

Central Institute of Sub Tropical Horticulture (CISH)

Model

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

Crop / Activity	Mango, Guava, Banana, Papaya and Custard Apple Cultivation
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2019-20

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

**Central Institute of Sub Tropical Horticulture (CISH), ICAR, Vill & Post-
Rahmankhera, Kakori, Lucknow.**

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Training Programme Name	Entrepreneurship and Leadership Development Programme for Horticulture Entrepreneurs desirous of applying to Schemes of National Horticulture Board
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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 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 days 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 are capital intensive running from several lakhs to several crores. In addition these involve good documentation and timebound 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, timebound 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. Open Field Cultivation of fruits	Mango, Guava, Banana, Papaya and Custard Apple
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Profile of the Institute:

ICAR-Central Institute for Subtropical Horticulture, Lucknow

The ICAR-Central Institute for Subtropical Horticulture, Lucknow set up as Central Mango Research Station initially with a focused thrust on mango as Regional Research Station of IIHR in 1972, and upgraded as full-fledged Institute in 1984 as Central Institute of Horticulture for Northern Plains and renamed as Central Institute for Subtropical Horticulture (CISH) on June 14, 1995 has since undergone transformation nomenclaturally reflecting a shift in research mandate also. One Regional Research Station of the Institute has also been established at Malda (W.B.).

Institute has four Divisions *viz.* Crop Improvement & Biotechnology, Division of Crop Production, Division of Crop Protection and Division of Post Harvest Management. Besides this, three supporting units, Priority Setting & Evaluation, Library and Farm Management are also there to provide facilities to scientists. Institute has excellent Technical Information Center, ARIS Cell, Agriculture Knowledge Management Unit, Phone-in-live/Media Resource Centre and Kisan Call Centre. National Committee on Plasticulture Application in Horticulture (NCPAH) under Ministry of Agriculture has sanctioned one centre for promotion of precision farming in horticultural crops and for conducting training programmes on variety of technologies developed by the Institute for the benefit of orchardists.

Institute has enlarged vision of conducting basic and applied research in frontier areas for development of cost effective and viable technologies for enhancing production and productivity of mango, guava, aonla, bael and underutilized fruit crop besides human resource development and technology dissemination. Institute has signed MOUs with SAUs/ Central Universities and also recognized by IGNOU, New Delhi as one of the study center for offering a certificate course on organic farming. National Horticulture Mission has also identified the Institute as nodal centre for imparting training on rejuvenation of old and senile mango orchards.

ICAR-CISH is credited to have World's largest collection of mango germplasm (772) including 20 exotic cultivars besides germplasm/ accessions of guava (152), aonla (35), bael (59) jamun (38), litchi (35), khirnee (17), mahua (25), tamarind (20), wood apple (17), custard apple (8), mulberry (10), jackfruit (28), strawberry (3), pepino (4), leafy green mustard (2), lettuce (10), dolichos bean (22), beans (4), lady finger (2), Chinese cabbage (3), cucumber (22), tomato (7), pointed gourd (28) etc.

Institute has developed two mango varieties *viz.* Ambika-a regular bearing hybrid (cross between Amrapali and Janaradhan Pasand) for export market and Arunika (cross between

Amrapali x Vanraj) to overcome the problem of biennial bearing, four guava varieties viz. Lalit, Shweta, Dhawal and Lalima from open pollinated seedling selections, CISH-Jamwant, an improved variety of jamun and identified two bael varieties (CISH-B-1 and CISH-B-2), promising accessions of jamun (CISH J-42) and two nutraceutically rich aonla selection (CISH-A-31 and CISH-A-33). Guava varieties especially Lalit and Shweta developed by the Institute have occupied substantial area across the country resulting in significant impact on rural economy. Institute has developed inter-specific wilt resistant rootstock (*P. molle* x *P. guajava*) of guava tolerant to even sodic soil conditions and its clonal multiplication technique. Institute has produced and supplied around eight lakh core planting material of mango, guava, aonla and bael to orchardists, nurserymen and state Govt. across the country.

Institute has also standardized rejuvenation technologies for improving productivity of old and unproductive orchards of mango, guava and aonla, rapid multiplication technique (Wedge grafting) for multiplying guava and other subtropical fruits throughout the year in greenhouse as well as in open, high density planting in mango cv. Dashehari with 400 plants ha⁻¹ (5.0 x 5.0 m) and guava cv. Allahabad Safeda and Lalit with 555 plants ha⁻¹ (3.0x6.0 m), soil application of paclobutrazol (3.2 ml metre⁻¹ of canopy diameter) to induce regular flowering and fruiting in mango, CISH-Bio-Enhancer for nursery raising of vegetables, IPM/IDM schedules for pests and diseases inflicting damages in mango and guava, ICAR-FUSICONT eco-friendly technology for management of panama wilt caused by *Fusarium* TR-4 race in U.P. and Bihar.

Institute has developed technologies/recipes for preparation of various value added products including RTS drinks, ciders, wines, osmo-freeze dried slices, fibre enriched biscuits, herbal tea, etc. Eleven technologies have also been commercialized. Institute has also developed protocol for mango export and long distance transport. Four mobile apps (Ripe Mango Products, Raw Mango Products, Mango Harvesting Advisor and Mango Orchard Based Poultry Farming) developed and launched on goggle play store/www.mangifera.res.in for generating employment opportunities and improve the livelihood status of the farmers. Apart from this Food safety advisories on insecticide and fungicide residues in agriculture produce are being provided to the fruit and vegetable growers. Around 30,000 farmers across the country trained in various technologies developed by the Institute.

Basic infrastructure and collaboration to be in place

1. Competent Faculty:

Forty Scientist working in specialized field viz. Horticulture, Soil Science, Plant Pathology, Entomology, Environmental Science, Post Harvest Management, Farm Mechanization Extension, agro chemicals, organic farming, nursery management, microbiology, crop improvement and biotechnology etc. along with technical staff are working in the institute

2. Research expertise and farm / Demonstration experience:

Faculties having wide experience up to 30 years in the respective field of specialization and demonstration experience at farmers field.

3. Excellent classrooms with all Audio-visual equipment and aids including PPT facility:

Institute has two class room of 50 number of seating capacity in each with up to date sitting arrangements and audio visual arrangements of PA system, LCD projector facilities at Rehmankhara and R. B Road campus, respectively. Institute is equipped with one conference hall of more than 400 seating arrangements and one committee room at Rehmankhara campus.

4. Excellent living/ residential accommodation with Computers and internet.

Institute has a scientist cum farmer's guest house at R B Road campus with 10 numbers of rooms and two number of dormitory with a capacity to accommodate 13 persons in each dormitory with all amenities. Rehmankhara campus of institute has a farmer's hostel on Hardoi road with accommodation capacity of 30 participants at a time

5. Has good networking with experts across India, to invite best of the faculty in a particular area of expertise:

Institute has good network with state and central Govt. Agencies working in India and Uttar Pradesh in particular. Institute has good network with state universities, extension functionaries and central universities and extension functionaries working in the field of agriculture, animal sciences and fisheries.

6. Has collaboration with entrepreneurs and Industry:

Institute is promoting entrepreneurs by way of providing technical consultancy, incubation of entrepreneurs, field visit at the field level and liasioning with research and developmental agencies.

7. Willing to provide internships with FPOs/ FPCs/entrepreneurs:

Institute is ready to offer internships for FPOs/ FPCs/entrepreneurs in the specialized field of subtropical fruit production, protected cultivation, model nursery raising of fruit crops, processing and value addition *etc.*

Previous experience:

Date	Topic of Training	Number of Participants (in figure)	Sponsoring Agency	Duration	Type of participants	Place of Training
08-01-2019	Residential training under AC&ABC	32	MANAGE	60 days	Trainees	ICAR-CISH, Lucknow
15-04-2018	Gardner Training	100	ASCI	30 days	Farmers	ICAR-CISH, Lucknow
25-05-2018	Gardner Training	95	ASCI	30 days	Farmers	ICAR-CISH, Lucknow
01-06-2018	Exposure Course on subtropical fruit	26	Exposure Course	30 days	Student (Mewar University)	ICAR-CISH, Lucknow
03-10-2018	Training on Certified farm Advisor (Fruits)	11	MANAGE	15 days	Student/SMS/CHS	ICAR-CISH, Lucknow
12-06-2017	Exposure Course on Subtropical Fruit	12	Short term training (Self Finance)	20 days	Students (Mewar University, Chittorgarh)	ICAR-CISH, Lucknow
20-07-2017	Exposure Course on Subtropical Fruit	12	One month training (Self Finance)	30 days	Students(ITM University, Gwalior)	ICAR-CISH, Lucknow
15-01-2018	Green House Operator at PFDC	30	ASCI	30 days	Farmers	ICAR-CISH, Lucknow
14-02-2018	Green House Operator Trainees	30	PFDC	30 days	Farmers, Students	ICAR-CISH, Lucknow
15-03-2018	Gardner Training	100	ASCI	30 days	Farmers	ICAR-CISH, Lucknow
20-05-2017	Post Harvest Management of mango	03	Short term training (Self Finance)	21 days	Students (Dr. PDKV, Akola)	ICAR-CISH, Lucknow
04-06-2018	Exposure Course on subtropical fruit	17	Exposure Course	7 days	Student (BHU varanasi)	ICAR-CISH Rahmaankhera
06-08-2018	Production, Protection & Post harvest management of Mango and Guava	18	Commissioner , Agricultural Horticulture and Field Forestry, Bhopal	5 days	Assistant Director	ICAR-CISH Rahmaankhera

10-09-2018	MTC on Entrepreneurship Development through Market Driven Production and Processing of Horticultural Crops	15	DOE-MAFW	8 days	ADH/DDH/AHO/CHO/HDO/SMS	ICAR-CISH Rahmaankhera
03-10-2018	Organic Farming in Horticultural Crops	30	CPWD	3 days	Dir/Deputy Dir/ Assit. Dir	ICAR-CISH, Telibagh, Lucknow
22-10-2018	Refresher Program on "Opportunities For Value Addition in Horticulture" for Established Agripreneurs"	14	MANAGE	4 Days	SMGGS/KVK	ICAR-CISH Rahmaankhera
13-11-2018	MTC on Food and Nutritional security of farm women through horticulture based interventions	20	DOE-MAFW	8 days	ADH/DDH/AHO/CHO/HDO/SMS	ICAR-CISH Rehmankhhera
26-12-2018	Horticultural Crop Production Under Sub-tropics	15	Self Financed Training	9 days	BHU(Ag) Students	ICAR-CISH Rehmankhhera
27-12-2018	Training programme on "Nursery management of horticultural crops"	114	Self Financed Training	3 days	Women	ICAR-CISH Rehmankhhera
01.02.2019	MTC on Scientific bee-keeping for alternative livelihood & higher yield of crop plants through efficient pollination	18	DOE-MAFW	8 days	Farmers	ICAR-CISH, RRS Malda

06.02.2019	Training on "High density planting of subtropical fruits" organized by ICAR-CISH	21	ATMA	3 days	Farmers	ICAR-CISH Rehmankhhera
12.03.2019	Training Programme on Integrated management of mango and guava orchards	21	Horticulture Department, Mandi	7 days	Farmers	ICAR-CISH Rehmankhhera
09-01-2019	Training-cum-Workshop Programme under Pradhanmantri Sinchai Yojna on "Per drop more crop" (Microirrigation)	50	PFDC	2 Days	ASI/HI/AHI	ICAR-CISH Rehmankhhera

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. 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. 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 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.
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 6 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, 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 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.

Attitude: developing confidence and leadership to successfully complete NHB project timely as per NHB norms, specifications/standards, protocols etc.

1. Networking with various Government and Non-Government Agencies and mentors.
2. 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 (Mango/Guava/Banana, Papaya and Custard Apple)			
Duration	6 working days: One Weeks			
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. Ashok Kumar, Principal Scientist, Division of Crop Production ICAR-CISH, Lucknow-226101(U.P.) +91-9161983069 (M) Email:ashokhort@gmail.com			
Languages				
Training calendar for 2019-20	Month	Month of registration	Training Dates	
	August 2019			
	September 2019			
	October 2019			
	November 2019		18-27 nd Nov., 2019	
	December 2019			
	January 2020	Dec., 2019	20-25 th Jan., 2020	
	February 2020			
	March 2020	Feb., 2019	16-21 st Mar., 2020	
How to Apply				
Next review/ revision of Trainin g Design	February 2020			
Batch size and cost and Payment system	Batch size	Course Fees*	Hostel: Accommodation, Boarding: BF+L+D + Morning Tea + Afternoon Snacks*	Total cost*
	Limited to 30	Rs. 5000/-	Excluded (Boarding, lodging and cost towards field visit will be borne by trainee)	-----
	Payment system and address: Name of the Bank: Punjab National Bank Name: ICAR Unit CISH A/C. No.: 153012101000034 IFSC: PUNB0619500			

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.
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, 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 S1	Orientation / Inauguration	<ul style="list-style-type: none"> General discipline in class room (Do's and Don'ts) Every trainee to share their introduction with expectations. Motivational Talk 	
Day1 S2	Economic / Marketing Potential and Specific State/ UTs context: Scope and opportunities and Success stories.	<ol style="list-style-type: none"> Crop Origin, Botany and economic products: Fresh product & Processing & Value added products. India: Area, Production, Productivity, Prices & value. State/UT : Area, Production, Productivity, Prices & value, variation across markets. Global: Area, Production, Productivity, Prices; Domestic market : Supply and Demand; Export and Import scenario; Case study of success stories-2 Concerns for growers / entrepreneurs 	Horticulturist
Day1 S3	Personal skills development	<ol style="list-style-type: none"> Improve listening, reading, writing and communication skills, team work; reading of signs etc. To learn/ improve IT/ social media and know how to benefit from Internet and newspapers/media. To improve leadership / social skills common informed vision, communication, team work, negotiation skills; with an exercise and success story. To explore leadership roles required in horticulture business and realign and recalibrate self with new knowledge, concepts and tools. Managing change and innovation and Taking charge and leading strategy. 	
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: <ol style="list-style-type: none"> Scheme guidelines Flow chart Dos and Don'ts, List of documents to be submitted and Agenda and Checklist. Technology standards/ specifications etc. Issues with Banks. Common reasons for rejection of projects at NHB. Q& A on Queries. 	DD NHB

Day1 S5	Technology Entrepreneurship & innovation	Technology areas & Providers <ul style="list-style-type: none"> • 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./ KAU/ ATMA/NHM • Climate change Entrepreneurship: <ul style="list-style-type: none"> • 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 trainees context. • How to minimise cost of production and maximise profits. Innovation What is innovation? Innovation in Horti- business?	
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Day2 S1	Selecting cultivar	<ol style="list-style-type: none"> 1. Know -Agro-climatic, soil health, and water quality 2. Know varieties with their features- High yielding, advantages and disadvantages 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/hybrid. 6. Quality Planting Material-How to confirm/ verify, treatment, storage etc. 7. Nursery Management 8. Sources of Quality Seeds/Planting material. 9. Knowledge of vegetative propagation. 	Horticulturist & Marketing Expert
Day2 S2	Knowledge and Statistics	<ul style="list-style-type: none"> • 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 	
Day2 S3 & 4	Production technologies	Familiarize technology and components of cultivation practices, practical on layout. Row orientation etc.	
		Agronomic practices: <ul style="list-style-type: none"> • Plant density manipulation <i>vis a vis</i> canopy characteristics. • Understanding mango phenology for scheduling package of practices. • Initial training and subsequent canopy architecture modification. 	
		<ul style="list-style-type: none"> • Soil & Water testing- PH & EC Concept, treatment and its importance. • Pit preparation and proper site/ field lay out / design • Plantation 	
Day2 S5	Practical Session on orchard management	Understanding fruiting behavior of varieties, its manipulation and orchard management.	

<p>Day 3</p> <p>S1 & 2</p>	<p>Crop (Organic/less chemical)</p> <p>Production Technology- Class room and Field visit to successful entrepreneur</p>	<ol style="list-style-type: none"> 1. Water requirement, critical stages, Irrigation / fertigation & drainage/ soil & water conservation/ RWH; irrigation schedule; 2. Weed management & Mulching. 3. Nutrient Management (Macro & Micro) / Manuring including Bio-fertilizer: Vermi compost production- Identify correct species of earthworm, quality production technique, finances and market linkage, food safety issues etc. 4. Integrated Pest, Disease & Nematode Management- knowing of pests/diseases/ symptoms, stages of attack and measures & precautions; Bio-pesticides, promotion of natural enemies. 5. Specific crop based Farming System, Inter/ Mixed cropping; 6. Farm mechanisation& Automation- Tools and equipment for nursery and production & harvesting, Annual Maintenance & Service centre etc. 7. Crop rotation / inter crop. 8. Care to be taken in procuring inputs. 9. Availing extension services at regular intervals with the visit of experts to fields. 10. Honey bees- supplementary income 11. What is cluster sprout? Cluster? Salient features of Cluster? 12. Crop calendar. 	<p>Horticulturist</p> <p>Plant Protection Expert</p> <p>Soil Expert</p>
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Day 3 S.3 & 4	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. Monitoring and Evaluation of project 	Panel of 1.Chartered Accountant 2.Horticulturist 3.PHM Expert 4.Bank Manager 5.Insurance Agency
Day 3 S5	Visit to Farm-of Farmer	13. Sessions including training, pruning, etc.	
	Discussion	Evaluation of Assignment and observations	
Day 4 S 1 & 2	Harvesting, Post-Harvest Management / Infrastructure- to enhance holding life and to reduce post-harvest losses	<ol style="list-style-type: none"> 1. Post-Harvest losses and Waste scenario in the country and measures to minimize the same. 2. Proper technique & do's and don'ts of Harvesting; 3. Careful Post-harvest handling / practices including use of crates, reception area, washing/cleaning, sorting, grading (standards), Ripening, Packaging, labelling, pre-cooling & Preservation & Traceability 	PHM Expert
	Processing / Value Addition	<ol style="list-style-type: none"> 1. Fresh product: Minimal processing. 2. Processing / Preservation- & Value Addition <ul style="list-style-type: none"> • By product utilisation • Use of renewable energy on roof tops for processing energy 	

Day 4 S 3	Supply/ Cold- chain development both for fresh and processed produce	1. What is Supply Chain and Cold Chain? Advantages. 2. <u>For Local sale</u> : where product selling cycle is < 48 hrs- to have aggregation, staging platforms at village level for sorting and grading and to consolidate volume for viable truck loads. 3. <u>For Long distance</u> : where product selling cycle is > 48 hrs- require aggregation platforms, pre-conditioning supply & cold chain management- Modern pack house, integration with reefer transport.	
Day 4 S 4&5	Agri/Horti - Logistics	4. Required infrastructure Gaps, 5. Strategy for phase wise Supply/ Cold Chain development in trainees context. 6. For domestic market- Local & Distant 7. For export market. 8. Annual Maintenance, Contract of Infrastructure.	PHM Expert
	Visit to processing unit/ Value addition plants	Visit to pack house for understanding components of packaging line	

Day 5 S1 &S2	Producing Quality produce	<p>Food Safety & Certification & Traceability activities: at pre-planting, Crop husbandry, Harvesting and Post-harvest.</p> <ul style="list-style-type: none"> • Good Agricultural Practices-GLOBAL GAP/ INDIGAP • BRC/IFS/ FSSC/SQF/ • Codex Alimentarius/ • Organic certification <p>For India based facilities and labs- visit websites or APEDA website.</p> <p>Health: Have knowledge of various health hazards relevant to work place including that of machinery & vehicles, chemicals usage, contamination; safety checks, farm personnel safety measures (protective clothing, gloves /gadgets) and first aid; Waste disposal, minimum damage to environment, emergency protocols for health and safety.</p> <p>Standards</p> <ul style="list-style-type: none"> • GSCP- Global Social Compliance Program; • Social code: GRASP • Fair food • Standards • EU MRL ;FAO-IPM • Sea based logistics certification: IFOAM; Cargo hand book • GMP- for processed / value added products 	Expert
Day 5 S 3 & 4	Visit Food Testing Laboratory, Farmers fields, Markets, Cold storage, transportation etc.	Appreciate consumer perspective	
Day 5 S5	Field visit	Visit to local APMC / Whole sale-Terminal market/ Retail Chain/Recording of Price Information/	

Day 6 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
		<p>Market Intelligence / Transparency in Market prices/ Assimilation of Market Information /</p> <ol style="list-style-type: none"> 1. Knowing end market prices- Local market and distance market; from reliable sources, Mandis, competitors through Media-print, AIR, TV, internet, commission agents etc. 2. Analyse market information season wise. 3. Use market information to decide on crop, area to be sown, appropriate post – harvest decision of drying, grading, bagging, processing, storage etc., and to decide where to sell, when to sell, to whom to sell, and what quantity to sell etc to be profitable. 4. Arranging cost effective transportation. 5. Also use market information for growing next crop, area and release of produce into market etc. 	
		<p>Demand assessment and management:</p> <ol style="list-style-type: none"> 1. Need to consolidate demand from all sources- retail outlets, chain, hawkers etc. 2. Assured quantum can be vertically integrated with producers. 3. Variable demand is linked with indirect or Mandi based procurement. 4. To know a balance sheet: demand and supply of commodity if possible. 	

		<p>Causes of market instability and measures to address</p> <p>Causes: Low cost supplies from new production areas, Fluctuating demand in Transport availability, Market manipulation, weather vagaries, local disruptions (Bandhs etc.) etc.</p> <p>Measures: Building brand loyalty, Efficient supply chain with dedicated transport on pre-determined schedules, Complementary storage option for buffers for 2 weeks; For perishables- back end sources and reefer transport, modern pack houses; Food processing capacity, Export markets.</p> <p>Measures to check gluts.</p>	
		<p>Marketing models / Measures to 23ealize price spread / enhance price 23ealization. 1.Direct-</p> <ol style="list-style-type: none"> 1.Bulk sale- fast tracked without any pre-cooling with daily dispatches. 2.Bulk or retail outlets- owned/ franchisee. 3.Through wholesale trader / Retail chain/ Exporter/Importer/ Street vendors/ vegetable sellers. <p>2 Marketing with /without legal contract with buyers, supply chain agents etc.</p> <p>3 Models:</p> <ul style="list-style-type: none"> • NDDDB-Mother Dairy/ SAFAL Model- Front end distribution hub and retail outlets. • HOCOMS model: Both back end ownership of collection centres and transport and front end distribution, outlets. • Big Basket Model. • Study of pricing / price 23ealization across the models <p>Supply to Distribution hub by Buyer like HOPCOMs or by FPO as in case of Mothers; dairy SAFAL.</p>	
		Private partnership- Success stories	

		Potential niche Export markets 1. Global Scenario- product wise; Success story, 2. State/UT s potential, Challenges for Export markets- sea based; 3. Interaction with Exporters and Importers. 4. Linkage with Distribution hubs (Netherland)	
		Potential niche Domestic markets: 1. Indian Scenario- productwise; Challenges for Domestic – road based 2. List of processors, valueadded companies.	
		Exposure / Networking visits/Trade Fairs/ Exhibitions_ India & Abroad- CDB support	
Day 6 S3	Supply/ Cold- chain development both for fresh and processed produce	4. What is Supply Chain and Cold Chain? Advantages. 5. <u>For Local sale</u> : where product selling cycle is < 48 hrs- to have aggregation, staging platforms at village level for sorting and grading and to consolidate volume for viable truck loads. 6. <u>For Long distance</u> : where product selling cycle is > 48 hrs- require aggregation platforms, pre-conditioning supply & cold chain management- Modern pack house, integration with reefer transport.	
Day 6 S 4	Evaluation 1 Hour	Training evaluation /Test on 1. Knowledge 2. Skills 3. Attitude Marks in the test are	
	Total Marks Final Assessment	1. Class room participation	50%
		3 Final evaluation	50%
		Total Marks (Are recorded in Completion Certificate)	
Day 6 S 5	Feedback		
	Discussion on Feedback		
	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: http://agricoop.gov.in/statistics/publication-reports</p> <p>World fruit and vegetable map: 2018: Robo Bank https://research.rabobank.com/far/en/sectors/regional-food-agri/world_fruit_map_2018.html</p> <p>APEDA AGRIEXCHANGE: http://agriexchange.apeda.gov.in/ ICAR institutions publications on specific crop CII / FICCI/ASSOCHAM/ PHDCC reports</p> <p>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</p>	
2.	Personal skills development	Internet and youtube	
3.	Selection of cultivar and Production practices for high productivity	<p>ICAR institutions publications on specific crop Package of practices of specific crop (s).</p> <p>e-learning: videos from authentic sources- ICAR/ SAU/SHU/Global Institutions. ICAR e-courses: https://ecourses.icar.gov.in/</p>	
4.	Harvesting, Post-Harvest Management / Infrastructure	<p>Analysis of FPO model for Vegetables https://nccd.gov.in/PDF/Analysis_FPO_model.pdf</p> <p>Doubling of Farmers Income Report: Vol.III and IV http://agricoop.gov.in/doubling-farmers</p>	
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	<p>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</p>	
7.	Marketing and value chain development	<p>Directorate of Marketing and Inspection website: http://agmarknet.gov.in/ Crop specific market information sources</p>	
8.	Maintain quality of produce: Health & Food Safety / Traceability and Standards	<p>TNAU AgriTech portal on Food Safety: http://agritech.tnau.ac.in/gap_gmp_glp/gap_fresh%20_%20fruits%20&%20veg.html http://agritech.tnau.ac.in/food_safetyindex.html</p> <p>Global Gap: https://www.globalgap.org/uk_en/</p> <p>INDGAP: http://www.qcin.org/CAS/INDGAP/</p> <p>Global gap India facilities: http://agriexchange.apeda.gov.in/Market%20Profile/Market_Intelligence/Annexure_III.pdf</p> <p>Food Traceability in India: http://face-cii.in/sites/default/files/final_report-version_2.pdf</p> <p>FAO International Code of Conduct on Pesticide Management http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/code/en/</p> <p>TRACEABILITY IN FOOD AND AGRICULTURAL PRODUCTS: ITC, Switzerland publication at http://www.intracen.org/</p> <p>GRASP: Global GAP Risk Assessment on Social Practice The Global Social Compliance Programme GSCP https://www.gscpequivalenceprocess.com/</p>	
9.	Finance, Credit & Farm/ Project & Risk Management	<p>Model DPR Templates for NHB Schemes www.nhb.gov.in</p>	

10.	Cluster development : Collaborative farming/ FPOs / FPC	<p>NHB Website: Proposed scheme: Horticulture Business Cluster and Supply chain development Programme</p> <p>FAO (2010) Agro-based clusters in developing countries: staying competitive in a globalized economy http://www.fao.org/docrep/012/i1560e/i1560e.pdf</p> <p>World Bank: Agriculture Clusters https://www.innovationpolicyplatform.org/sites/default/files/rdf_imported_documents/Agricultural_Clusters.pdf</p> <p>How Can the Poor Benefit from the Growing Markets for High</p>	
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		<p>Value Agricultural Products? FAO / UN Paper https://papers.ssrn.com/sol3/papers.cfm?abstract_id=944027</p> <p>Crop specific Producers Society and company online authentic sources</p>	
11.	Government organisations and Schemes	<p>http://agricoop.gov.in/ http://mofpi.nic.in/ http://apeda.gov.in/ http://nhb.gov.in/ http://coconutboard.nic.in/Scheme.aspx</p>	
12.	Knowledge and Statistics	<p>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</p>	
13.	Technology and Entrepreneurship	<p>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</p>	
14.	Protected (/Greenhouse / Shade net / Walk in Tunnel) cultivation:	<p>National Committee on plasticulture Agriculture with the Horticulture https://www.ncpahindia.com/ Agriculture Skill Council of India: Curriculum and Occupational / Qualification standards:</p>	
15.	Cold Storage / Cold Chain Development:	<p>http://asci-india.com/National%20Occupation%20Standards.php</p>	

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 Nagpu r	https://www.youtube.com/watch?v=QwE6oFkq3F8
NRC Banan a	http://nrcb.res.in/success-stories.php
CITH Srinag ar	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
Grape s	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) :
- 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. Utilisation 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;

Colocation 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.

- c. 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 utilise facilities / services within set limits.
10. Generate innovation and promote evolution of the business model.