ICAR-Indian Institute of Horticultural Research

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DIVISION OF SOCIAL SCIENCES AND TRAINING

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Entrepreneurship and Leadership Development Programme for Horticulture Entrepreneurs Desirous of applying to Schemes of National Horticulture Board

Crop / Activity	Protected cultivation of Flowers

2019-20

Become Entrepreneur	
	Lead Change and Innovation
Be creative	
	Lead Profits

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Training Programme Name	**Entrepreneurship and Leadership Development Programme of Horticulture for Protected cultivation of Flowers : Rose, Carnation, Gerbera, , Anthurium, Lilium, Chrysanthymum & Orchids (Dendrobium/ Cymbidium etc)**

Introduction: Horticultural crops particularly flower crops are most suitable for mixed cropping system. Flower crops growing is preferred by the farmers due to quick and high return per unit area. The Government of India has identified floriculture as the sunrise industry and has accorded it 100 per cent export oriented status in terms of foreign exchange earnings.

Indian floriculture market was worth Rs 157 billion in year 2018 it has been projected to reach 472 billion by 2024. GOI has identified as sunrise industry and accorded it 100% export oriented status. Owing to steady increase in demand commercial floriculture has emerged as Hi-Tech activity taking place under controlled climatic conditions inside greenhouse. The liberalization of industrial and trade policies paved the way for development of export oriented production of cut flowers. Floriculture crops like Rose, Carnation, Gerbera, Anthurium, Lilium, Chrysanthymum & Orchids (Dendrobium/Cymbidium) etc., are grown in greenhouses. Total flower production include 2392000 MT from 306000 Ha during 2016-2017.

National Horticulture Board, an autonomous organisation under the Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, Government of India has been promoting and developing commercial horticulture in the country since 1984. Appreciating both the challenges and prospects of commercial horticulture, so as to mitigate constraints and risks and maximise benefits and net income, NHB has taken a number of initiatives viz., Model Detail Project Reports, conducting both awareness and technical workshops and simplification of scheme implementation process. One another measure taken up is encouraging farmers, entrepreneurs and applicants desirous of availing benefit under its schemes to have requisite entrepreneurship and leadership by undergoing a 06 days training programme at one of the best training institutes recognised by it.

Rationale for the Training: NHB projects are credit linked and back ended and are capital intensive running from several lakhs to several crores. In addition these involve good documentation and time bound activities on the part of promoter, banker and other stakeholders. So Endeavour should be to ensure that the project is successful by all means be addressing all possible risks. Over the years it has been observed by NHB that most of the promoters of NHB projects are not having the required understanding of scheme documentation, time bound activities and lack knowledge and skills of handling the project themselves and thus become subjected to vagaries of others ignorance and omissions and commissions. The result is a number of projects have failed or became ineligible for subsidy consideration. Thus so as to rule out any these omissions and commissions and risks, NHB has made it mandatory for every applicant to undergo a 06 day training programme at one of

the NHB recognised /approved institution, with a goal of zero rejection of a project for which IPA is issued.

Importance of Project: Crop / Activity: Global/National/State and role in horticulture development

Name of Activity
Protected cultivation of Flowers- **Rose, Carnation, Gerbera, , Anthurium, Lilium, Chrysanthymum & Orchids (Dendrobium/ Cymbidium etc)**

About IIHR

The ICAR-Indian Institute of Horticultural Research (IIHR) is a premier institute conducting basic, strategic, anticipatory and applied research on various aspects of fruit, vegetable, ornamental, medicinal crops and mushrooms, located at Hessaraghatta, Bengaluru.

Mandate

- To undertake basic and applied research for developing strategies to enhance productivity and utilization of tropical and sub-tropical horticulture crops viz., fruits, vegetables, ornamentals, medicinal plants and mushrooms.
- To serve as a repository of scientific information relevant to horticulture.
- To act as a centre for training for up gradation of scientific manpower in modern technologies for horticulture production and
- To collaborate with national and international agencies in achieving the above objectives.

Mission:

The mission of the institute is achieving sustainable development of horticulture, which in turn would provide livelihood security, economic growth and nutritional security that have been challenged from time and again by various factors. Towards this end, the IIHR, Bengaluru has been carrying out research in fruits, vegetables ornamental, medicinal plants and mushrooms.

Research and Development: In the beginning years, the main research agenda of the institute was to increase the production and productivity of horticultural crop varieties by developing high yielding varieties in fruits, vegetables, ornamentals and medicinal and aromatic plants and mushrooms and also develop advanced production technologies to increase the productivity of horticultural crops. With changing times and emergence of new challenges in the fields of crop improvement, crop production, crop protection and crop utilization, emphasis was laid on breeding varieties for biotic and abiotic stresses, breeding F1 hybrids, developing integrated pest and disease management technologies, developing integrated water and nutrient management protocols towards optimum utilization of resources and production and utilization of edible and medicinal mushroom. Developing post harvest management practices to reduce post harvest losses and further value additions and frontier research areas like hi-tech horticulture especially production of vegetables under protected conditions, precision farming, information technology, biotechnological interventions to increase yields, protect crops from insect- pests, diseases and viruses, and extension of shelf life of crop produces, biological control, disease diagnostics, pesticide residue management, evaluation and mitigation of adverse effects of climate change in

horticultural crop production *etc.* became the other priority areas with changing research agenda at the national level. Research work carried out during the last four decades has paid rich dividends in the terms of release of more than 200 varieties and hybrids and development of good number of sustainable production, protection and post-harvest management technologies.

The institute is involved in first line transfer of technology of dissemination of information and technologies developed by the institute. This is being carried out by conducting on-farm and off-farm demonstrations, various media and publicity activities, radio and television programs, publishing popular literature, video films, conducting field days, participating in national and international exhibitions, first line training programs for development functionaries, need based training programs to entrepreneurs and corporate/ private agencies and also to the needy farmers. Some of the innovative extension methods like mobile messaging, farmers' field schools, and techno-agents for promotion of sustainable horticultural activities, video conferencing for training, interactive meets etc. have been successfully employed. Popular literature in Kannada, Hindi and English languages in the form of extension bulletins and folders on various aspects of horticulture have been brought out and are being distributed to extension personnel and farmers. The institute offers consultancy services on various aspects of horticulture in the form of general consultancy on horticulture production, advisory service, project preparation and project appraisal, technology development etc. The other services like contract service, paid up trials, product testing and analysis, soil, water and leaf analysis and advisory, technology assessment and refinement *etc.* are also under taken on payment basis.

Capacity Building: The Division of Social Sciences and Training also conducts regular training programs to development personnel and farmers on various advanced technologies in horticultural sector. The division is looking after training and extension activities of the institute apart from research, conducting demonstrations, communication of technologies through innovative extension methodologies etc. The division had a Trainers Training Centre of the Indian Council and Agricultural Research (1976-1997) and an Advanced Training Centre of the Directorate of Extension Government of India (1997-2003). With the formation of National Horticultural Mission there is a lot of demand from the state department of various states as well as farmers and private entrepreneurs for acquiring training on various aspects of horticulture. Hence, tailor made training programmes are now being conducted on the various aspects of horticulture for the varied clientele on payment basis. It is the endeavour of the division to keep in tune with the technological requirements in horticulture and the latest developments in the field of information technology and accordingly various training programmes are being regularly conducted in the division.

Human Resources: Presently the institute has a total strength of more than 600 staff with more than 150 scientific, 225 technical, 80 administrative and 140 supporting staff. The institute is headed by the Director supported by Heads of Divisions, Chief Administrative Officer (CAO) and Chief Finance and Accounts Officer (CFAO). The Central Horticultural Experiment Stations at Chettalli and Bhubaneswar headed by the Station Heads and the Krishi Vigyan Kendras (KVKs) are headed by Program Coordinators under the overall control of the Director of the Institute.

Objectives of Training Programme :

1. Knowledge: Ensure every trainee acquires adequate knowledge and understanding of NHB Scheme Operational guidelines, Annual design and procedure viz.
    a. Eligibility of applicant including definition of family, and project, the process and steps involved in the scheme implementation, timelines, Scheme cost norms, pattern of assistance etc. Calculation of Eligible Project cost, Eligible components for subsidy, NHB standards, Basic Data Sheet & Protocols to be complied for availing subsidy,; Crop / Project specific Model DPR Template, Terms and conditions of IPA, Do's and Don'ts for Applicants /Banks/NHB officials for IPA ,
    b. List of documents(enclosed)
    c. To acquaint with NHB website including registration and modes of online application, operation of online account and contact persons, helpdesk and grievance redressal.
    d. Subsidy claim process through Bank/FI and list of documents to be submitted along with claim, JIT process, JIT Format, Documentation, Circumstances to request for and consider Re-JIT& Post-JIT process.
    e. Formats of Agenda and check list used for processing subsidy claim.
    f. How to expand understanding based on the minutes of meetings of previous IC and PAC available on website. It helps the applicant to understand how decision on subsidy is being made.
    g. To know and appreciate specific Horticultural commodity / crop economic importance and potential of fresh commodity and processed / value addition commodity; Country and Global scenario and State/UT Scenario.
    h. To learn / visit success stories / best practices including cluster development / FPOs; interact with successful entrepreneurs; and recognise key factors responsible for success and failure.
2. Personal leadership and skills development
    a. To explore leadership roles required in horticulture business and realign and recalibrate self with new knowledge, concepts and tools.
    b. Managing change and innovation and Taking charge and leading strategy.
    c. To learn/ improve IT/ social media and know how to benefit from Internet and newspapers/media.
    d. To improve leadership / social skills especially common informed vision, communication, team work, negotiation skills; with an exercise and success story.
3. Selection of cultivar, Technology to be adopted and Production practices for crop intensification and high productivity and ecological sustainability.
    a. How to select suitable variety/hybrid/cultivar and source quality planting material/ seed based on market demand and sustainability.
    b. Technology: Protection cultivation Technology-various kinds, customisation based on Agro-climatic condition, crop and pest and diseases profile; familiarisation of components and Mechanisation and Automation.

c. To know scientific production, harvesting and post-harvesting practices, technology and management and Analyse gap analysis with that of the current practices, technology and management of trainees.

4. Harvesting, Post-Harvest Management practices, technologies and Infrastructure
    a. Time of Harvesting, Moisture level of the produce, post-harvest practices, cleaning, sorting, grading, packing, labelling, pre-cooling, storage and transportation.
    b. To be aware of Post-harvest and storage practices, protocols and technologies.
    c. To know required infrastructure- Supply Chain/ Cold Chain and Marketing infrastructure and Gap analysis to the context of trainees.
5. Processing and value addition
6. Marketing and value chain development
    a. To know value chain and document current value chain of trainees context.
    b. To know how to source inputs from reliable and quality sources economically and explore best way / place to sell.
    c. To know market based production concept; crop planning and preparing crop calendar.
    d. Analyse market prices of various markets and causes of instability. Document market efficiency and share of grower in consumer price realisation and possible way to minimise price spread.
    e. To know importance of branding and promotion.
    f. How to become an Exporter and know the roles of APEDA.
7. Cold-chain development both for Export and Domestic Markets
8. Producing quality produce: MPS registration will be taken into account Breeders rights
9. DPR for Flowers viz Rose, Carnation, Gerbera, , Anthurium, Lilium, Chrysanthymum & Orchids (Dendrobium/ Cymbidium etc) and their Project Management including Finance & Credit.
    a. To empower selection of crop based project based on Agro-climatic/soil/ water suitability, Market, Finance and Technical viability.
    b. To empower the trainees to prepare Detail Project Report of his/her project. In case it is already prepared with the help of external expert, the trainee is made to understand and critically analyse the same.
    c. To know about Banks/ Financial Institutions; Loan procedure-how to avail finance/ credit- challenges and prospects. Document difficulties in trainee's context and facilitate in possible solutions on expeditious and easy access to credit.
    d. To know risks viz., including natural calamities in production and business and their management strategies including insurance schemes.
    e. To learn about Farm record book keeping.
10. Cluster development / Collaborative farming: What is cluster? Essential elements? To know importance of cluster approach,
11. Government organisations and Schemes related to Horticulture and laws to be complied.

12. Horticulture Statistics sources including DAC&FW website and State Horticulture Dept. website.
13. Technology and Entrepreneurship

Pedagogy: Training methods / styles are:

a. Lectures- with two way communication using Audio-visual aids, videos etc.
b. Group discussion
c. Panel discussion
d. Skill practice
e. Interactive field visits etc.

Outputs expected: (As on the last date of 06 days training)

1. 100% attendance of all Classes prescribed.
2. Daily studying of reading material provided.
3. Successful and timely completion of assignments.
4. A score a minimum of 65 % in final assessment by each trainee.
5. Knowledge: by each of the trainee
    a. Essential elements of NHB Scheme guidelines, documentation & processes and Do's and Don'ts, understanding DPR, Bank Appraisal and Sanction, identification of risks and vulnerabilities and measures to address the same, Processes and documentation of NHB scheme implementation for successful subsidy release.
    b. Essential elements of scientific and commercial Production, harvesting, post-harvest, Marketing, Exports etc. in English/Hindi/trainees' language.
    c. Good Agricultural Practices, PBR, MPS registration. Traceability and standards etc.
    d. Documentation of analysis of current scenario of trainee's context- production, harvest, post-harvest, supply chain, marketing and gap analysis and possible road map.
6. Skills: by each of the trainee
    a. Curiosity and continuous learning.
    b. Crop: Modern scientific Cultivation, harvesting, post-harvest, food safety, traceability certification and standards.
    c. Project: PHM&CC: Modern scientific operations, technology, safety etc.
    d. Familiarisation of Technology, Standards, Protocols and hands on experience.
    e. Good understanding of DPR and Project Management:
    f. A 3 year Strategic action plan: A Year to Year strategy for 3 years to achieve set goal in 3 years- for improved production & productivity with economy, modern harvest, post-harvest practices, infrastructure, marketing and organisational systems for improved incomes.
    g. Problem solving- to solve existing problem being faced by the trainees.
7. Attitude: developing confidence and leadership to successfully complete NHB project timely as per NHB norms, specifications/standards, protocols etc.

8. Networking with various Government and Non-Government Agencies and mentors.
9. To know various schemes and future useful training programmes across the country.

Outcomes expected (in 18 months)

1. The proposed training completed successfully with right technology and processes complying with all NHB Scheme requirements.
2. Cost of production reduced; crop health improved, productivity increased & losses reduced.
3. Food safety Improved, certification / standards compliance
4. Quality infrastructure created.
5. Profits/ net income increased.

Programme in Brief

<table>
<tr><td>Training Programme Name</td><td colspan="4">Entrepreneurship and Leadership Development Programme for Horticulture for Protected cultivation of Flowers Rose, Carnation, Gerbera, , Anthurium, Lilium, Chrysanthymum & Orchids (Dendrobium/ Cymbidium etc)</td></tr>
<tr><td>Duration</td><td colspan="4">06 working days: 1 Week (total day required : 07/08 Days including arrival ,departure and in between weekend holidays)</td></tr>
<tr><td>Participant Target Group</td><td colspan="4">Individuals desirous of availing NHB benefit under Scheme No.1 and also for those who want to improve their knowledge and leadership in protected Cut Flower cultivation .</td></tr>
<tr><td>Training Coordinator with Designation and Address Tel, Mobile and email id</td><td colspan="4">Dr C.Aswath, Principal Scientist, Division of Floriculture, ICAR-Indian Institute of Horticultural Research, Hesaraghatta Lake Post, Bengaluru – 560 089 Email: Aswath.C@icar.gov.in Mobile No.9902544449
Dr R Senthil kumar, Principal Scientist, Division of Social Sciences and Training, ICAR-Indian Institute of Horticultural Research, Hesaraghatta Lake Post, Bengaluru – 560 089 Email: senthil.rathinam@icar.gov.in Mobile No.9663796473</td></tr>
<tr><td>Languages</td><td colspan="4">English/Hindi</td></tr>
<tr><td rowspan="2">Training calendar for 2019-20</td><td>Month</td><td>Last date for Registration</td><td>Training reporting dates</td><td>Training Dates</td></tr>
<tr><td>February 2020</td><td>20 Januaryr 2020</td><td>04 February 2020</td><td>09 February. 2020</td></tr>
<tr><td>How to Apply</td><td colspan="4">By E mail</td></tr>
<tr><td>Next review/ revision of Training Design</td><td colspan="4">February 2020</td></tr>
<tr><td rowspan="3">Batch size and cost and Payment system</td><td>Batch size</td><td>Course Fees</td><td>Hostel: Accommodation, Boarding: BF+L+D + Morning Tea + Afternoon Snacks</td><td>Total cost for 06 days</td></tr>
<tr><td>20</td><td colspan="3">1500/participant/day
9000/ participant (06 days)</td></tr>
<tr><td colspan="4">Payment system and address:
ICAR-Indian Institute of Horticultural Research, Bangalore
S.B. A/c No. 37578009241
STATE BANK OF INDIA
HESARAGHATTA
SBI, IIHR, HESARAGHATTA LAKE POST, BANGALORE – 560 089
SBIN0041187</td></tr>
<tr><td>Enrolment</td><td colspan="4">Is voluntary on the part of trainee and on his/her submission of willingness in writing to undergo training.</td></tr>
<tr><td>Certificate</td><td colspan="4">Upon successful completion of training with 65% marks in final assessment, the candidates are awarded completion certificate with marks.</td></tr>
</table>

NHB & HTI Role	1. The training programme is voluntary for any individual or trainee. 2. The cost of training is to be borne by trainee him/herself. 3. The training is not sponsored by NHB nor by any Government. 4. Upon 100% attendance and upon scoring 65% marks is considered as successful completion and then are eligible for training completion certificate. 5. Successful completion of training programme by the applicant and submission of completion certificate is one of the requirement for obtaining In-Principle Approval (IPA). 6. It is compulsory to reside in the hostel/accommodation provided by the institute in the interest of training. 7. The training institute has no say in NHB decision making either in approval or rejection of IPA or sanction or not sanction of Subsidy. 8. Trainees are responsible for their conduct and wellbeing issues 9. NHB has no liability towards IPA and Subsidy release or non-release 10. HTI has no liability towards IPA and Subsidy release or non-release.

Expectations from trainee before the arrival to the Training institute:

1. Study NHB scheme guidelines of all schemes with emphasis on specific component for which application is being/ is made including General conditions, Basic structure, Applicant eligibility, Technical standards, Basic Data sheet and Protocols, Budgetary allocation for his/her state/UT, Guidelines for submitting application, cost of application, various prescribed formats,FAQs, Dos and Don'ts, Agenda and Checklist, List of documents to be submitted both for Pre-IPA and IPA available in NHB website and as received in their online account.
2. Study one's own Detail Project Report along with Model DPR available in NHB website.
3. Visit NHB website and study various services available- especially Scheme guidelines, Model DPRs, Technical Standards, Statistics, NHB interactive, Minutes of meetings (past), Public circulars to the extent possible.
4. Should see him/her self whether he/she is satisfying NHB Scheme requirements.
5. To cooperate with Horticulture Training Institute.
6. To share specific problems/ gaps / barriers in horticulture growth and profits in his area.

Material to be brought by each of trainee:

1. Hardcopy of application already submitted to NHB if any.
2. Hardcopy of DPR already submitted to NHB or prepared if any.
3. Hardcopy of Model NHB DPR if possible.
4. Hardcopy of copy of Dos' and Don't's, Agenda and Checklist, List of documents to be submitted.
5. Hardcopy of applicants' eligibility and General conditions.

Day wise schedule

Session	Module	Learning	Expert
	Registration	**Registration** Prior-Assessment of knowledge, attitude and skills	
Day1 Session1	**Orientation / Inauguration**	• General discipline in class room (Do's and Don'ts) • Every trainee to share their introduction with expectations. • Motivational Talk	Course coordinator ICAR-IIHR &Successful entrepreneur
Day1 S2	Economic / Marketing Potential and Specific State/ UTs context: Scope and opportunities and Success stories.	1. Greenhouse Flower Crop Origin, Botany and economic products of Rose, Carnation, Gerbera, , Anthurium, Lilium, Chrysanthymum & Orchids (Dendrobium/ Cymbidium etc) 2. Area, Production, Productivity, Prices & value. In context with India & state 3. Global: Area, Production, Productivity, Prices Export and Import scenario 4. Domestic market : Supply and Demand 5. Case study of success stories-2 6. Concerns for growers / entrepreneurs!	ICAR-IIHR Faculty & Successful entrepreneur
Day1 S3	Personal skills development	1. Lecture on soft skill development & leadership required in horticulture business	**Guest Faculty**
Day1 S4	NHB Scheme Guidelines, Annual Design and Processes of successful implementation and DPR, Bank Appraisal and Sanction of own Project	Group Discussion and Presentation by each group: 1.Scheme guidelines 2.Flow chart 3.Dos and Donts, List of documents to be submitted and Agenda and Checklist. 4.Technology standards/ Specifications etc. 5.Issues with Banks. 6.Common reasons for rejection of Projects at NHB. 7.Q& A on Queries.	**DD NHB**
	Quiz	Today's learning	
	Reading material for next day*	1. Study of NHB Scheme guidelines and come up with queries. 2. Reading material on Protected cultivation technologies, components and erection. 3. Reading material on Agronomic practices.	
	Evening/Nigh Home work/ Assignment #	• Creation of Whats' app group of all trainees. • Joining of NHB crop specific/Project specific Whats' app group.	

*: TO be read in the night before attending next day class.

#: Are evaluated/tested the following day.

Day2 S1	Media selection in protected cultivation	1. Cultivation Practices Rose, Carnation, Gerbera, , Anthurium, Lilium, Chrysanthymum & Orchids (Dendrobium/ Cymbidium etc)for soil, Agro climatic requirements , media preparation , soil and soilless culture. Media sterilization , Bed preparation 2. Media for Nursery/ seedling preparation	ICAR-IIHR **Faculty**
Day2 S2	Protected Cultivation Technologies	Types of greenhouses , Site selection, Layout & Design &Dimensions Structure Selection based on crop, location, climate, Foundation, Erection, Selection of cladding material, Quality norms of Greenhouse erection materials. Familiarise different components & equipment of GH/ Shade net etc, Climate Control in greenhouse – RH, Temperature, light, as per crop requirement, operation & maintenance, automation in greenhouses Cost and Economics of Protected cultivation, register keeping, Annual Maintenance Contract, insurance etc. Selection of fabricator, Do's and Don'ts	ICAR-IIHR **Faculty+ International flower auction centre Faculty**
Day2 S3 & 4	Visit to Poly house / Shade net/ Tunnel/ etc. & Agronomic practices regarding media preparation	Familiarise technology and components of protected cultivation, practical on erection/ fabrication, challenges and suitability. Collective erection of Poly house / Shade net /Tunnel.	ICAR-IIHR **Faculty**
		Agronomic practices:	
		• Soil & Water testing- PH & EC Concept, treatment and its importance. • Bed preparation and proper site/ field lay out / design • Fumigation & Mulching • Basal dose preparation • Plantation	ICAR-IIHR **Faculty**
		• Soil less Media in Protected cultivation: • Coco peat , Rock wool, Perlite, Vermiculite • Media Bag Selection • Soil and Soil less cultivation &Importance in Flower cultivation	ICAR-IIHR **faculty**
	Discussion	Evaluation of Assignment and observations	
	Quiz	Learning on yesterday and today	
	Reading for	Crop Production technology under protected	

	next day	cultivation **of Rose Carnation & Gerbera**	
	Assignment for next day	Study difference between different types of greenhouse structures and its material	

Day 3 **S.1 & 2 Sessions**	CropProduction Technology- Class room	**1. Crop production technology of Rose Carnation & Gerbera (only two crop per day)** 2. Planting – varietal selection, planting season, Spacing & important intercultural practices as per crops 3. Rose cultural practises – planting , mother shoot bending, initial structure development, pruning, regular bending , disbudding, hygiene and weeding, 4. Carnation important cultural practises – support system , pinching, guiding, disbudding hygiene and weeding, 5. Gerbera important cultural practises – disbudding , Raking of soil, removal of old leaves, opening of Crown	ICAR-IIHR **Faculty+ GKVK faculty**
S.3 & 4	Visit to Poly house / Shade net/ Tunnel/ etc.	Practical sessions including mother shoot bending, initial structure development, pruning, regular bending , disbudding, hygiene and weeding pinching, guiding, disbudding hygiene and weeding disbudding , Raking of soil, removal of old leaves, opening of Crown in Rose, Gerbera& carnation	ICAR-IIHR **faculty**
	Discussion	Evaluation of Assignment and observations	
	Quiz	Learning on 3 days	
	Reading for next day	• Cultivation of Anthurium, Orchids &lilium • Bed preparation and support system in Anthurium, orchids &lilium • •	
	Assignment	Importance of Cultural practices like disbudding, bending in rose cultivation Significance of disbudding and pinching (1st and 1 ,5 pinching) in carnation Importance of disbudding and removal of old leaves in Gerbera	

Day 4 **S.1 & 2 Sessions**	Crop Production Technology-Class room	**1. Crop production technology of Orchid Anthurium&Lillium m Chrsanthymum** 2. Planting – varietal selection, planting season, Spacing & important intercultural practices as per crops 3. Orchids cultural practises – support structure, Media for orchid cultivation, bed preparation , imp cultural practices and hygiene 4. Anthurium important cultural practises – support structure, Media for Anthurium cultivation, bed preparation , imp cultural practices and hygiene 5. Lillium important cultural practises	ICAR-IIHR **Faculty, / TNAU faculty**
S.3 & 4	Visit to Farm- of Farmer /Field visit to successful entrepreneur	6. Practical sessions including support structure, Media for Anthurium/ Orchid/ Lilium cultivation, bed preparation , imp cultural practices and hygiene	ICAR-IIHR **faculty**
	Discussion	Evaluation of Assignment and observations	
	Quiz	Learning on 4 days	
	Reading for next day	• Irrigation management • Fertilizer management.	
	Assignment	Study of import varieties and types of anthurium/ Orchids &liliums suitable for indian markets	

Day 5 S1	**Integrated Nutrient Management**	**Irrigation and fertilizer management in** Rose, Carnation, Gerbera, , Anthurium, Lilium, Chrysanthymum & Orchids (Dendrobium/ Cymbidium etc 1. Water requirement,water quality for irrigation, treatment, critical stages of crop , irrigation schedule 2. Irrigationsystem (Drip / foggers/ misters),design specifications , maintenance 3. Care to be taken in procuring inputs	ICAR-IIHR **, Faculty**
Day5 S2	**Crop protection Pest management**	**Crop protection in** Rose, Carnation, Gerbera, , Anthurium, Lilium, Chrysanthymum & Orchids (Dendrobium/ Cymbidium etc 1. Introduction to major pest in protected cultivation 2. Identificationknowing of pestssymptoms, stages of attack , precautions and control measures-mechanical, cultural , Biological & chemical 3. Integrated Pest Management- Bio-pesticides, promotion of natural enemies. 4. Availing extension services at regular intervals with the visit of experts to fields.	ICAR-IIHR **faculty**
Day5 S3 & 4	**Disease management**	1. Introduction to major Disease in protected cultivation 2. Identification knowing of diseasesymptoms, stages of attack , precautions and control measures-mechanical, cultural , Biological & chemical 3. Integrated Pest Management- Bio-pesticides, promotion of natural enemies. 4. Availing extension services at regular intervals with the visit of experts to fields.	ICAR-IIHR **faculty**
			ICAR-IIHR **faculty**

Day 06 S1	Government organisations and Schemes and applicable laws	List of Institutions for promotion of Horticulture: State/ UT Govt., DAC&FW-CDB, NHB, GKVK, STATE Government, Central Schemes – SFAC, NCDC, MoFPI, APEDA, NABARD etc. NHM	**State Dept. of NHB State/UT official Horticulture/ SFAC APEDA NCDC NABARD**
S2	Technology Entrepreneurship & innovation	Technology areas & Providers • Quality Planting Material, Package of practices, IPM, Soil and Crop health, Aerial spraying, Crop monitoring, Pest and Disease Surveillance, Weather Forecasting • Advisory services • Use of IT, Automation- Drones etc. • Crop wise Experts across India and State. • Contacts at CDB/ CPCRI/NHB/ UT Agri.Dept./ GKVK/ ATMA/NHM • Climate change Entrepreneurship: • What it is? Essential elements? • Entrepreneurship in Horti-business-salient features. • Steps involved in setting up an enterprise and laws to be complied. • Business avenues in trainee's context. • How to minimise cost of production and maximise profits. Innovation • What is innovation? Innovation in Horti-business?	**Expert**
	Knowledge and Statistics	• Maintain statistics- Growers, Area, Production, Productivity, Pest and Diseases, Age of plantation • What's app group; • ICAR/SAU/SHU News letters • Advisories • Online news • Market information- State/UT , Domestic and Export • Radio, • e-learning • Kisan Call centres	
S 3	Evaluation 1 Hour	Training evaluation /Test on 1. Knowledge 2. Skills 3. Attitude	**Course coordinator**

		Marks in the test are		
	Total Marks Final Assessment	1. Class room participation	25%	
		2. Timely submission of assignments	25%	
		3. Final evaluation	50%	
		Total Marks (Are recorded in Completion Certificate)		
	Feedback 30 Min			**Course coordinator**
	Discussion on Feedback			
S 4	Valediction			

Trainers' Material: to be used for preparing Participants Handbook first in English and then in local language as far as possible.

The following weblinks are illustrative. Training Institute is requested to explore more and the best fit material for the trainees socio-economic condition, crop and enterprise.

S.No	Module	Reading Material	
		For the Trainer	For the trainee
1.	Economic Potential and Specific State/ UTs context and Success stories.	Horticulture Statistics at a glance: http://agricoop.gov.in/statistics/publication-reports World fruit and vegetable map: 2018: Robo Bank https://research.rabobank.com/far/en/sectors/regional-food-agri/world_fruit_map_2018.html APEDA AGRIEXCHANGE: http://agriexchange.apeda.gov.in/ ICAR institutions publications on specific crop CII / FICCI/ASSOCHAM/ PHDCC reports http://www.fao.org/docs/eims/upload/210971/global_issues_paper.pdf Success stories: http://agritech.tnau.ac.in/success_stories/sstories_horti_2015.html	
2.	Personal skills development	Internet and youtbue	
3.	Selection of cultivar and Production practices for high productivity	ICAR institutions publications on specific crop Package of practices of specific crop (s). e-learning: videos from authentic sources- ICAR/ SAU/SHU/Global Institutions. ICAR e-courses: https://ecourses.icar.gov.in/	
4.	Harvesting, Post-Harvest Management / Infrastructure	Analysis of FPO model for Vegetables https://nccd.gov.in/PDF/Analysis_FPO_model.pdf Doubling of Farmers Income Report: Vol.III and IV http://agricoop.gov.in/doubling-farmers	
5.	Processing / Value Addition	ICAR / Any reputed R&D Institution publications e-learning: videos from authentic sources- ICAR/ SAU/SHU/Global Institutions.	
6.	Supply/ Cold-chain development both for fresh and processed produce	Cold Chain Awareness program https://nccd.gov.in/PDF/Cold-chain%20Awareness%20Booklet.pdf Analysis of NDDB Model for Vegetables https://nccd.gov.in/PDF/Analysis_NDDB_veg_model.pdf All India Cold Chain Infrastructure Capacity : Gap Analysis https://nccd.gov.in/PDF/CCSG_Final%20Report_Web.pdf	
7.	Marketing and value chain development	Directorate of Marketing and Inspection website: http://agmarknet.gov.in/ Crop specific market information sources	
8.	Maintain quality of	TNAU AgriTech portal on Food Safety:	

	produce: Health & Food Safety / Traceability and Standards	http://agritech.tnau.ac.in/gap_gmp_glp/gap_fresh%20_%20fruits%20&%20veg.html http://agritech.tnau.ac.in/food_safetyindex.html Global Gap: https://www.globalgap.org/uk_en/ INDGAP: http://www.qcin.org/CAS/INDGAP/ Global gap India facilities: http://agriexchange.apeda.gov.in/Market%20Profile/Market_Inteligence/Annexure_III.pdf Food Traceability in Inda: http://face-cii.in/sites/default/files/final_report-version_2.pdf FAO International Code of Conduct on Pesticide Management http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/code/en/ TRACEABILITY IN FOOD AND AGRICULTURAL PRODUCTS: ITC, Switzerland publication at http://www.intracen.org/ GRASP: Global GAP Risk Assessment on Social Practice The Global Social Compliance Programme GSCP https://www.gscpequivalenceprocess.com/	
9.	Finance, Credit & Farm/ Project & Risk Management	Model DPR Templates for NHB Schemes ww.nhb.gov.in	
10.	Cluster development : Collaborative farming/ FPOs/ FPC	NHB Website: Proposed scheme: Horticulture Business Cluster and Supply chain development Programme FAO (2010) Agro-based clusters in developing countries: staying competitive in a globalized economy http://www.fao.org/docrep/012/i1560e/i1560e.pdf World Bank: Agriculture Clusters https://www.innovationpolicyplatform.org/sites/default/files/rdf_imported_documents/Agricultural_Clusters.pdf How Can the Poor Benefit from the Growing Markets for High Value Agricultural Products? FAO / UN Paper https://papers.ssrn.com/sol3/papers.cfm?abstract_id=944027 Crop specific Producers Society and company online authentic sources	
11.	Government organisations and Schemes	http://agricoop.gov.in/ http://mofpi.nic.in/ http://apeda.gov.in/ http://nhb.gov.in/ http://coconutboard.nic.in/Scheme.aspx	
12.	Knowledge and Statistics	ICAR Indian Horticulture Magazine: https://icar.org.in/node/9420 IIHR: https://iihr.res.in/documentary-video-clips-for-farmers FAO: http://www.fao.org/e-agriculture/stub-28	
13.	Technology and Entrepreneurship	Visit ICAR – Institutions / Directorates/ Bureaux/ NRCs: https://icar.org.in/ Innovation in Agriculture: http://www.fao.org/3/CA2460EN/ca2460en.PDF Specific technologies: https://icar.org.in/content/agricultural-technologies e-learning: https://ecourses.icar.gov.in/ ICAR Publications: https://krishi.icar.gov.in/jspui/ Local University publications Local University success stories	

14.	Protected (/Greenhouse / Shade net / Walk in Tunnel) cultivation:	National Committee on plasticulture Agriculture with the Horticulture https://www.ncpahindia.com/ Agriculture Skill Council of India: Curriculum and Occupational / Qualification standards: http://asci-india.com/National%20Occupation%20Standards.php	
15.	Cold Storage / Cold Chain Development:		

Reading material for the trainee is to be prepared by the Training Institute based on trainers' reading material in local language either in brief or in detail based on the module and need. May share booklets or print out of detailed scientific package of practices recommended locally.

Success Stories: Illustrative

IARI	http://iari.res.in/index.php?option=com_content&view=article&id=539&Itemid=1516 http://www.iari.res.in/files/Pusa_Hydrogel.pdf
IIHR	https://iihr.res.in/success-stories
CISH	http://www.cish.res.in/success_story.php
CCRI Nagpur	https://www.youtube.com/watch?v=QwE6oFkq3F8
NRC Banana	http://nrcb.res.in/success-stories.php
CITH Srinagar	http://www.cith.org.in/index.php?option=com_content&view=article&id=83&Itemid=11&lang=en
IIVR	https://iivr.org.in/success-stories
Grapes	https://rkvy.nic.in/Uploads/SucessStory/TAMILNADU/2018/20180440133.%20GRS%20Success%20story.pdf

https://www.innovationpolicyplatform.org/sites/default/files/rdf_imported_documents/Agricultural_Clusters.pdf

Activities prior to training by Horticulture Training Institute:

The training institute shall undertake

1. Desk Analysis:
    a. About specific commodity: State/ UT and District's Area, Production, Productivity, cost of cultivation, production, post-harvest and marketing problems etc.
    b. Road map formulated by State/UT government to develop the area/ crop / farmers income of the area including State/UT Economic Survey, Annual Report of Agriculture/Horticulture Dept., District website etc.
    c. Explore various research articles on crop production, marketing etc. of the State/ Area.
    d. Examine various study reports of Government agencies- State/ DAC&FW/ APEDA/ SFAC/MoFPI and private agencies- CII /FICCI/ASSOCHAM/ Others for the horticulture Development of the State, Specific location, India etc.
2. Preparation of training design and teaching-learning material.
    a. Preparation of training schedule with good mix of theory, practicals (both in class room and field visits) and home work (After class hours) and also physical fitness and site seeing.
    b. Participants Handbook: A brief note on each of teaching module in local language for circulation to each trainee, with the help of local technical expert.
    c. Preparation of case studies/ exercises for class room discussion / brain storming / homework.
    d. Access to internet and computers to explore the potential of technology.
    e. Identification of the best experts for each of the session and invitation of successful FPOs/ entrepreneurs/ experts for interaction session with the trainees.
    f. Identification of FPOs/Entrepreneurs/Firms/ Organisations for internship with clear Do's and Don'ts.
    g. Every trainee to come with 2 problems with respect to each of the session.
    h. Use of Audio-visual aids for teaching-learning& Good logistics for field visits
3. Identification of fields, FPOs, enterprises and operations etc. for the visit of trainees.
4. Good preparation of trainees accommodation, food (of trainees cultural context as far as possible), primary health care etc.

Services by the Horticulture Training Institute

1. **Facilities to Participants during training**
    a. Safe and joyful learning environment.
    b. Classrooms are (Venue) : **ICAR-IIHR**, Bengaluru
    c. Safe hostel accommodation and healthy Boarding.
    d. Accommodation/Hostel is at: **ICAR-IIHR**, Bengaluru
    e. Hostel check in: One day before training
    f. Hostel check out: following day of completion of course.
    g. Internet and computer systems.
2. **Material to be made available to Participants by Horticulture Training Institute**
    a. Training Brochure before training
    b. Reading Material during training
3. **Faculty:**

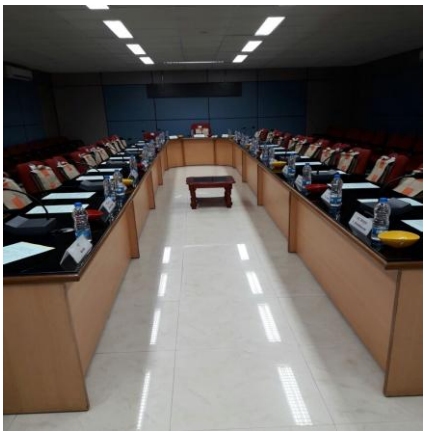
4. **Post-training activities:**
    1. Take written feedback on each of session with respect to content, clarity and delivery style, opportunity for Q&A, accommodation, food, other facilities, suggestions for improvement etc. and share action proposed in future trainings, during valedictory session.
    2. Submission of training report to be submitted within 15 days of completion of EDP:
        a. Objectives, outputs and outcomes of training.
        b. Training schedule
        c. Trainee's / participant list with postal address and contact numbers.
        d. Photographs and Video (Also to be hosted by training institute and NHB)
        e. Analysis of feedback and action taken report.
        f. Action taken on networking with trainees local R&D Institution / experts for regular extension and entrepreneurship development activities.
        g. Utilisation Certificate.

Photograph of ICAR-IIHR,

Bengaluru **Campus**

IIHR Classroom

IIHR COMMITTEE ROOM



IIHR Hostel