Khan Mushroom Farm & Training Centre, VPO Nangal Salangri, Una H.P.

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

Crop / Activity	Mushroom Cultivation
	2019-20

Become Entrepreneur	
	Lead Change and Innovation
Be creative	
	Lead Profits

Khan Mushroom Farm & Training Centre

VPO Nangal Salangri, Tehsil & District Una(H.P)

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

Introduction: India is producing about 1.60 lakh tonnes of mushroom per annum in comparison to 330 lakh tonnes in China. With more than 1.37 billion population, the availability is very meagre as the production is very low. India is having more than 700 million tonnes of agri-residue which is not utilized commercially on large scale. It about 1-2% of the agri-residue is utilized India can produce about 15-20 lakh tonnes of protein rich mushroom which will help to combat the malnutrition along with livelihood opportunities in the rural areas Further, the land and water requirement for the cultivation of mushroom is low compared to other field and horticultural crops. Overall mushroom cultivation demands very good entrepreneurship and leadership.

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

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

Profile of the Institute:

ICAR-Directorate of Mushroom Research, Solan is engaged in mushroom research for last 36 years at its headquarters at Solan and 32 AICRP mushroom centres across the country. In India, mushroom cultivation started in 1960s and during last couple of years the production has increased due to involvement of various entrepreneurs in mushroom industry. Regular mushroom cultivation trainings are being imparted to the mushroom growers, farmers, rural youth, entrepreneurs, state officials and SMS of KVKs. A large of entrepreneurs are showing keen interest for mushroom cultivation and the Directorate is engaged in fulfilling their demand through new training modules. Apart from ICAR-DMR, Solan, HAIC, Murthal (Haryana), ICAR-IIHR, Bangalore (Karnataka), Khan Mushroom Farm, Una (H.P.) are also giving mushroom cultivation trainings to the stakeholders.

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.

Previous experience:

ICAR-DMR, Solan (H.P.) is imparting mushroom cultivation trainings to the entrepreneurs (7 days) twice a year in which more than 50 participants are enrolled in each batch. Similarly, Khan Mushroom Farm, Una (H.P.) is imparting training since 2000 to the farmers as well as students from Agri. Universities. HAIC, Murthal, Sonepat (Haryana) and ICAR-IIHR, Bangalore also provide trainings related to mushroom cultivation at regular intervals. After getting trainings from these centres, the stakeholders are taking up mushroom cultivation activity along with compost preparation and quality spawn production helping them to get better returns from a small unit thereby increasing the socio-economic status. As the job opportunities are limited, small and marginal farmers can get better livelihood opportunities if mushroom cultivation is taken up as a commercial venture.

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. iv. Calculation of Eligible Project cost, Eligible components for subsidy, NHB standards, Basic Data Sheet & Protocols to be complied for availing subsidy etc., 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. Spawn production which includes pure culture, mother culture and commercial spawn.
 - b. Preparation of compost through short method of composting for the button mushroom.

- c. Modern and high-tech mushroom cultivation as seasonal/climate controlled conditions in different parts of the country.
- d. Cultivation of specialty and medicinal mushrooms for getting higher returns from the mushroom unit
- 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 including various products, drying/dehydration and canning.
- 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
- 9. To know Global /national norms of Food Safety & traceability- Good Agricultural Practices, and standards, MRL, IPM, logistics, GMP.
- 10. 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.
- 11. Cluster development / Collaborative farming: What is cluster? Essential elements? To know importance of cluster approach,

- 12. Government organisations and Schemes related to Horticulture and laws to be complied.
- 13. Horticulture Statistics sources including DAC&FW website and State Horticulture Dept. website.
- 14. 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, postharvest, 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.

- 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	Entrepreneurshi	o and Leaders	ship I	Development P	rogramme for
Programme	Horticulture Ent	repreneurs			
Name					
Duration	06 working days				
Participant	Individuals desiror	us of availing NH	IB bene	efit under Schem	e No.1 and
Target Group	also for those who	want to improve	their k	nowledge and le	adership in
	protected commer	cial horticulture.			
Training					
Coordinator	Yussouf Khan, MD				
with	Khan Mushroom Farm & Training Centre, VPO Nangal Salangari,				
Designation	Dhamandari Road	, Una (H.P.)- 174	303		
and Address	Ph. 01975272096	Mob 9418178839	9		
Tel, Mobile	info@khanmushrc	oom.com			
and email id	yousuf_khan07@ł	notmail.com			
Languages					
Training	Month	Last date for		Training	Training
calendar for		Registration		reporting dates	Dates
2019-20	August 2019	-			
	September 2019	Khan Mushroor	n	15/9/2019	16/9/2019
		Farm			
	October 2019	Khan Mushroor	n	15/10/2019	16/10/2019
		Farm			
	November 2019	Khan Mushroor	n	15/11/2019	16/11/2019
		Farm			
	December 2019	Khan Mushroor	n	15/12/2019	16/12/2019
		Farm			
	January 2020	Khan Mushroor	n	15/1/2020	16/1/2020
	-	Farm			
	February 2020	Khan Mushroor	n	15/2/2020	16/2/2020
		Farm			
	March 2020	Khan Mushroor	n	15/3/2020	16/3/2020
		Farm			
How to Apply				·	·
Next review/	February 2020				
revision of					
Training					
Design					
Batch size and	Batch size	Course Fees	Hoste	l: Accommodati	on, Total cost
cost and		(Per person)	Board	ling: BF+L+D	(Per
Payment			+ N	Aorning Tea	+ person)
system			After	noon Snacks	
	15 & above	12,000	6000		16000
	10-15	14,000	6000		16000
	5-10	15,000	6000		21000
	<5	20000	6000		26000
	Payment system	m and add	ress:	A/c numbe	r=11507131710

	IFSC=SBIN0009833				
	State Bank of India – Basdal, Una HP				
	A/c name- Khan Mushroom Farm & Training Centre				
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 Role	1. The training programme is voluntary for any individual or trainee.				
	2. The cost of training is to be borne by trainee him/herself.				
	3. The training is not sponsored by NHB nor by any Government.				
	4. Upon 100% attendance and upon scoring 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 requirement for				
	obtaining In-Principle Approval (IPA).				
	6. It is compulsory to reside in the hostel/accommodation provided by				
	the institute in the interest of training.				
	7. The training institute has no say in NHB decision making either in				
	approval or rejection of IPA or sanction or not sanction of Subsidy.				
	8. Trainees are responsible for their conduct and wellbeing issues.				

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	Orientation /	• General discipline in class room (Do's	Shamshad Begum
Session	Inauguration	and Don'ts)	
1		• Every trainee to share their introduction	
		with expectations.	
		Motivational Talk	
Day1	Exposure visit	1. Exposure visit to the mushroom farm,	Shamshad Begum
S2		cropping rooms & laboratories	
		2. Facilities in the cropping rooms	
		3. Infrastructure and research facilities in	
		the laboratories	
Day1	Introduction of	1. Mushroom production: An agribusiness	Yussouf Khan
S3 &	mushroom and	activity	
S4	their utility	2. Nutritional and medicinal value of	
		different mushrooms	
	Quiz	Today's learning	
	Reading	1. Study of NHB Scheme guidelines and	/Khan Mushroom
	material for	come up with queries.	
	next day*	2. Reading material on climate controlled	
		cultivation technologies, components	
		and erection for mushroom units.	
		3. Reading material on cultivation	
	T	practices of mushroom.	
	Evening/Nigh	• Creation of Whats' app group of all	Khan Mushroom
	Home work/	trainees.	
	Assignment#	• Joining of NHB crop specific/Project	
		specific Whats' app group.	

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

#: Are evaluated/tested the following day.

Day2	Mushroom	1. Mushroom culture preparation and	ICAR-
S1 &	culture	preservation technique	DMR/ICAR-
S2		2. Quality spawn production technology	IIHR/HAIC/Khan
			Mushroom
Day2	Spawn	Familiarise participants with the production	
S3 & 4	production,	technology of spawn	
	quality traits	• Practical demonstration of preparation and	ICAR-
	in mushroom	preservation of culture	DMR/ICAR-
	strains and	• Practical on preparation of quality spawn	IIHR/HAIC/Khan
	raw material	• Ouality traits in cultivated mushroom	Mushroom
	for button	strains and consumer acceptability	
	mushroom	• Raw materials and formulations for	
		compost for white button mushroom	
	Discussion	Evaluation of Assignment and observations	
	Quiz	Learning on yesterday and today	
	Reading for	Production technology under controlled	ICAR-
	next day	condition specific to each trainee based on	DMR/ICAR-
		choice /NHB project	IIHR/HAIC/Khan
			Mushroom
	Assignment	Difference between Applicants DPR and	ICAR-
	for next day	NHB's Model DPR- What are the learnings.	DMR/ICAR-
		-	IIHR/HAIC/Khan
			Mushroom

Day 3	Method for	1. Methods of compost production for white	Khan
-	compost	button mushroom	Mushroom
S1 & S2	production, crop	2. Recent advances in crop management of	
	management and	white button mushroom	
	compost	3. Practical on compost preparation for white	
	preparation	button mushroom	
S3 & 4	Mushroom Farm	4. Farm design & infrastructure for a	Khan
	design &	commercial mushroom unit	Mushroom
	infrastructure and	5. Economics of button mushroom	
	economics of	cultivation under controlled conditions	
	mushroom	6. Cultivation & economics of paddy straw	
	production	mushroom cultivation	
	Discussion	Evaluation of Assignment and observations	
	Quiz	Learning on day 3	
	Reading for next	• Factors that decide harvesting time.	/Khan
	day	• Post-harvest management practices,	Mushroom
		technologies and infrastructure – specific	
		to each trainee.	
	Assignment	Technologies for Water, Nutrient and	Khan
		Integrated Pest and Disease management.	Mushroom
		Preparation of Crop calender including Pest,	
		disease & Nematode management	

-			
Day 4	Visit to	1. To have interaction for various activities	Successful
S1, S2,	commercial	being undertaken by the mushroom grower	mushroom
S3 &	mushroom unit	2. Infrastructure and design of the unit	entrepreneur
S4		3. Quality of water	-
S 3 &		4. Procurement and storage of raw material	
4		5. Preparation of spawn and compost	
		6. Maintenance of the controlled unit	
		7. Hygienic conditions in and around the	
		mushroom unit	
		8. Harvesting, packing, storage and marketing of	
		the produce	
		9. Preparation of value added products	
		10. Drying/dehydration of different mushrooms	
		and their storage	
	Discussion	Evaluation of Assignment and observations	
	Quiz	Learning on day 5	
	Reading for	Pests and disease management in mushroom	Khan
	next day		Mushroom
	Assignment	• Technologies for Integrated Pest and Disease	Khan
		management.	Mushroom
		• Preparation of Crop calendar including Pest,	
		disease & Nematode management	
		• Marketing challenges being faced by trainees	
		in their cluster.	

Day 5	Insect-pests	1. Competitor moulds/ fungal/ viral diseases of	Khan Mushroom
S1	and disease	mushrooms	
&S2	management	2. Bacterial diseases and abiotic disorders in	
	in	mushrooms	
	mushroom	3. Insects, pests & nematodes of mushrooms and their management	
S 3 &S4	Medicinal mushroom	4. Cultivation of medicinal mushroom (Ganoderma lucidum)	Khan Mushroom
	and mobile	5. Practical on substrate preparation for	
	apps	Reishi/ <i>Ganoderma</i> mushroom	
		6. Use of mobile apps in mushroom cultivation	
	Discussion	Evaluation of Assignment and observations	
	Quiz	Learning on day 6	
	Reading for	Agricultural credit -Term loan credit: Process	Khan Mushroom
	next day	and dos and donts	
	Assignment	Explore: <u>http://agmarknet.gov.in/</u>	Khan Mushroom
		Documentation of difficulties being faced by	
		trainees;	
		Interaction with Bankers and growers	

Day 6 Session 1 & 2	Practical on PHT, video on success story and interaction with officials of NHB	 Practical on harvesting, handling, packaging and storage of mushrooms Video film on success story of a mushroom entrepreneur Interaction with officials from NHB on funding of mainteend subsidu 	ICAR- DMR/ICAR- IIHR/HAIC/Khan Mushroom
		runding of projects and subsidy	
S 3	Post training evaluation	Training evaluation /Test on1. Knowledge2. Skills3. Attitude	ICAR- DMR/ICAR- IIHR/HAIC/Khan Mushroom
		Marks in the test are	
	Total Marks	1. Class room participation25%	
	Final Assessment	2. Timely submission of 25% assignments	
		3. Final evaluation50%	
		Total Marks (Are recorded in Completion Certificate)	
	Feedback		3-4 Successful
	30 Min		entrepreneurs
	Discussion on		
	Feedback		ICAR-
S 4	Interaction with		DMR/ICAR-
	scientists for		IIHR/HAIC/Khan
	clearing doubts		Mushroom
	and valedictory		
	function		

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

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

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

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	Food Safety / Traceability and	Global Gap: <u>https://www.globalgap.org/uk_en/</u>	
	Standards	INDGAP: http://www.qcin.org/CAS/INDGAP/	
		Global gap India facilities: <u>http://agriexchange</u> .apeda.gov.in/Market%20Profile/Market_Inteligence/Annexure_III.pdf	
		Food Traceability in Inda: <u>http://face-</u> <u>cii.in/sites/default/files/final_report-version_2.pdf</u>	
		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 <u>http://www.intracen.org/</u>	
		GRASP: Global GAP Risk Assessment on Social Practice The Global Social Compliance Programme GSCP	
9.	Finance, Credit &	Model DPR Templates for NHB Schemes	
	Farm/ Project &	ww.nhb.gov.in	
	Risk Management		
10.	Cluster	NHB Website: Proposed scheme: Horticulture Business Cluster and Supply chain development Programme	
	Collaborative	Suppry chain development i rogramme	
	farming/ FPOs/	FAO (2010) Agro-based clusters in developing countries: staying	
	FPC	competitive in a globalized economy	
		http://www.fao.org/docrep/012/i1560e/i1560e.pdf	
		World Bank: Agriculture Clusters https://www.innovationpolicyplatform.org/sites/default/files/rdf imported documents/Agricultural Clusters.pdf	
		How Can the Poor Benefit from the Growing Markets for High	
		https://papers.ssrn.com/sol3/papers.cfm?abstract_id=944027	
		Crop specific Producers Society and company online authentic sources	
11.	Government	http://agricoop.gov.in/	
	organisations and	http://motpi.nic.in/	
	Schemes	http://nbb.gov.in/	
		http://coconutboard.nic.in/Scheme.aspx	
12.	Knowledge and	ICAR Indian Horticulture Magazine: https://icar.org.in/node/9420	
	Statistics	IIHR: <u>https://ihr.res.in/documentary-video-clips-for-farmers</u> EAO: http://www.fao.org/e-agriculture/stub-28	
13.	Technology and	Visit ICAR – Institutions / Directorates/ Bureaux/ NRCs:	
	Entrepreneurship	https://icar.org.in/	
		Innovation in	
		<u>Agriculture:http://www.tao.org/3/CA2460EN/ca2460en.PDF</u>	
		technologies <u>mups.//icar.org.m/content/agriculturar-</u>	
		e-learning: <u>https://ecourses.icar.gov.in/</u>	
		ICAR Publications: https://krishi.icar.gov.in/jspui/	
		Local University publications	
14	Drotacted	Local University success stories	
14.	//Greenhouse /	https://www.ncpahindia.com/	
1	(Greenhouse /		1

	Shade net / Walk in Tunnel) cultivation:	Agriculture Skill Council of India: Curriculum and Occupational / Qualification standards:	
15.	Cold Storage Cold Chain	http://asci-india.com/National%20Occupation%20Standards.php	
	Development:		ĺ

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	https://www.youtube.com/watch?v=QwE6oFkq3F8
Nagpur	
NRC	http://nrcb.res.in/success-stories.php
Banana	
CITH	http://www.cith.org.in/index.php?option=com_content&view=article&id=83&Itemid=11⟨=en
Srinaga	
r	
IIVR	https://iivr.org.in/success-stories
Grapes	https://rkvy.nic.in/Uploads/SucessStory/TAMILNADU/2018/20180440133.%20GRS%20Success%2
	0story.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/ DACFW/ 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 : At training Institutes
- c. Safe hostel accommodation and healthy Boarding.
- d. Accommodation/Hostel is at: At training institutes/near by hotels
- 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. Specialisation: Similarity in the commodity (s) production and complementarily 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.

- 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.

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



Trainees at Khan Mushroom Farm & Training Centre







Agriculture University PALAMPUR and Sant Baba Bhag Singh University Jalandher Punjab



Khalasha College Anandpur SahibPunjab at Khan Mushroom Farm



Office of Khan Mushroom Farm Una



View of Trainees Residential Room at Khan Mushroom Farm