

**Name of the Institute:**

**ICAR-Central Institute of Post Harvest Engineering and Technology,  
Ludhiana**

**Model**

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

<b>Activity</b>	<b>Type – I Type, II Cold Storage, CA Storage &amp; Modernization</b>
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**2019-20**

<i>Become Entrepreneur</i>	
	<i>Lead Change and Innovation</i>
<i>Be creative</i>	
	<i>Lead Profits</i>

Address of Horticulture Training Institute:

- **ICAR-Central Institute of Post Harvest Engineering and Technology, PAU Campus, Ludhiana, Punjab**

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Website: [www.ciphet.in](http://www.ciphet.in)

### Index

	Topic	Page
1.	Introduction	
2.	Rationale	
3.	Importance of Project: Crop/ Activity	
4.	Profile of Institute and facilities and Services	
5.	Objectives of training Programme	
6.	Pedagogy: Training methods / styles are:	
7.	Outputs expected: ( As on the last date of 06 days training)	
8.	Outcomes expected ( in 18 months)	
9.	Programme in brief	
10.	Expectations from trainee before the arrival to the Training institute	
11.	06 Days training schedule	
12.	Trainers' Material: to be used for preparing Participants Handbook first in English and then in local language as far as possible.	
13.	Activities prior to training by Horticulture Training Institute	
14.	Services by the Horticulture Training Institute	
15.	Photographs of Campus/ Class rooms / Hostel / Technology / Infrastructure	

<b>Training Programme Name</b>	<b>Entrepreneurship and Leadership Development Programme for Horticulture Entrepreneurs desirous of applying to Schemes of National Horticulture Board</b>
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**Introduction:** India is the second largest producer of Fruits and Vegetables globally. During 2017-18 the production of Fruits is 97 Million MT and that of Vegetables is 184 million MT and that of flowers is 2.4 Million MT. The salient features of commercial Horticulture are Perishability, intense Technology, High Profitability accompanied with high investment and High Risks including vulnerability to post-harvest losses. Overall it demands very good entrepreneurship and leadership.

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 by 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 days 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**

1. Cold Storage Type-1 /	✓
2. Cold Storage Type-2/	
3. Cold Storage Expansion/	
4. Cold Storage Modernisation etc.	

**Profile of the Institute:**

**1. ICAR-Central Institute of Post Harvest Engineering and Technology, Ludhiana**

The ICAR-Central Institute of Post-Harvest Engineering and Technology (CIPHET) was established on 3rd October 1989 at the PAU Campus, Ludhiana, Punjab, India as a nodal institute to undertake lead researches in the area of the Post-Harvest Engineering and Technology appropriate to agricultural production catchment and agro-industries. The institute's second campus was established on 19th March 1993 at Abohar, Punjab, India which is primarily responsible for conducting research and development activities on fruits and vegetables, and commercial horticultural crops. ICAR-CIPHET is also headquarters for two All India Coordinated Research Projects (AICRPs) viz. AICRP on Post-Harvest Engineering and Technology (PHET) at 31 Centre's and AICRP on Plasticulture Engineering & Technology (PET) at 14 Centre's. The institute has a mandate for carrying out research for solving problems and identifying technologies related to post-harvest loss assessment and prevention, processing, value addition and storage of agricultural, horticultural, livestock, and aquaculture produce targeted to achieve food safety and quality assurance. The other major mandate of the institute is to create human resource and entrepreneurship development in post-harvest engineering and technology.



**Basic infrastructure and collaboration to be in place**

**1. Competent Faculty.**

SN	Name of Faculty	Designation	Qualification	Expertise	Experience in years
<b>CIPHET, Ludhiana</b>					
1	Dr. R.K. Singh,	Director	Ph.D.	Irrigation and protected cultivation of horticultural produce	
2	Dr. K. Narsaiah	Principal Scientist and I/c Head	Ph.D.	Post-harvest management of horticultural produce	
3	Dr. Ranjeet Singh	Sr. Sci	Ph.D.	Packaging and MAP of horticultural produce	
4	Dr. Yogesh Kumar	Scientist (SS)	Ph.D.	Food Safety	
5	Dr. Rahul Kumar Anurag	Scientist (SS)	Ph.D.	Primary processing and packaging of horticultural produce	
6	Dr Tanbir Ahmad,	Scientist (SS)	Ph.D.	Food Safety	
7	Er. Akhoon Asrar Bashir	Scientist	M.Tech.	Post harvest Engg. and Cold chain management	
8	Mrs. Surya	Scientist	M.Sc.	Food Microbiology	
9	Dr. Poonam Choudhary	Scientist	Ph.D.	Food Nutrition	
10	Dr. Bhupendra Ghodki	Scientist	Ph.D.	Post harvest Engg. and Cold chain management	

11	Dr. Bidyalakshmi	Scientist	Ph.D.	Post harvest Engg. and Cold chain management	
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2. Research expertise and laboratory/pilot plant / Demonstration experience.



Non Destructive Quality Evaluation lab



Agricultural Knowledge management Unit



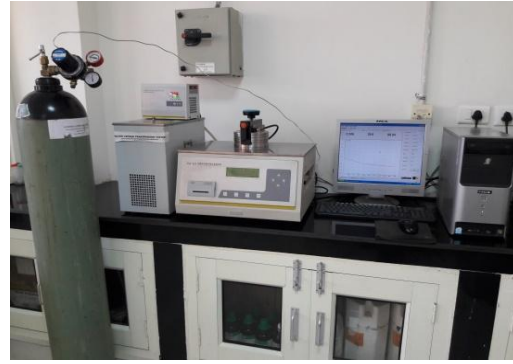
Food Testing Lab



Food Testing Lab



Food packaging lab



Water Vapour Permeability Tester



Evaporatively Cooled Room



Cold Storage

3. Excellent classrooms with all Audio-visual equipment and aids including PPT facility.
4. Excellent living/ residential accommodation with Computers and internet.
5. Has good networking with experts across India, to invite best of the faculty in a particular area of expertise.
6. Has collaboration with entrepreneurs and Industry.
7. Willing to provide internships with FPOs/ FPCs/entrepreneurs.

#### **Previous experience:**

##### **1. ICAR-Central Institute of Post Harvest Engineering and Technology, Ludhiana**

The Institute also has well-furnished guest house facilities. More details of the institute are available at [www.ciphet.in](http://www.ciphet.in). The institute conducts regular professional trainings. During last year, total of 648 participants were trained for post-harvest management of agricultural and livestock produce through three ICAR sponsored summer/winter schools, one model training course, seventeen EDP, eleven farmers' training, and two workshops. A total of 182 students were also trained during this period. The institute has assessed the losses during storage in godowns, funded by food Corporation of India (FCI). The institute has also established a fumigation chamber and norms for treatment of grapes for export to New Zealand and Australia. Besides, ICAR-CIPHET has a Food testing Laboratory for testing commercial samples. It also conducts professional training programmes.

### **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 to be submitted.
  - 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. Knowledge and practical guidance on applying the appropriate post harvest management techniques for different fruits and vegetables in order to maintain and optimize product quality, assure its safety and ensure efficiency in the supply chain.



- a. To be aware of post-harvest and storage practices, protocols and technologies.
  - b. How to select suitable primary processing and packaging technologies and machinery for different fruits and vegetables.
  - c. Technology: Time of Harvesting, Moisture level of the produce, Pre-cooling of products for removal of field heat, cleaning, washing and sanitization, waxing, grading and sorting of fruits and vegetables, peeling/trimming/size reduction for production of fresh cut fruits/vegetables, packaging , storage and transportation technology.
  - d. To know required infrastructure- Supply Chain/ Cold Chain and Marketing infrastructure and Gap analysis with that of the current practices to the context of trainees, and management of trainees.
4. Processing and value addition
5. 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.
6. Supply/ Cold-chain development both for fresh and processed produce
7. Producing quality produce: Healthy, Food Safety / Traceability and Standards
  - a. To know Global /National norms of Food Safety & traceability- Good Agricultural Practices, and standards, MRL, IPM, logistics, GMP, Organic certification, etc. Encourage trainees to document a roadmap for availing certification in 1 year time.
8. DPR and 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 trainees 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.
- 9. Cluster development / Collaborative farming: What is cluster? Essential elements? To know importance of cluster approach,
- 10. Government organisations and Schemes related to Horticulture and laws to be complied.
- 11. Horticulture Statistics sources including DAC&FW website and State Horticulture Dept. website.
- 12. 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 75 % 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 post-harvest processing, packaging, transportation and Marketing, Exports etc. in English/Hindi/trainees' language.
  - c. Food safety (Good Agricultural Practices), traceability, standards etc.
  - d. Documentation of analysis of current scenario of trainees 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 harvesting, post-harvest, packaging, storage, food safety, traceability certification and standards.

- c. Project: PHM-Primary Processing & Packaging: 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 Post harvest management 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. Successful completion of the project with right technology and processes complying with all NHB Scheme requirements.
2. Reduced post harvest losses in fruits & vegetables; improved product quality&higher shelf-life of products.
3. Improved food safety, certification, standards compliance- at least process is initiated.
4. Improved infrastructure.
5. Improved profits/ net income to farmers and rural entrepreneurs.
6. Creation of job opportunities for all types of rural youth.

## Programme in Brief

<b>Training Programme Name</b>	<b>Entrepreneurship and Leadership Development Programme for Horticulture Entrepreneurs-</b>				
Duration	6 working days				
Participant Target Group	Individuals desirous of availing NHB benefit under Scheme No.1 or 2 and also for those who want to improve their knowledge and leadership in protected commercial horticulture.				
Training Coordinator with Designation and Address Tel, Mobile and email id	Dr. K. Narsaiah, I/c Head, Agri. Structures and Environmental Control, CIPHET, Ludhiana-141004 Phone: 9417143925                      Email: <a href="mailto:knarsan@gmail.com">knarsan@gmail.com</a> , <a href="mailto:k.narsaiah@icar.gov.in">k.narsaiah@icar.gov.in</a>				
Languages					
Training calendar for 2019-20	Month	Last date for Registration	Training reporting dates	Training Dates	Institute Name
	August 2019				
	September 2019				
	October 2019				
	November 2019				
	December 2019				
	January 2020				
	February 2020				
	March 2020				
How to Apply	Desirous candidates should send an application in a format provided at the end of this document along with application fee. Copy of the same should also be submitted to National Horticulture Board.				
Next review/ revision of Training Design	February 2020				
Batch size and cost and Payment system	<b>ICAR-CIPHET</b>				
	Batch size	Course Rs. candidate	Fees per candidate	Hostel: Accommodation, Boarding: BF+L+D + Morning Tea + Afternoon Snacks Rs. per candidate	Total cost Rs. per candidate
	5-10	14000		3000	17000

		(Inclusive of GST)		
	Payment system and address:	100% To be paid in advance, along with application, through DD in the name ICAR-Unit CIPHET, Ludhiana		
Enrolment	Is voluntary on the part of trainee and on his/her submission of willingness in writing to undergo training.			
Certificate	Upon successful completion of training with 75% marks in final assessment, the candidates are awarded completion certificate with marks.			
NHB & HTI Role	<ol style="list-style-type: none"><li>1. The training programme is voluntary for any individual or trainee.</li><li>2. The cost of training is to be borne by trainee him/herself.</li><li>3. The training is not sponsored by NHB nor by any Government.</li><li>4. Upon 100% attendance and upon scoring 95% marks is considered as successful completion and then are eligible for training completion certificate.</li><li>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).</li><li>6. It is compulsory to reside in the hostel/accommodation provided by the institute in the interest of training.</li><li>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.</li><li>8. Trainees are responsible for their conduct and wellbeing issues</li><li>9. NHB has no liability towards IPA and Subsidy release or non-release</li><li>10. HTI has no liability towards IPA and Subsidy release or non-release.</li></ol>			

### **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
	<b>Registration</b>	<b>Registration</b> Prior-Assessment of knowledge, attitude and skills	
<b>Day1 Session 1</b>	<b>Orientation / Inauguration</b>	<ul style="list-style-type: none"> <li>General discipline in class room (Do's and Don'ts)</li> <li>Every trainee to share their introduction with expectations.</li> <li>Motivational Talk</li> </ul>	Successful entrepreneur
<b>Day1 S2</b>	<b>Economic / Marketing Potential and Specific State/ UTs context: Scope and opportunities and Success stories.</b>	<ol style="list-style-type: none"> <li>Crop Origin, Botany and economic products:</li> <li>Fresh product &amp; Processing &amp; Value added products.</li> <li>India: Area, Production, Productivity, Prices &amp; value.</li> <li>State/UT : Area, Production, Productivity</li> <li>Prices &amp; value, variation across markets.</li> <li>Area, Production, Productivity, Prices</li> <li>Domestic market : Supply and Demand</li> <li>Export and Import scenario</li> <li>Case study of success stories-2</li> <li>Concerns for entrepreneurs</li> </ol>	
<b>Day1 S3</b>	<b>Personal skills development</b>	<ol style="list-style-type: none"> <li>Improve listening, reading, writing and communication skills, team work; reading of signs etc.</li> <li>To learn/ improve IT/ social media and know how to benefit from Internet and newspapers/media.</li> <li>To improve leadership / social skills common informed vision, communication, team work, negotiation skills; with an exercise and success story.</li> <li>To explore leadership roles required in horticulture business and realign and recalibrate self with new knowledge, concepts and tools.</li> <li>Managing change and innovation and Taking charge and leading strategy.</li> </ol>	
<b>Day1 S4</b>	<b>NHB Scheme Guidelines, Annual Design and Processes of successful implementation</b>	Group Discussion and Presentation by each group: <ol style="list-style-type: none"> <li>Scheme guidelines</li> <li>Flow chart</li> <li>Do's and Don'ts, List of documents to be submitted</li> </ol>	<b>DD NHB</b>

	and DPR, Bank Appraisal and Sanction of own Project	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.	
	Quiz	Today's learning	
	Reading material for next day*	1. Study of NHB Scheme guidelines and come up with queries. 2. Reading material on Cold storage technologies, components and erection.	
	Evening/Night Home work/ Assignment#	<ul style="list-style-type: none"> <li>• Creation of Whatsapp group of all trainees.</li> <li>• Joining of NHB crop specific/Project specific Whats' app group.</li> </ul>	

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

#: Are evaluated/tested the following day.



<b>Day2 S1</b>	<b>Project implementation &amp; Storage Practices.</b>	<p>Types, Site selection, Layout &amp; Design &amp; Size; Selection based on crop, location, climate including low cost structures, Directions, Foundation, Erection, Selection of cladding material, Quality of materials. Basic structure of cold storage warehouse; General layout</p> <p>Familiarise different components &amp; equipment as per product requirement, maintenance of required environment – RH, Temperature, light, as per product requirement, care, operation &amp; maintenance, automation</p> <p>Cost and Economics of Storage, register keeping, Annual Maintenance Contract, insurance etc.</p> <p>1. Selection of Consultant &amp; contractor, Do's and Don'ts</p>	<p>Post harvest Engg. and Cold chain design engineer</p> <p>+storage manager</p>
<b>Day2 S2</b>	<b>Visit to Refrigeration system manufacturer</b>	Familiarise technology and components of Cold Stores, practical on erection/ fabrication, challenges and suitability.	Post harvest Engg. and Cold chain design engineer
<b>Day2 S3 &amp; 4</b>	<b>Visit to Refrigeration system manufacturer</b>	Study Storage construction, Handling & Storage Practices and Operations.	
	<b>Discussion</b>	<ul style="list-style-type: none"> <li>Evaluation of Assignment and observations</li> </ul>	
	<b>Quiz</b>	Learning on yesterday and today	
	<b>Reading for</b>	Cold storage Basics.(recommended book by	

	next day	ISHRAE)	
	Assignment for next day	Design considerations of Refrigeration systems	

<b>Day 3</b>  <b>S.1 &amp; 2 Sessions</b>	Class room and  Field visit to Refrigeration system manufacturer	Heat Load calculations, Component Selection, Type of Plants - Water cooled / Air cooled .Types of refrigerant used, Energy Efficiency	<b>Cold Store Design Consultant / Engineer</b>
<b>S.3 &amp; 4</b>	Visit to Cold Storage and Refrigeration system manufacturer	1. Practical sessions including training, Handling Practices 2. Basic maintenance of cold storage. Fault finding and rectification of refrigeration system	
	Discussion	Evaluation of Assignment and observations	
	Quiz	Learning on 3 days	
	Reading for next day	<ul style="list-style-type: none"> <li>• Factors that decide storage period .</li> <li>• Cold Store practices, technologies and infrastructure – specific to each trainee.</li> </ul>	
	Assignment	Water Quality and Water Saving techniques	

<b>Day 4</b> <b>S 1 &amp; 2</b>	<b>Cold Storage Practices</b>	<ol style="list-style-type: none"> <li>1. Post Cold Store losses and Waste scenario in the country and measures to minimise the same.</li> <li>2. Proper technique &amp; do's and don'ts of Cold Storage practices.</li> <li>3. Factors affecting quality, moisture, Size, Colour, Time etc.</li> <li>4. Careful handling / practices including use of packing material in Cold Stores.</li> </ol>	Post harvest Engg. and Cold chain management expert
<b>S3 &amp; S4</b>	Visit to Modern Pack house, cold storage etc.	Skill /Hands on training on Post-harvest practices.	
	<b>Discussion</b>	Evaluation of Assignment and observations	
	<b>Quiz</b>	Learning on 4 days	
	<b>Reading for next day</b>		
	<b>Assignment</b>	Technologies for minimising cold storage losses	

<b>Day 5  S1 &amp;2</b>	<b>Marketing and value chain development</b>	<p>Marketing Basics :</p> <ol style="list-style-type: none"> <li>1) Value chain analysis of product commodity in State / UT – Current scenario and the best possible solutions</li> <li>2) Identification of markets – Exports. Distant Market, Local Markets – Mandis / Traders, Storage units.</li> <li>3) Demand – seasons / days etc.</li> <li>4) E- marketing</li> <li>5) Ascertaining the storage worthiness of warehouse, Inventory management, Stock control and movements Legal requirements and list of commodities notified for issuance of NWRs</li> </ol>	<b>Marketing expert/ APMC Secretary, Exporter / Banker</b>
		<p>Demand assessment and management:</p> <ol style="list-style-type: none"> <li>1. Need to consolidate demand from all sources- retail outlets, chain, hawkers etc.</li> <li>2. Assured quantum can be vertically integrated with producers.</li> <li>3. Variable demand is linked with indirect or Mandi based procurement.</li> <li>1. To know a balance sheet: demand and supply of commodity if possible if possible.</li> </ol>	
		<p>Causes of market instability and measures to address</p> <ol style="list-style-type: none"> <li>1. Causes: Low cost supplies from new production areas, Fluctuating demand in Transport availability, Market manipulation, weather vagaries, local disruptions (Bandhs etc.) etc.</li> <li>2. Measures: Building brand loyalty, Efficient supply chain with dedicated transport on pre-determined schedules, Complementary storage option for buffers for 2 weeks.</li> <li>4. Measures to check gluts.</li> </ol>	
		<p>Marketing models / Measures to minimise price spread / enhance price realisation.</p>	

		<p>1. Marketing with /without legal contract with buyers, supply chain agents etc.</p> <p>2. Models:</p> <ul style="list-style-type: none"> <li>• NDDDB-Mother Dairy/ SAFAL Model- Front end distribution hub and retail outlets.</li> <li>• HOCOMS model: Both back end ownership of collection centres and transport and front end distribution, outlets.</li> <li>• Big Basket Model.</li> <li>• Study of pricing / price realisation across the models</li> </ul> <p>3. Supply to Distribution hub by Buyer like HOPCOMs or by FPO as in case of Mothers; dairy SAFAL.</p>	
		Private partnership- Success stories	
		<p>Potential niche Export markets</p> <ol style="list-style-type: none"> <li>1. Global Scenario- product wise; Success story,</li> <li>2. State/UT s potential, Challenges for Export markets- sea based;</li> <li>3. Interaction with Exporters and Importers.</li> </ol> <p>Linkage with Distribution hubs (Netherland)</p>	
		<p>Potential niche Domestic markets:</p> <ol style="list-style-type: none"> <li>1. Indian Scenario- product wise; Challenges for Domestic – road based</li> <li>4. List of processors, value added companies.</li> </ol>	
		2. Exposure / Networking visits/Trade Fairs/ Exhibitions_ India & Abroad- CDB support	
<b>S 3 &amp;4</b>	Economics, Finance, Credit & DPR and Project Management and Risk Management	<ol style="list-style-type: none"> <li>1. Estimate cost of Project and required investment;</li> <li>2. To know about Banks/ Financial Institutions; Loan procedure-how to avail finance/ credit-challenges and prospects.</li> <li>3. Facilitate in possible solutions on expeditious and easy access to credit in trainees context.</li> <li>4. To prepare a proposal for loan duly considering Market, Finance and Technical</li> </ol>	<p><b>Panel of</b></p> <p><b>1. Chartered Accountant</b></p> <p><b>2. Horticulturist</b></p>

		viability. 5. Model DPR Templates of NHB. 6. DPR preparation for various schemes 7. Store record keeping. 8. Economics of enterprise & performance measurement using 2-3 Financial indicators. 9. Managing Natural calamities 10. Mitigation, Insurance- risks covered, not covered, claims, assessment, settlement etc. Monitoring and Evaluation of project	<b>3.PHM Expert</b>  <b>4.Bank Manager</b>  <b>5.Consultant / Engineer.</b>  <b>6.Insurance Agency</b>
<b>S 3 &amp;4</b>	Discussion	11. Evaluation of Assignment and observations	
	Quiz	Learning on 5 days	
	Reading for next day	Govt. Schemes	
	Assignment	<b>Explore: <a href="http://agmarknet.gov.in/">http://agmarknet.gov.in/</a></b>  Documentation of difficulties being faced by trainees;  Interaction with Bankers and growers	

Day 6  Session 1 & 2	Government organisations and Schemes and applicable laws.	List of Institutions for promotion of Cold chain,: State/ UT Govt., DAC&FW- CDB, NHB, CPCRI, UT Government, Central Schemes – SFAC, NCDC, MoFPI, APEDA, NABARD etc.  Applicable laws / clearances etc. for Cold storage-business- As may be applicable-  <ul style="list-style-type: none"><li>• Technology: TM, Patent, licensing.</li><li>• Cold Storage: Fire Safety, Pollution, Agriculture Marketing, Conversion of Land use etc.</li><li>• Food safety, Certification &amp; Traceability activities</li><li>• Plant safety measure, Health care for staff and labours.</li></ul>		State Dept. of Horticulture/  NHB State/UT official  SFAC APEDA NCDC NABARD
S 3	Evaluation  1 Hour	Training evaluation /Test on  1. Knowledge 2. Skills 3. Attitude Marks in the test are		3-4 Successful entrepreneurs
	Total Marks	1. Class room participation	25%	
	Final Assessment	2. Timely submission of assignments	25%	
		3. Final evaluation	50%	
		Total Marks ( Are recorded in Completion Certificate )		
	Feedback  30 Min			3-4 Successful entrepreneurs
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.	<p>Horticulture Statistics at a glance:  <a href="http://agricoop.gov.in/statistics/publication-reports">http://agricoop.gov.in/statistics/publication-reports</a></p> <p>World fruit and vegetable map: 2018: Robo Bank  <a href="https://research.rabobank.com/far/en/sectors/regional-food-agri/world_fruit_map_2018.html">https://research.rabobank.com/far/en/sectors/regional-food-agri/world_fruit_map_2018.html</a></p> <p>APEDA AGRIEXCHANGE: <a href="http://agriexchange.apeda.gov.in/">http://agriexchange.apeda.gov.in/</a></p> <p>ICAR institutions publications on specific crop  CII / FICCI/ASSOCHAM/ PHDCC reports</p> <p><a href="http://www.fao.org/docs/eims/upload/210971/global_issues_paper.pdf">http://www.fao.org/docs/eims/upload/210971/global_issues_paper.pdf</a></p> <p>Success stories:  <a href="http://agritech.tnau.ac.in/success_stories/sstories_horti_2015.html">http://agritech.tnau.ac.in/success_stories/sstories_horti_2015.html</a></p>	
2.	Personal skills development	Internet and youtube	
3.	Harvesting, Post-Harvest Management / Infrastructure	<p>Text Books on Post Harvest of Horticultural Crops; FAO documents and reports;  Analysis of FPO model for Vegetables  <a href="https://nccd.gov.in/PDF/Analysis_FPO_model.pdf">https://nccd.gov.in/PDF/Analysis_FPO_model.pdf</a></p> <p>Doubling of Farmers Income Report: Vol.III and IV  <a href="http://agricoop.gov.in/doubling-farmers">http://agricoop.gov.in/doubling-farmers</a></p>	
4.	Packaging/ Processing / Value Addition	ICAR / Any reputed R&D Institution publications; Text books on Post Harvest; e-learning: videos from authentic sources- ICAR/ SAU/SHU/Global Institutions.	
5.	Supply/ Cold-chain development both for fresh and processed produce	<p>Cold Chain Awareness program  <a href="https://nccd.gov.in/PDF/Cold-chain%20Awareness%20Booklet.pdf">https://nccd.gov.in/PDF/Cold-chain%20Awareness%20Booklet.pdf</a></p> <p>Analysis of NDDB Model for Vegetables  <a href="https://nccd.gov.in/PDF/Analysis_NDDB_veg_model.pdf">https://nccd.gov.in/PDF/Analysis_NDDB_veg_model.pdf</a></p> <p>All India Cold Chain Infrastructure Capacity : Gap Analysis  <a href="https://nccd.gov.in/PDF/CCSG_Final%20Report_Web.pdf">https://nccd.gov.in/PDF/CCSG_Final%20Report_Web.pdf</a></p>	

6.	Marketing and value chain development	Directorate of Marketing and Inspection website: <a href="http://agmarknet.gov.in/">http://agmarknet.gov.in/</a> Crop specific market information sources	
7.	Maintain quality of produce: Health & Food Safety / Traceability and Standards	TNAU AgriTech portal on Food Safety: <a href="http://agritech.tnau.ac.in/gap_gmp_glp/gap_fresh%20_%20fruits%20&amp;%20veg.html">http://agritech.tnau.ac.in/gap_gmp_glp/gap_fresh%20_%20fruits%20&amp;%20veg.html</a> <a href="http://agritech.tnau.ac.in/food_safetyindex.html">http://agritech.tnau.ac.in/food_safetyindex.html</a>  Global Gap: <a href="https://www.globalgap.org/uk_en/">https://www.globalgap.org/uk_en/</a>  INDGAP: <a href="http://www.qcin.org/CAS/INDGAP/">http://www.qcin.org/CAS/INDGAP/</a>  Global gap India facilities: <a href="http://agriexchange.apeda.gov.in/Market%20Profile/Market_Intelligence/Annexure_III.pdf">http://agriexchange.apeda.gov.in/Market%20Profile/Market_Intelligence/Annexure_III.pdf</a>  Food Traceability in India: <a href="http://face-cii.in/sites/default/files/final_report-version_2.pdf">http://face-cii.in/sites/default/files/final_report-version_2.pdf</a>  FAO International Code of Conduct on Pesticide Management <a href="http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/code/en/">http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/code/en/</a>  TRACEABILITY IN FOOD AND AGRICULTURAL PRODUCTS: ITC, Switzerland publication at <a href="http://www.intracen.org/">http://www.intracen.org/</a>  GRASP: Global GAP Risk Assessment on Social Practice The Global Social Compliance Programme GSCP <a href="https://www.gscequivalenceprocess.com/">https://www.gscequivalenceprocess.com/</a>	
8.	Finance, Credit & Farm/ Project & Risk Management	Model DPR Templates for NHB Schemes <a href="http://www.nhb.gov.in">www.nhb.gov.in</a>	
9.	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 <a href="http://www.fao.org/docrep/012/i1560e/i1560e.pdf">http://www.fao.org/docrep/012/i1560e/i1560e.pdf</a>  World Bank: Agriculture Clusters <a href="https://www.innovationpolicyplatform.org/sites/default/files/rdf_imported_documents/Agricultural_Clusters.pdf">https://www.innovationpolicyplatform.org/sites/default/files/rdf_imported_documents/Agricultural_Clusters.pdf</a>  How Can the Poor Benefit from the Growing Markets for High Value Agricultural Products? FAO / UN Paper <a href="https://papers.ssrn.com/sol3/papers.cfm?abstract_id=944027">https://papers.ssrn.com/sol3/papers.cfm?abstract_id=944027</a>  Crop specific Producers Society and company online authentic sources	
10.	Government organisations and Schemes	<a href="http://agricoop.gov.in/">http://agricoop.gov.in/</a> <a href="http://mofpi.nic.in/">http://mofpi.nic.in/</a> <a href="http://apeda.gov.in/">http://apeda.gov.in/</a> <a href="http://nhb.gov.in/">http://nhb.gov.in/</a> <a href="http://coconutboard.nic.in/Scheme.aspx">http://coconutboard.nic.in/Scheme.aspx</a>	
11.	Knowledge and Statistics	ICAR Indian Horticulture Magazine: <a href="https://icar.org.in/node/9420">https://icar.org.in/node/9420</a> IIHR: <a href="https://iihr.res.in/documentary-video-clips-for-farmers">https://iihr.res.in/documentary-video-clips-for-farmers</a> FAO: <a href="http://www.fao.org/e-agriculture/stub-28">http://www.fao.org/e-agriculture/stub-28</a>	

12.	Technology and Entrepreneurship	Visit ICAR – Institutions / Directorates/ Bureaux/ NRCs: <a href="https://icar.org.in/">https://icar.org.in/</a> <u>Innovation in Agriculture</u> : <a href="http://www.fao.org/3/CA2460EN/ca2460en.PDF">http://www.fao.org/3/CA2460EN/ca2460en.PDF</a> Specific technologies: <a href="https://icar.org.in/content/agricultural-technologies">https://icar.org.in/content/agricultural-technologies</a> e-learning: <a href="https://ecourses.icar.gov.in/">https://ecourses.icar.gov.in/</a> ICAR Publications: <a href="https://krishi.icar.gov.in/jspui/">https://krishi.icar.gov.in/jspui/</a> Local University publications Local University success stories	
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### **Activities prior to training by Horticulture Training Institute:**

#### **The training institute shall undertake**

1. Desk Analysis:
  - a. About specific crops and processing technologies: State/ UT and District's Area, Production, post-harvest and marketing practices, 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 processing, 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, practical (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-CIAE Bhopal; ICAR-CIPHET, Ludhiana; NIPHT, Pune; KVK, Baramati
- c. Safe hostel accommodation and healthy Boarding.
- d. Accommodation/Hostel is at: ICAR-CIAE Bhopal; ICAR-CIPHET, Ludhiana; NIPHT, Pune; KVK, Baramati
- 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: Available**

### **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.

#### **APPLICATION FOR**

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

#### **PHM- PRIMARY PROCESSING AND PACKAGING OF FRUITS AND VEGETABLES/ PHM- COLD ROOM, RIPENING CHAMBER & REFER-VAN**

#### **Name of the Institute (Select One):**

- ICAR-Central Institute of Agricultural Engineering, Bhopal
- ICAR-Central Institute of Post Harvest Engineering and Technology, Ludhiana
- National Institute of Post Harvest Technology, Pune
- Krishi Vigyan Kendra, Baramati

Name and address of applicant	:		
Father's/Husband's Name	:		
Permanent address	:		
Contact details	:	E-mail	Mobile
Date of Birth	:		
Educational Qualifications	:		
Present profession/activity	:		
Name of the training (Please select one)	:	PHM- PRIMARY PROCESSING AND PACKAGING OF FRUITS AND VEGETABLES/ PHM- COLD ROOM, RIPENING CHAMBER & REFER-VAN	
Month and date of training	:		
Training Fee, Draft details	:	Amount, Rs.: DD No. & date: Name of Bank:	
GST No. (optional)	:		
Whether application has been submitted to NHB for funding?	:	Yes/ No	

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Signature of the candidate