	31.01.2020	5	24
4.	Integrated soil Nutrient & Rhizosphere Management	03.02.2020	10.02.2020	8	26
5.	Agro Ecosystem Analysis (AESA) and Ecological Engineering for Pest Management	17.02.2020	21.02.2020	5	11
6.	Production protocol Entomopathogenic Nematodes	24.02.2020	28.02.2020	5	14
7.	Field diagnosis and Management of Plant Parasitic Nematodes	09.03.2020	13.03.2020	5	10

II. Farmers training

S.No	Name of Training Program	From	To	Duration (days)	Total Trainees
1.	On-farm production of Biocontrol agents (odisha)	27.01.2020	29.01.2020	3	30
2.	on-farm production of Biocontrol agents (TN)	03.02.2020	05.02.2020	3	40
3.	On-farm production of Biocontrol agents (TS&AP)	11.02.2020	13.02.2020	3	09
4.	‘on-farm production of Biocontrol agents (TN)	12.02.2020	14.02.2020	3	43
5.	Tamil Nadu state farmes training programme on ‘on-farm production of Biocontrol agents (TN)	18.02.2020	20.02.2020	3	40

1. Officer s training programme

1. Production Protocol for Biofertilizers

In this programme total 31 officers/scientists from different states & organizations have participated. The participants underwent various aspects of the Production Protocol for Microbial Biopesticides such as Establishment of Microbial bio pesticide Laboratory, Requirements to get Accreditation as per ISO-17025, Introduction to Biological control of plant pathogens, Preparation and Maintenance of pure cultures of fungus and bacteria, Host rearing for production of NPV , Use of EPF’s in plant health management and their mass production techniques, Use of entomopathogenic nematodes (EPN), a promising bio-control agent for the management of insect pests, Botanical pesticides in insect pest management, Parameters to be tested for Quality control of bio pesticides- an overview . Participants also undergone practical sessions on Hands on session on isolation, identification and production of *Trichoderma* & *Pseudomonas*, comercial production of *Trichoderma*, *Pseudomonas* on-farm production of Biopesticides (*Trichoderma*, *Pseudomonas*), mass production of EPF etc., Hands on practice on Mass production techniques of NPV, Hands on practice on Mass production techniques of EPFs, Quality analysis of bio-pesticides (*Trichoderma* and *Pseudomonas*)



Practical session at Bio-pesticide & Biofertilizers

2. Production protocol for predators and parasitoids

In this programme total 21 officers/scientists from different states & organizations have participated. The theory and practical classes were taken for participants on the following topics along with the hands on practice, field exercise and visit to the AICRP biocontrol laboratory at PJTSAU. The theory classes on Introduction to Biological Control -Principles and Concepts, Role of Insect Predators in Sustainable Agriculture, Biological control of crop pests by parasitoids, Ecological engineering for pest management, Conservation of entomophagous insects were taught by the NIPHM scientific staff, the practical classes on Mass production of laboratory host, mass production of egg parasitoids, larval parasitoids, egg-larval parasitoids, Reduviid bugs, anthocorid bug predator, Green lace wing, *Cryptolaemusmontrouzieri* was conducted practically and hands on practice of all these practicals were done by the participants under the guidance of NIPHM scientific staff and Collection and Identification of different natural enemies & Identification and mass production of Coccinellid predators, field release of Biocontrol agents were the field exercise conducted for the participants.



Practical session on field release of Biocontrol agents

3. Production protocol for Microbial Biopesticides

In this programme total 24 officers/scientists from different states & organizations have participated. The participants underwent various aspects of the Production Protocol for Microbial Biopesticides such as Establishment of Microbial bio pesticide Laboratory, Requirements to get Accreditation as per ISO-17025, Introduction to Biological control of plant pathogens, Preparation and Maintenance of pure cultures of fungus and bacteria, Host rearing for production of NPV , Use of EPF's in plant health management and their mass production techniques, Use of entomopathogenic nematodes (EPN), a promising bio-control agent for the management of insect pests, Botanical pesticides in insect pest management, Parameters to be tested for Quality control of bio pesticides

4. Integrated soil Nutrient & Rhizosphere Management

In this programme total 26 officers/scientists from different states & organizations have participated. The participants underwent various aspects of Soil Nutrient Management including approaches like living Soil concept, use of biofertilizers, Ecological Engineering for below-ground pest management, integrated nutrient management for sustainable farming, role of biopesticides in soil health management, AESA methodology, soil test-based nutrient management, rhizosphere engineering for PHM, Identification of plant nutrient deficiency symptoms, Pesticide application techniques, role of PGPRs and EPF in Rhizosphere improvement, etc.



Practical session at NIPHM

5. Agro Ecosystem Analysis (AESA) and Ecological Engineering for Pest Management

In this programme total 11 officers/scientists from different states & organizations have participated. The training classes on AESA concepts, Role of Ecological engineering in pest Management, Important predators in agriculture and their role in pest management, Biological Control, Principles and concepts, have been taught by the faculty of NIPHM. As part of exercise the trainees have done collection of natural enemies from field where they observed the different crops and growing ecosystems and also taken the AESA observations, after the field visit trainees have done the AESA chart preparation and given demonstration of the observations and recommendations of AESA methodology



Field visit for AESA

6. Production protocol Entomopathogenic Nematodes

In this programme total 14 officers/scientists from different states & organizations have participated.

7. Field diagnosis and Management of Plant Parasitic Nematodes

In this programme total 10 officers/scientists from different states & organizations have participated. The training classes on introduction to plant parasitic nematodes, current status of PPN in India & world, extraction and sampling methods, symptoms and identification of PPN, PPN of quarantine importance in India, diagnosis of PPN in horticultural crops and Integrated Nematodes management in vegetables grown in polyhouse and Biointensive approaches in nematodes management have been taught by the faculty of NIPHM. As part of exercise the trainees have done collection of soil samples from NIPHM field where they observed the different vegetable crops nematode identification symptoms and extraction of nematodes from the samples collected along with the slide preparation and identification of nematodes.



Practical session on Nematode identification

2. Farmers training

1. On-farm production of Biocontrol agents

In this programmes total 162 farmers from different states(AP, TS Odisha and Tamil Na) have participated. . In this training program, the participants were educated on the on- farm production of bio-control agents, bio-pesticides, bio-fertilizers, botanical insecticides, mass multiplication of Entomopathogenic nematodes AESA and ecological engineering.

2. Certificate Course on Plant Health Management in Organic Farming (11. 11. 2019 to 20.03.2020)

- The CCOF part I course started on 11.11.2109 and inaugurated by Director General, NIPHM on 14.11.2019. A total 25 trainees from different states are attended. The participants underwent various aspects of Organic farming practices for plant health management.
- 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.

- Part II of the CCOF course started on 9.12.2019. The participants met with mentor scientist IIFSR and discussed on their project work. As per the decided topics, participants started their project work at their respective locations. Sent communication to mentors and participants to submit progress reports regarding fieldwork of **Cet. Course on Organic Farming part II**.
- As per the schedule of the course twenty (20) participants joined the Part-III programme at NIPHM from 10.03.2020 to 20.03.2020. As per the schedule of the course, all the participants prepared the Part II(Project work) presentation and report as prescribed format. As approved by the competent authority the experts from local IIFSR centre are invited for project report and presentation evaluation. All the participants presented their project work report and submitted the reports.



Visit to CCOF project work

3. Off campus visits

1. PoCRA-Project-Maharashtra Visit:

- As discussed in the review meeting of PHM division held by Director General NIPHM, it was planned to visit different locations where On farm production units for biofertilizers are proposed to be established under Maharashtra PoCRA. In compliance to the instructions, the visit was performed by Dr OP Sharma JD Agro and Mr Vinod Pawar JRF (Nematology) from 27 to 30 January, 2020.



Visit to PoCRA Project Maharashtra

- Visited all 5 locations proposed, and observed that ‘On farm production units for biofertilizers’ are established at 3 locations (KVK Washim, KVK Akola and at V. Dhanoradistt. Buldana). Other 2 KVKs (Nanded and Hingoli) have also assured to establish the units very soon.
- The production in the on farm units is carried out as per requirement during the sowing season. Samples for quality check shall be sent to NIPHM from next batch production.
- Interacted with KVK staff and representative farmers. Explained the on farm production concept and method of bioferti. and EPN production. Provided fresh mother cultures, NIPHM bioferti. formulation samples, literature and list of material requirement for the unit.
- KVKs are expecting support from PoCRA in terms of direct funding to KVKs. Further follow up and backstopping by PoCRA and NIPHM is required.

4. Off-campus training programs- Mysore Tobacco

NIPHM faculty, which is mentioned above are visited different Auction Plot Forms of Tobacco board for demonstration of NIPHM bioproducts such as *Pseudomonas fluorescens* & *Trichoderma harzianum* as desired by tobacco growers during nursery bed preparation and other initial stages for controlling the soil born diseases like damping off and black shank, which are major problems in tobacco crop. Tobacco growers are spending more amount on chemicals to control these diseases and unknowingly deteriorate the soil health & quality.

The topics mainly covered in this off-campus programme are mentioned below;

The application of *Trichoderma* & *Pseudomonas*, Biofertilizers in Tobacco: To emphasized mainly at the time of Nursery bed preparation, seedlings transferring to the pore trays, main field application with enrichment of *Trichoderma* & *Pseudomonas* in organic amendments like FYM/coco pit/ vermicompost.



Demonstration of Biopesticides to tobacco growers

5. Village adoption programme

1. Mohammed Nagar village, Medak district

PHM Staff along with Subject Matter Specialist (crop protection, KVK) visited **Mohammed Nagar village** farmer's field and demonstrated to all selected chilli farmers regarding land preparation and raised bed methods in the main field for chilli transplantation. Suggested to follow the border/gourd crops (sorghum/maize) and use of pheromones/sticky traps to control sucking pests in chilli crop. Distributed one liter each of *Pseudomonas* and *Trichoderma* to all selected farmers in presence of sarpanch. Suggested to follow the border/gourd crops (sorghum/maize/), use pheromones/sticky traps and irrigate fields regularly to control sucking pests in chilli crop.



2. Chowdarapalli village, Ibrahimpatnam

The promotion of organic farming in peri-urban areas at Chowdarapalli (Village) in Yacharam (Mandal) visiting every week as per the schedule. The PHM staff members are visiting to undertake plant health interventions in horticulture crops. Briefly explaining the use of *Pseudomonas* and *Trichoderma*, biofertilizer & biopesticide in Horticulture crops (Bhendi, Tomato, Chilli and Gourds). Demonstrated the preparation of ITK and application methods for soil health and pest management practices in the presence of other farmers. Explained use and application method of NIPHM fruit fly trap, lures in field level. Distributed lures to farmers and demonstrated its application methods in farmers field.





Pesticide Management Division:

Pesticide Management Division has conducted the following training programs during Jan- Mar, 2020.

S. No.	Name of the Training Program	From	To	Duration (days)	Number of participants
1.	Workshop cum Training program on Organization Management of Pesticide Testing laboratories	07.01.2020	08.01.2020	2	14
2.	Pesticide Formulation Analysis	21.01.2020	20.03.2020	60	24
3.	Orientation Program on Quality Control of Pesticides under Insecticide act, 1968(Special Program for A.P. Govt.)	27.01.2020	31.01.2020	5	43
4.	Laboratory Quality Management System and Internal Audit as per ISO/ IEC: 17025-2017	02.03.2020	06.03.2020	5	21

DETAILS OF TRAINING PROGRAM:

1. Workshop cum Training Program on Organization Management of Pesticide Testing

Laboratories:

The two day work shop cum training program was organized from 7 to 8 Jan 2020 for senior level officers holding the charges of administration /supervision of their PTLs. The Pesticide Testing Laboratories (PTLs) are required to be accredited by the National Accreditation Board for Testing and Calibration Laboratories (NABL) or any other organization to get recognition for its technical competency in analyzing pesticides. The program was designed to impart knowledge to the officers on the resources, technical requirements and infrastructure required for the establishment of PTLs and Accreditation. The program was attended by 14 officers from different states.



PTLs program at NIPHM

2. Pesticide Formulation Analysis:

Pesticide Formulation Analysis is a 60 days mandatory training program that is prescribed under the Insecticide Act, 1968 for the Insecticide analysts working in State, Regional Pesticide Testing Laboratories and Central Insecticide Laboratory apart from the required educational qualification. PMD, NIPHM is organizing this mandatory training program on Pesticide Formulation Analysis with an aim to create a pool of qualified pesticide analysts to work in Central and State Pesticide Testing Laboratories. The program was organized from 21.01.2020 to 20.03.2020 covering various aspects of analysis of Pesticide Formulation Analysis through theoretical and practical classes. The program gives the participants hands on training on analysis samples and operation of instruments such as GC-FID, HPLC, UV-Vis Spectrophotometer and FTIR. The program covers Principles of volumetric analysis and different type of titrations, analysis of physico-chemical properties of various pesticide formulations and Instrumental methods of Analysis of Pesticides. The participants are also given training on Laboratory Quality System Management and Internal Audit as per ISO/IEC 17025-2017 which is required for accreditation of the laboratories by organizations like National Accreditation Board for Testing and Calibration of Laboratories (NABL) as per international standard. The present 130th batch of Pesticide Formulation Analysis was attended by 24 participants from the states of TN, Karnataka, Bihar, Jammu and CIL, Faridabad.

3. Orientation Program on Quality Control of Pesticides under Insecticide Act, 1968:

With an aim to ensure the availability of quality inputs to farmers, the Government of Andhra Pradesh has planned to strengthen the testing facilities of agricultural inputs the state. In this connection, based on the request from the Department of Agriculture, Govt. of Andhra Pradesh, a special orientation program on quality Control of pesticides was organized from 27 to 31 Jan 2020. The program was attended by 43 officers working in various parts of Andhra Pradesh. The officers were given knowledge on establishment of pesticide laboratories, methods of drawl and analysis of pesticides, parameters to be analyzed for various pesticide formulations, different volumetric and instrumental methods of analysis.



Special program on quality control of Pesticides

4. Laboratory Quality Management System and Internal Audit as per ISO/IEC:17025-2017:

The five day program on Laboratory Quality Management System and Internal Audit as per ISO/IEC: 17025-2017 was conducted from 2.03.2020 to 06.03.2020 is for the laboratories seeking accreditation as per ISO/IEC: 17025-2017 standard. This international standard or a document provides general requirements that can be used to ensure that laboratories are competent to give valid analytical results, both nationally and around the world. Accreditation is a formal recognition by an independent body, generally known as an accreditation body that the laboratory operates according to international standards. The training program introduces the participants to the various clauses of ISO/IEC: 17025-2017 that gives requirements under structural, resource and process requirements for meeting the international standard for accreditation. Twenty one participants attended the program.

Plant Health Engineering Division:

During the quarter following programmes were organized by the division which may be covered in forthcoming newsletter.

1. Officer training:

1. Post-Harvest Management and Storage Techniques

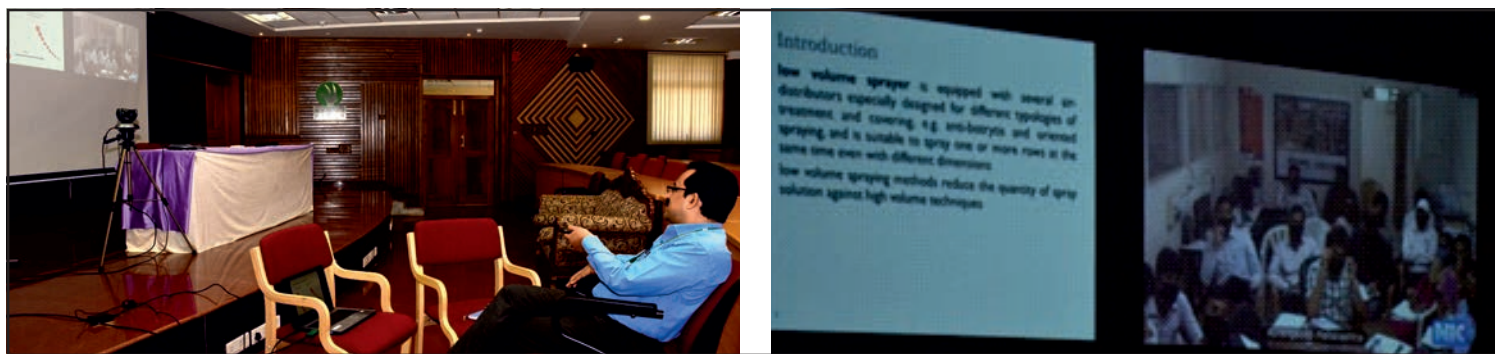
Improper harvesting, handling transportation and distribution of fruits and vegetables result in the significant losses which cause ultimately economic loss. It is estimated that total loss of vegetable and fruits in India due to inadequate post-harvest handling & transportation of storage is around 20-25%. Several factors influence the post-harvest losses due to physical, physiological, mechanical and hygienic conditions. Fruits and vegetables are characterized by high metabolic activities and known to possess short shelf life. To address the post-harvest management issues and to increase the awareness on storage techniques, a programme was conducted for 5-days duration from 20.01.2020 to 24.01.2020. Forty-one participants from 17 states registered in this programme. This training helped officers to developing the skills on storage problems of food grains at commercial or farm level, Post-harvest handling, modern storage structures at farm level, problems of moisture and damage of food grains and control of stored grain pest at farm level. During the training programme, visit was also organized at M/s, Sam Agritech, Medchal Outreach Facility in Post-Harvest Management and processing.



Visit at M/s, Sam Agritech, Medchal

2. Training on ‘Pesticide Application Techniques and safety Measures’ online mode

Online training to officers in developing the skill in selecting the appropriate application techniques and maintenance of plant protection equipments for guiding farmers in proper selection of PP equipment, sprayer’s calibration and application of pesticides to achieve optimum pest management was conducted. This training, entitled ‘Pesticide Application Techniques and Safety Measures’ was organized for one-day duration on 11.02.2020 in which 20 participants from Maharashtra states participated.



Master trainees programme for Aurangabad officers through video conferencing

Pesticide application techniques play an important role in pest management. The indiscriminate use of pesticides is an alarming issue in today’s global scenario. Proper technique of application of pesticide and the equipment used for applying pesticide are vital to the success of pest control operations. The use of pesticides involves knowledge not only of application equipment, but of pest management as well. The skill developed in the training helps in achieving optimum pest management in a safe manner.

The training emphasized the operator’s safety before, after and during spraying by minimizing the contamination of getting exposure towards the toxic chemicals.

3.Training on ‘Farm Equipment for Plant Health Management’

Day by day availability of farm labours are decreasing and the area of cultivation land is becoming limited. Effective usage of equipment and selection shall be a big task in front of agriculture community to meet the demand of food with the increase in population and decrease in the

natural resources. Mechanization of agriculture is an essential input to the modern agriculture. It enhances productivity, besides reducing human drudgery and cost of cultivation. Mechanization also helps in improving utilization efficiencies of other inputs. To address the farm implement and to increase the uses into the field, a programme was conducted for 3-days duration from 02.03.2020 to 04.03.2020. Six participants from various states registered in this programme.

This training helped them to developing the skills on selection of proper equipment at field level based on the types of soil, crop and crop density. Participants of training programme on ‘Farm equipment for plant health management’, along with SO (PHE) visited FIM scheme at PJTSAU, Rajendranagar and ICRISAT. They were exposed to different types of farm equipment and tractor operated and self-propelled sprayers.



Training on Farm equipment for plant health management

2. Farmers Training:

One day off campus training programme for Farmers

Training to farmers in developing the skill in selecting the appropriate application techniques and maintenance of plant protection equipments, proper selection of PP equipment, sprayer’s calibration and application of pesticides in agriculture field to achieve optimum pest management was conducted. This training, entitled ‘**Pesticide Application Techniques and Safety Measures**’ was organized off campus for one day duration at KrishiVignana Kendra (KVK) Kawadimatti, Yadgir District of Karnataka state, 20 farmers (18 male and 2 female) has attended the programme.

The objective of the training is to provide the skills to farmers in the area of Plant Protection. Right plant Protection equipment for our Indian Agriculture is a big challenge in near future. This training helps the farmers to use right techniques and right sprayers.

3. Other Activities:

Village Adoption Highlights:

Institutional visits:

Faculties’ training/workshop/Seminar/meeting/Visit

- Er. M. Udaya Bhanu, SO (PHE) and Er. Govind Kumar Maurya, ASO (PHE) visited Jain Irrigation Pvt. Ltd and interacted with officials in the connection of Advance Irrigation System training practical exposure and installation of drip system in NIPHM field.
- As part of advanced irrigation systems training, Er. Govind Kumar Maurya, ASO (PHE) along with 21 participants visited M/s Jain Irrigation System Ltd at Gatkeswar and visited a micro irrigation field where farmer have adopted drip and sprinkler technology on 20th August, 2019



MSU extension delegate visit to PHE workshop



USDA official visit to PHE workshop

Visitors at PHE-Workshop

Officers:

- Michigan state university (MSU) extension delegates visited PHE workshop on 20.02.2020 and got exposed to various activities and equipment developed by PHE.
- USDA officials visited and interacted with faculty and got exposed to various activities and equipment developed by PHE.
- One officers group from NAARM, visited PHE workshop and got acquainted with Institute developed equipment.

Farmers:

- Batch of twenty farmers each visited on 21st January 2020 from Tamil Nadu got acquainted with different spraying techniques and also the farmer friendly equipment developed by PHE division
- As a part of exposure visit 20 farmers along with officers from Tamil Nadu horticultural department visited PHE workshop, and got exposed to various activities and equipment developed by PHE.
- As a part of farmers exposure visit, 17 farmers and one scientist from CRIDA visited PHE workshop, and got exposed to various activities and equipment developed by PHE.



Tamil Nadu farmers visit to PHE workshop



ASCI trainees visit to PHE workshop

Students:

- As a part of educational tour 98 students from College of agriculture, Maharashtra along with faculty members visited PHE workshop on 7.02.2020 and got exposed to various activities and equipment developed by PHE.
- 20 ASCI trainees from ICAR CRIDA visited PHE workshop on 26.02.2020 and got acquainted how to maintain sprayers and got exposed to various activities and equipment developed by PHE.
- One M. Tech student from Vignan University is undergoing internship in PHE division, and he is allotted to do a project on “A Study on Wear Characteristics of Sprayer Nozzles”. Test trails are in progress.

Other activities:

- Er. Sk Haneefa Begum, delivered a guest lecture on “Importance of grain storage in food processing” at College of Home science, PJTSAU.
- Dr. Vidhu Kampurath, JD (PHE) attended and took 3 sessions of lectures on IoT and Drones in precision agriculture in the 5 day training programme on “E resources, E-learning and IoT” for students and staff of UAS Raichur (Karnataka) on 27th February 2020.
- Other divisional trainees from PHM, PB divisions visited workshop and acquainted with various equipment, as a part of Institutional visit.



Lecture at PJTSAU



Farmers exposure visit



RPM trainees visit to PHE workshop

रावस्वाप्रसं में राजभाषा हिंदी के क्रियान्वयन से संबंधित क्रियाकलाप

दिनांक 29-01-2020 को वर्ष 2019-20 हेतु राजभाषा कार्यान्वयन समिति (राकास) की तृतीय बैठक श्रीमती जी.जयलक्ष्मी, भा.प्र.से., महानिदेशक, एनआईपीएचएम की अध्यक्षता में आयोजित की गई। बैठक में महानिदेशक के समक्ष अक्टूबर-दिसंबर, 2019 की तिमाही हिंदी प्रगति रिपोर्ट प्रस्तुत किया गया। उन्होंने रिपोर्ट की समीक्षा करते हुए संस्थान में राजभाषा अधिनियम की धारा 3(3) के पूर्णतः अनुपालन किये जाने के निदेश दिये।

महानिदेशक ने यह भी निदेश दिया कि इस संस्थान के शेष कर्मचारियों एवं अधिकारियों के लिए राजभाषा विभाग, गृह मंत्रालय, भारत सरकार, नई दिल्ली द्वारा अपेक्षित हिंदी प्रशिक्षण पाठ्यक्रम संचालित किये जाएं एवं वार्षिक कार्यक्रम के तहत उल्लिखित अनुदेशों का अनुपालन किया जाए।

दिनांक 26-02-2020 को संस्थान के अधिकारियों एवं कर्मचारियों के लिए एक दिवसीय हिंदी कार्यशाला का आयोजन किया गया। पीबीडी प्रभाग के निदेशक ने कहा कि कर्मचारियों को इस कार्यशाला का अधिक से अधिक लाभ लेना चाहिए एवं राजभाषा हिंदी में कामकाज करने के दौरान जो कठिनाईयां आ रही हों, उसका निवारण किया जाना चाहिए। डॉ विधु काम्पुरत, संयुक्त निदेशक (पीएचई) एवं प्रभारी रजिस्ट्रार कहा कि हमारा संस्थान भारत सरकार, गृह मंत्रालय, राजभाषा विभाग द्वारा 'ग' क्षेत्र हेतु निर्धारित लक्ष्यों से अधिक है। संस्थान के स्तर पर कार्यालयीन कामकाज में हिंदी को बढ़ावा देने हेतु कर्मचारियों के लिए दो बैचों में हिंदी कक्षाओं का आयोजन किया जा रहा है जिससे वे हिंदी में आसानी से कार्य कर सकें।



हिंदी कार्यशाला

अतिथि वक्ता मोहम्मद कमालुद्दीन, सहायक निदेशक, केन्द्रीय हिंदी उप प्रशिक्षण संस्थान, विशाखापट्टनम ने कार्यशाला के दौरान प्रतिभागियों को राजभाषा नीति, राजभाषा हिंदी के कार्यान्वयन, राजभाषा हिंदी के प्रति केन्द्र सरकारी कर्मचारियों की जिम्मेदारियों, वार्षिक कार्यक्रम एवं राजभाषा संबंधी अनुच्छेदों एवं धारा 3(3) के तहत आने वाले सभी दस्तावेजों के बारे में विस्तार पूर्वक जानकारी दी।

कविता

फलों का राजा आम

मैं हूँ फलों का राजा
आता हूँ गर्मी के मौसम में ताजा ताजा
मुझ में है मिठास कुछ खास
में रहता हूँ सबके दीलों के के पास
मेरे रूप है अनेक
मेरे नाम भी है अनेक
मैं हूँ फलों का राजा
आता हूँ गर्मी के मौसम में ताजा ताजा
मुझे हापुस कहे या बेनिशाँन
मेरी तो सब राज्यों में है शान ही शान
मुझ से बनती है रस रबड़ी
विदेशों में भी मेरी शान बड़ी
मैं हूँ फलों का राजा
आता हूँ गर्मी के मौसम में ताजा ताजा ॥



- डॉ गिरीश ए गुंजोटिकर

(उपनिदेशक (पादप- रोगविज्ञान), अपेक्षा गिरीश गुंजोटिकर)

Chief Editor

Smt. G. Jayalakshmi, IAS, DG

Executive Editor

Dr. J. Alice RP Sujeetha, Director (PBD)

Editorial Board Members

Dr. Vidhu Khampurath P, JD (PHE)

Dr. A. G. Girish, DD (PP)

Er. Shaik Liyakhat Ali Ahamed, AD (ICT)

Published by :

Director General

National Institute of Plant Health Management (NIPHM)

Department of Agriculture, Cooperation & Farmers Welfare,
Ministry of Agriculture & Farmers Welfare, Govt. of India
Rajendra Nagar, Hyderabad - 500 030, Telangana, India.

Tel Fax : +91 04 24015346, niphm@nic.in