

Central Institute of Temperate Horticulture (CITH)

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

National Horticulture Board Crop / Activity	Apple High Density in Apple (High/Ultra Density Plantation in Apple)
---	--

2019-20

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

**Central Institute of Temperate Horticulture (CITH), Old
Airport Rd. Rangreth, Srinagar**

Index	Topic
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
16.	What is cluster? When a group of individual growers or farms are called as Cluster? Essential elements / components of a cluster.

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

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 maximize 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 day training programme at one of the best training institutes recognized by it.

Rationale for the Training: NHB projects are credit linked and back ended and is 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 recognized /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. Open Field Cultivation of Apple (Ultra High Density and High Density plantation system).

Profile of the Institute:

For strengthening R&D activities and horticultural production in the temperate region of the country, the ICAR-CITH, was established in 1994 as a premier with its HQ at Srinagar, (J&K) and Regional Station at Mukteshwar, Uttarakhand. The institute is mandated for carrying out basic, strategic and applied research on major temperate horticultural crops, besides serving as a Centre for National repository of germplasm and scientific information and Human Resources Development (HRD).

Basic infrastructure and collaboration to be in place

1. Competent Faculty.
2. Research expertise and farm / Demonstration experience.
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.

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, and 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 recognize 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 fruit crop

Selection of cultivar Technology to be adopted and Production practices for crop intensification and high productivity and ecological sustainability and profitability.

- a. How to select suitable variety/cultivar and quality planting material/ seed based on market demand and sustainability.

b. Technology: Protection cultivation Technology-various kinds, customization based on Agro-climatic condition, crop and pest and diseases profile; familiarisation of tools and implements and components of mechanization.

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, Maturity standards of fruit for harvesting, 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 inputs from a reliable sources and quality sources economically and explore best way /markets/mandies 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 realization and possible way to minimize price spread.

e. To know importance of branding and promotion.

f. How to become an Exporter and know the roles of APEDA.

7. Supply/ Cold-chain development both for fresh and processed produce

8. 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.

9. 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 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 organizations 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 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 Production, harvesting, post-harvest, Marketing, Exportsetc. 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 Cultivation, harvesting, post-harvest, food safety, traceability certification and standards.
 - c. Project: PHM&CC: Modern scientific operations, technology, safety etc.
 - d. Familiarization 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 organizational 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 cost of production; improved crop health, productivity & Reduced losses.

3. Improved food safety, certification, standards compliance- at least process is initiated.

4. Improved infrastructure.

5. Improved profits/ net income.

Programme in Brief

Training Programme Name		Entrepreneurship and Leadership Development Programme for Horticulture Entrepreneurs		
Duration		06 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 commercial horticulture production.		
Training Coordinator with Designation and Address Tel, Mobile and email id		Dr. Wasim Hassan Raja Scientist ICAR-CITH, Srinagar 9419058998 wasimiari@gmail.com		
Languages				
Training calendar for 2019-20	Month	Last date for Registration	Training reporting dates	Training Dates
	August 2019			
	September 2019			
	October 2019			
	November 2019		Three trainings per year and as per demand/requirement	
	December 2019	(Dec. - 2019)		
	January 2020	(Jan. - 2019)		
	February 2020	(Feb. - 2019)		
	March 2020			
How to Apply				
Next review/ revision of Training Design			February 2020	
Batch size and cost and Payment system	Course Fees in Rupees	Hostel: Accommodation, Boarding: BF+L+D + Morning Tea + Afternoon Snacks	Total cost (Rs.) + GST as applicable.	
15 & above	Rs. 800/-day	Rs. 400/- day X 20	24000/-	
10-15	Rs. 800/-day	Rs. 400/- day X 15	18000/-	
5-10	Rs. 1000/-day	Rs. 400/- day X 10	14000/-	
05	Rs. 1200/-day	Rs. 400/- day X 5	8000/-	
Payment system and address:				
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"> 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 95% 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 requirements 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, and 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'ts, 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. Brief about the training.	Training Incharge
Day1 S2	Economic / Marketing Potential and Specific State/ UTs context: Scope and opportunities and Success stories.	1. India: Area, Production, Productivity, Prices & value. 2. State/UT: Area, Production, Productivity. 3. Prices & value, variation across markets. 4. Global: Area, Production, Productivity, Prices; 5. Domestic market : Supply and Demand; 6. Export and Import scenario; Case study of success stories-2 7. Concerns for growers / entrepreneurs!	Horticulturist
Day1 S3	Personal skills development	1. Improve listening, reading, writing and communication skills, team work; reading of signs etc. 2. To learn/ improve IT/ social media and know how to benefit from Internet and newspapers/media. 3. To improve leadership / social skills common informed vision, communication, team work, negotiation skills; with an exercise and success story. 4. To explore leadership roles required in horticulture business and realign and recalibrate self with new knowledge, concepts and tools. 5. Managing change and innovation and Taking charge and leading strategy.	HRD Expert
Day1 S4	NHB Scheme Guidelines, Annual Design and Processes of successful	Group Discussion and Presentation by each group: 1. Scheme guidelines 2. Flow chart 3. Dos and Dons, List of documents to be	DD NHB

	implementation and DPR, Bank Appraisal and Sanction of own Project	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.	
Quiz	Today's learning		
Reading material for next day*	<ol style="list-style-type: none"> 1. Study of NHB Scheme guidelines and come up with queries. 2. Reading material on high density cultivation technologies in apple. 3. Reading material on management practices. 		
Evening/Nigh Home work/ Assignment	<ol style="list-style-type: none"> 1. Creation of Whats' app group of all trainees. 2. 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.

Day 2 S1	Selection of crop, site cultivar/variety /rootstock	<ol style="list-style-type: none"> 1. Know -Agro-climatic, soil health, and water quality, 2. Known elite/popular varieties with their characteristics High yielding, Pest/Disease resistant, 3. Ascertaining market/consumer preference -choice characteristics of commodity. 4. Understanding ecological challenges of project land and village. 5. How to select economically profitable and sustainable cultivar variety/genotype/root stock. 6. Quality Planting Material-How to confirm/ variety. 7. Nursery Management/ Seedling production, transplant seedling at appropriate time, stage and spacing. 8. Sources of Quality Planting material from NHB accredited nurseries. 9. Different propagation method in case of temperate fruit crops. 	Horticulturist
Day 2 S2	Site selection and layout Canopy architectural engineering for high density plantation in temperate fruit crops. Technological intervention in temperate	<p>Site selection, pit digging, lay out system of planting, season of planting.</p> <p>Different canopy management systems in apple.</p> <p>Concepts of Ultra high density plantation /HDP and medium density plantations in Apple.</p> <p>Bearing habit and pollination management in Apple/temperate fruits.</p> <p>Different technologies in management of high density Apple orchard.</p> <p>Importance of root stock/interstock in Apple for intensive orchard management systems.</p>	Horticulturist
Day 2 S3 & 4		Visit to Different high density orchards	
Discussion		Evaluation of Assignment and observations	
Quiz		Learning on yesterday and today	
Reading for next day		Different management aspects like training /pruning/staking/tying/bending/drip	

	irrigation/fertilization/management/ thinning for successful development of high density plantation system in Apple.
Assignment for next day	Difference between Applicants DPR and NHB's Model DPR- What are the learnings.

Day 3 S.1 & 2 Sessions	Crop Production Technology- Class room and Field visit to successful entrepreneur	<ol style="list-style-type: none"> 1. Water requirement (water management), Irrigation / fertigation & drainage/ soil & water conservation/ RWH; irrigation schedule; 2. Weed management & Mulching. 3. Nutrient Management (Macro & Micro) / physiological disorders management. Manuring including Bio-fertilizer: Vermi composting 4. Integrated Pest, Disease and management- knowing of pests/diseases/ symptoms, stages of attack and measures/economic injury & precautions; 5. Bio-pesticides, promotion of Bio Control agents of natural enemies. 6. Viruses, diagnosis, symptoms and management. 7. Honey bees- supplementary income. 8. Importance of pollination and pollinizer management in Apple. 9. Calendar of operations for disease management. 15. Practical sessions including training, pruning, Pinching, Thinning, Bending and Tying, girdling/stacking Lowering, Side shoot pinching etc. 16. Concepts of Pesticide/Insecticide PPM etc. 	Horticulturist Plant Protection and soil Expert
S.3 & 4	Visit to orchard- of Progressive orchardists.		
Discussion	Evaluation of Assignment and observations		
Quiz	Learning on 3 days		
Reading for next day	Maturity indicates of fruits. Post-harvest management practices, technologies and infrastructure – specific to each trainee.		
Assignment	Preparation of calendar of operations of Pest, disease management throughout year.		

Day 4 S1 &2	Marketing and value chain development	<p>Marketing Basics:</p> <ol style="list-style-type: none"> 1. Value Chain Analysis of product / commodity in State / UT- Current scenario and the best possible solutions 2. Identification of markets- Export, Distant Market, Local markets- Mandis/ Traders, Processing units. 3. Demand – seasons / days etc. 4. Market differentiation- Organic, Alcohol free, Taste etc. 5. Market Driven Production- Concept: What? How? Challenges? Solutions 6. Promotion strategy: Branding; Differentiation of product 7. e-marketing 	Marketing Expert, APMC Secretary, Exporter
S3		<p>Entrepreneurship:</p> <ol style="list-style-type: none"> 1. What it is? Essential elements? 2. Entrepreneurship in Horti-business-salient features. 3. Steps involved in setting up an enterprise and laws to be complied. 4. Business avenues in trainee's context. 5. How to minimize cost of production and maximize profits. <p>Innovation</p> <ol style="list-style-type: none"> 6. What is innovation? Innovation in Horti-business? 	Horti business Expert
S4		<p>Causes of market instability and measures to address</p> <ol style="list-style-type: none"> 1. Causes: Low cost supplies from new production areas, Fluctuating demand in Transport availability, Market manipulation, weather vagaries, local disruptions (Bandhs etc.) etc. 2. Measures: Building brand loyalty, Efficient supply chain with dedicated transport on pre-determined schedules, 	Horti business Expert

		Complementary storage option for buffers for 2 weeks; For perishables-back end sources and reefer transport, modern	
--	--	---	--

Day 5 S 1 & 2	Economics, Finance, Credit & DPR and Project Management and Risk Management	<ol style="list-style-type: none"> 1. Estimate cost of production and required investment; 2. To know about Banks/ Financial Institutions; Loan procedure-how to avail finance/ credit- challenges and prospects. 3. Facilitate in possible solutions on expeditious and easy access to credit in trainees context. 4. To prepare a proposal for loan duly considering Agro-climatic/soil/ water suitability, Market, Finance and Technical viability. 5. Model DPR Templates of NHB. 6. DPR preparation for various schemes 7. Farm 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. 11. Assessing seedling requirement and rejuvenation 12. Monitoring and Evaluation of project 	Panel of 1.Chartered Accountant 2.Horticulturist 3.PHM Expert 4.Bank Manager 5.Insurance Agency
S 3 &4	Visit to local Bank	<ol style="list-style-type: none"> 13. Understanding credit process. 14. NHB requirement 15. Knowing Dos and Don'ts 16. Role of Bank in NHB Schemes- Market and Financial feasibility, regular visits to project, Subsidy claim, JIT, SRF Account etc. 17. Repayment schedule 	
Discussion		Evaluation of Assignment and observations	
Quiz		Learning on 5 days	
Reading for next day			
Assignment		Understanding one's own DPR and Model DPR format-critical comments. Role of Banker in NHB Schemes.	

Day 06 Session 1 & 2	Government organizations and Schemes and applicable laws.	List of Institutions for promotion of Horticulture: State/ UT Govt., DAC&FW- CDB, NHB, CPCRI, UT Government, Central Schemes – SFAC, NCDC, MoFPI, APEDA, NABARD etc. Applicable laws / clearances etc. for Horti-business- As may be applicable- ☑ Crops: IPR, PPVFRA, ☑ Technology: TM, Patent, licensing. ☑ Cold Storage: Fire Safety, Pollution, Agriculture Marketing, Conversion of Land use etc.	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	Training Incharge
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		3-4 Successful entrepreneurs	
Discussion on Feedback			
S 4		Valedictory	

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 trainee's 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 YouTube	
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 NDDDB Model for Vegetables https://nccd.gov.in/PDF/Analysis_NDDDB_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 produce: Health & Food Safety / Traceability and Standards	TNAU AgriTech portal on Food Safety: 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: Food Traceability in India: 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/	
	Finance, Credit & Farm/ Project & Risk Management	Model DPR Templates for NHB Schemes www.nhb.gov.in	
	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 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	
	Government organizations and Schemes	http://agricoop.gov.in/ http://mofpi.nic.in/ http://apeda.gov.in/ http://nhb.gov.in/ http://coconutboard.nic.in/Scheme.aspx	
	Knowledge and	ICAR Indian Horticulture Magazine:	

	Statistics	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	
	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	
	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	
	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

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, practical's (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 trainee's 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).
- c. Safe hostel accommodation and healthy Boarding.
- d. Accommodation/Hostel is at:
- 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. Utilization Certificate.

Photographs of Campus/ Class rooms / Hostel / Technology / Infrastructure.

What is cluster? When a group of individual growers or farms are called as Cluster?

Essential elements / components of a cluster:

Cluster sprout: Large scale areas where a particular crop is under cultivation already, but lack all the characteristics of Cluster.

Cluster: A cluster is a geographic concentration of firms that work in a related value chain. (Professor C. Leigh Anderson 2015: Univ. Washington)

Principle (s):

1. Firms that operate close to related firms and supporting institutions are often more innovative and, therefore, more successful in raising productivity than firms that operate in isolation.
2. To counter increasing fragmentation in farm holding size, by promoting collaboration in land holders. This is expected to regain economy of scale- on inputs and on outputs.

The essential characteristics / elements of a horticulture cluster are:

1. Geography: Located within an identifiable & as far as practicable, contiguous area.
2. Specialization: Similarity in the commodity (s) production and complementarity in the methods of production, Channels for communication among the members, quality control and testing, technology and marketing strategies/practices energy consumption, Common challenges and opportunities etc.

i. In case of Fruits: Commodity specific

ii. In case of Vegetables: 4-5 crops of similar nature capable of rotation.

iii. In case of Floriculture: Commodity /Similar commodity specific

3. Intensive linkages viz., Horizontal, Vertical and Support relationships

a. Horizontal relationships among producers:

Cooperatives / FPOs/ Companies/Smallholder business consortia but for the NHB scheme it is within the FPC model.

b. Vertical relationships -among

i. Agricultural producers,

ii. Production Input Suppliers,

iii. Production, Harvest and Post-Harvest Service providers

iv. Financial Institutions,

v. Processors and exporters,

vi. Logistics/ Supply Chain providers

vii. Branded buyers and retailers;

Collocation of actors at multiple parts of the value chain is one of the defining features of agribusiness clusters. In such contexts co-location through agribusiness clusters can reduce transaction costs, and increase productivity and innovation.

Support relationships between producers and facilitating organizations:- that reinforce the quality, efficiency and sustainability aspects of the chain

- i. Governments, business service providers,
- ii. Research institutes, universities and
- iii. Non-government service organizations).
- iv. Cluster members may benefit from linkages from supporting institutions that provide specialized training, education, information, research and technical support (Porter, 1998). Clusters also often involve private sector financial firms who provide access to financial services and investment.

4. Critical mass of Actors: Number of growers and size: Critical mass of actors, resources and competencies necessary for a cluster to effectively lower transaction costs, facilitate information flows, provide access to specialized factor markets and interact effectively with local, regional and national consumers. Area of willing growers with produce volume capable of viable capacity use of the post-harvest infrastructure components while retaining priority to reach distant markets.

5. Producer ownership: Holds ownership of trading / marketing of produce: Removes intermediary traders/Bypass wholesale traders. Deals with buyers / retailers directly.

6. Shall serve identified Targeted Market (s).

7. Undertake promotion of produce with collective branding

8. Evolution and diversification of commodity trade with time and entrepreneurship- Fresh produce, processing and Export, new markets.

9. Inclusiveness: have provision for enrolling new members to enable prospective entrepreneurs and utilize facilities / services within set limits.

10. Generate innovation and promote evolution of the business model.

India's Success Story: Sahyadri Farms: Farmers Producers Company.