

Name of the Institute

ICAR-National Research Centre on Pomegranate

Model

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

<b>Crop / Activity</b>	<b>Open Field Cultivation of Pomegranate</b>
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2019-20

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

Address of Horticulture Training Institute

ICAR-National Research Centre on Pomegranate

NH-65, Solapur-Pune Highway

Kegaon, Solapur-413255

Maharashtra, India

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

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

**Rationale:** 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, 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:**

The ICAR-National Research Centre on Pomegranate, Solapur (Maharashtra), was established on June 16, 2005 by the Indian Council of Agricultural Research, New Delhi, as a step to strengthen research and development infrastructure for pomegranate crop and augment the production, productivity and utilization of pomegranate through basic, strategic and applied research. The centre was established to fulfill the growing demand for pomegranate both in domestic and export market through tapping the immense production potential prevailing in the country.

The ICAR-NRCP has 8 world class fully equipped laboratories and well established demonstration cum research plots for basic and applied research. The centre has successfully completed more than 15 externally funded and contract research projects funded by the Government and Industry besides logically concluding more than 10 institute funded research projects. The Centre has led 2 multi organizational and multidisciplinary mega projects. The ICAR-NRCP has filed 2 patents, developed and/or commercialized more than 10 agricultural technologies, released two pomegranate hybrids, developed two mobile applications downloaded by more than 20,000 downloads, published more than 500 publications with about 100 research papers in journals of national and international repute.

The centre has organized more than 178 residential and off campus training programmes and participated in or organized more than 20 exhibitions and conducted about 50 front line demonstrations directly benefitting about 50000 stakeholders of pomegranate industry. The centre has fully furnished 43 bed training centre equipped with modern amenities, 4 water harvesting structures and lift irrigation system for supply of irrigation water @ 1 lakh litre/day to ICAR-NRCP's research farm at Hiraj, Solapur.

## **Basic infrastructure at ICAR-NRCP and collaborations with other organizations**

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-NRCP has organized 178 residential and off campus training programmes for Pomegranate Farmers, State Government employees, ATMA, KVKs, Scientists, Scientist Probationers, Students, Employees of Private Companies like Syngenta, Bayer, Mahindra, Tata, etc directly benefitting about 20000 stakeholders of pomegranate industry. The centre has rich experience of organizing workshops, seminars and brainstorming sessions. ICAR-NRCP has designed and developed more than 20 training manual, farmers' friendly multilingual several technical, extension bulletins and folders, two multilingual picture/photograph dominated mobile applications for the benefit of pomegranate

stakeholders. Scientists from ICAR-NRCP were part of NHB joint inspection teams for nursery of open field projects, scientist also bagged and successfully completed 3 NHB projects. ICAR-NRCP played pivotal role in preparation of DPR document for pomegranate hosted at NHB website.

## **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. Capacity building of trainees by improving their understanding on various aspects of pomegranate propagation, production, ecological sustainability, integrated nutrient, diseases and pest management, effective utilization of scarce water resources for profitable production.

- a. Agro-climatic conditions suitable for pomegranate cultivation, important varieties, crop and pest and diseases profile; familiarisation of components and Mechanisation and Automation.
- b. 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, various maturity indices, 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 and ANARNET.
  - g. To make them aware of and used to with networking platforms, mobile applications, what's app groups, social medial platforms related to pomegranate.
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..
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 provide exposure to the trainees through field visits/ success stories / best practices including cluster development / FPOs; interaction with successful entrepreneurs; and help the trainees to recognize key factors responsible for success and failure.
  - f. To learn about Farm record book keeping.
10. Cluster development / Collaborative farming/ Cooperative/ Group farming: What is cluster? Essential elements? To know importance of cluster approach,
  11. Government organisations and Schemes related to Horticulture and laws to be complied.
  12. Horticulture Statistics sources including DAC&FW website and State Horticulture Dept. website.
  13. Technology and Entrepreneurship

**Pedagogy: Training methods / styles are:**

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

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

1. 100% attendance of all Classes prescribed.
2. Daily studying of reading material provided.
3. Successful and timely completion of assignments.
4. A score a minimum of 75 % in final assessment by each trainee.
5. Knowledge: by each of the trainee
  - a. Essential elements of NHB Scheme guidelines, documentation & processes and Do's and Don'ts, understanding DPR, Bank Appraisal and Sanction, identification of risks and vulnerabilities and measures to address the same, Processes and documentation of NHB scheme implementation for successful subsidy release.
  - b. Essential elements of scientific and commercial Production, harvesting, post-harvest, Marketing, Exportsetc. in English/Hindi/trainees' language.
  - c. Food safety (Good Agricultural Practices), traceability, standards etc.
  - d. Documentation of analysis of current scenario of trainees context- production, harvest, post-harvest, supply chain, marketing and gap analysis and possible road map.
6. Skills: by each of the trainee
  - a. Curiosity and continuous learning.
  - b. Crop: Modern scientific Cultivation, harvesting, post-harvest, food safety, traceability certification and standards.
  - c. Project: PHM&CC: Modern scientific operations, technology, safety etc.
  - d. 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

<b>Training Programme Name</b>	<b>Entrepreneurship and Leadership Development Programme for Horticulture Entrepreneurs</b>			
Duration	6 working days: 1 Week			
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	<p><b>Dr. N.V. Singh, Sr. Scientist, ICAR-NRCP</b>  <b>or as designated by the Director, ICAR-NRCP</b>  <b>e-mail: <a href="mailto:nripendras72@gmail.com">nripendras72@gmail.com</a></b>  <b>Mob. No. 08999254086</b></p> <p><b>Training Coordinator:</b> Organized more than 10 residential training programmes as training coordinator (covering more than 500 beneficiaries) for Pomegranate Farmers, State Government employees, Scientists, Scientist Probationers, Students, Employees of Private Companies like Syngenta. He was also involved in more than 20 off campus training programmes as organizer or as resource person.</p> <p><b>ICAR-NRCP:</b> Organized more than 30 residential training programmes covering more than 1500 beneficiaries along with conducting more than 100 non-residential or off campus trainings (as organizer or co-organizer) covering more than 15000 beneficiaries.</p>			
Languages				
Training calendar for 2019-20	Month	Last date for Registration	Training reporting dates	Training Dates
	Last week of January, 2020	20 days prior to training	One day before training to till 8:00 am morning of the first day of the training programme	27.01.2020-01.02.2020
	Third Week of March, 2020	20 days prior to training	One day before training to till 8:00 am morning of the first day of the training programme	16.03.2020-21.03.2020
How to Apply	Submission of duly filled in training application form available at ICAR-NRCP website			
Next review/ revision of Training Design	April, 2020			
Batch size and cost and Payment system	Batch size	Course Fees (Including 20 % institutional charge)	Hostel: Accommodation, Boarding: BF+L+D + Morning Tea + Afternoon Snacks	Total cost
	15 & above	1000/trainee/day	Rs. 650/trainee/day	1650/trainee/day

	(20)			
	10-15	1200/trainee/day	Rs. 650/trainee/day	1850/trainee/day
	5-10	1400/trainee/day	Rs. 650/trainee/day	2050/trainee/day
	≤5			
	<p>Payment system and address:  Online Transaction-  Account Name: ICAR Unit NRC on Pomegranate, Solapur  Account No.: 11087720776  IFSC Code: SBIN0000483  Nature of the Account: Current Account  Name of the Bank: State Bank of India  Address of the Bank: Budhawarpeth, Balives, Solapur-413002, Maharashtra  Branch Code: Balives Branch-00483</p> <p>Or</p> <p>Demand Draft in favour of ICAR Unit NRC on Pomegranate  Payable at Solapur</p>			
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	<ol style="list-style-type: none"> <li>1. The training programme is voluntary for any individual or trainee.</li> <li>2. The cost of training is to be borne by trainee him/herself.</li> <li>3. The training is not sponsored by NHB nor by any Government.</li> <li>4. Upon 100% attendance and upon scoring 75% marks is considered as successful completion and then are eligible for training completion certificate.</li> <li>5. Successful completion of training programme by the applicant and submission of completion certificate is one of the requirement for obtaining In-Principle Approval (IPA).</li> <li>6. It is compulsory to reside in the hostel/accommodation provided by the institute in the interest of training.</li> <li>7. The training institute has no say in NHB decision making either in approval or rejection of IPA or sanction or not sanction of Subsidy.</li> <li>8. Trainees are responsible for their conduct and wellbeing issues.</li> </ol>			

#### **Expectations from trainee before the arrival to the Training institute:**

1. Study NHB scheme guidelines of all schemes with emphasis on specific component for which application is being/ is made including General conditions, Basic structure, Applicant eligibility, Technical standards, Basic Data sheet and Protocols, Budgetary allocation for his/her state/UT, Guidelines for submitting application, cost of application, various prescribed formats, FAQs, Dos and Don'ts, Agenda and Checklist, List of documents to be submitted both for Pre-IPA and IPA available in NHB website and as received in their online account.
2. Study one's own Detail Project Report along with Model DPR available in NHB website.

3. Visit NHB website and study various services available- especially Scheme guidelines, Model DPRs, Technical Standards, Statistics, NHB interactive, Minutes of meetings (past), Public circulars to the extent possible.
4. Should see him/her self whether he/she is satisfying NHB Scheme requirements.
5. To cooperate with Horticulture Training Institute.
6. To share specific problems/ gaps / barriers in horticulture growth and profits in his area.

**Material to be brought by each of trainee:**

1. Hardcopy of application already submitted to NHB, if any.
2. Hardcopy of DPR already submitted to NHB or prepared, if any.
3. Hardcopy of Model NHB DPR, if possible.
4. Hardcopy of copy of Dos and Don'ts, Agenda and Checklist, List of documents to be submitted.
5. Hardcopy of applicants' eligibility and General conditions.

### Day wise schedule

Session	Module	Learning	Expert
	<b>Registration</b>	<b>Registration</b> Prior-Assessment of knowledge, attitude and skills	
<b>Day1 S (Session) 1</b>	<b>Orientation / Inauguration</b>	<ul style="list-style-type: none"> <li>• General discipline in class room (Do's and Don'ts)</li> <li>• Every trainee to share their introduction with expectations.</li> <li>• Motivational Talk</li> </ul>	Successful entrepreneur
<b>Day1 S2</b>	<b>Economic / Marketing Potential and Specific State/ UTs context: Scope and opportunities and Success stories.</b>	<ol style="list-style-type: none"> <li>1. Crop Origin, Botany and economic products:</li> <li>2. Fresh product &amp; Processing &amp; Value added products.</li> <li>3. India: Area, Production, Productivity, Prices &amp; value.</li> <li>4. State/UT : Area, Production, Productivity,</li> <li>5. Prices &amp; value, variation across markets.</li> <li>6. Global: Area, Production, Productivity, Prices;</li> <li>7. Domestic market : Supply and Demand;</li> <li>8. Export and Import scenario;</li> <li>9. Case study of success stories-2</li> <li><b>10.</b> Concerns for growers / entrepreneurs!</li> <li><b>11.</b> Climate Change</li> <li><b>12.</b> Entrepreneurship Development</li> <li><b>13.</b> ICAR-NRCP Profile</li> </ol>	<b>Director, ICAR-NRCP</b>
<b>Day1 S3</b>	<b>NHB Scheme Guidelines, Annual Design and Processes of successful implementation and DPR, Bank Appraisal and Sanction of own Project</b>	<p>Group Discussion and Presentation by each group:</p> <ol style="list-style-type: none"> <li>1. Scheme guidelines</li> <li>2. Flow chart</li> <li>3. Dos and Don'ts, List of documents to be submitted and Agenda and Checklist.</li> <li>4. Technology standards/ Specifications etc.</li> <li>5. Issues with Banks.</li> <li>6. Common reasons for rejection of Projects at NHB.</li> <li>7. Q&amp; A on Queries.</li> </ol>	<b>DD NHB/ Expert from NHB</b>
<b>Day1 S4</b>	<b>Economics, Finance, Credit &amp; DPR and Project Management and Risk Management</b>	<ol style="list-style-type: none"> <li>1. Estimate cost of production and required investment;</li> <li>2. To know about Banks/ Financial Institutions; Loan procedure-how to avail finance/ credit- challenges and prospects.</li> <li>3. Facilitate in possible solutions on expeditious and easy access to credit in trainees context.</li> <li>4. To prepare a proposal for loan duly considering Agro-climatic/soil/ water suitability, Market, Finance and Technical viability.</li> <li>5. Model DPR Templates of NHB.</li> <li>6. DPR preparation for various schemes</li> <li>7. Farm record keeping.</li> <li>8. Economics of enterprise &amp; performance measurement using 2-3 Financial indicators.</li> <li>9. Managing Natural calamities</li> </ol>	<b>Panel of</b> <b>1.CA</b> <b>2.Horticulturist (Dr. N.V. Singh)</b> <b>3.PHM Expert (Dr. N.N. Gaikwad)</b> <b>4.Bank Manager/ Expert from Bank</b>

		10. Mitigation, Insurance- risks covered, not covered, claims, assessment, settlement etc Monitoring and Evaluation of project	<b>5. One Successful NHB scheme holder farmer</b> <b>6. Insurance Agency</b> <b>7. Expert from NHB</b>
	Quiz	Today's learning	
	Reading material for next day*	1. Study of NHB Scheme guidelines and come up with queries. 2. Reading material on Pomegranate cultivation technologies, varieties, INM in pomegranate, planting material production, Horticultural practices, orchard layout	
	Evening/Night Home work/ Assignment#	<ul style="list-style-type: none"> <li>• Creation of Whats' app group of all trainees.</li> </ul>	

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

#: Are evaluated/tested the following day.

<b>Day2 S1</b>	Quality Planting Material in Pomegranate	<ol style="list-style-type: none"> <li>1. Quality Planting Material- Sources of QPM, Different types of Planting material and their utility.</li> <li>2. Knowledge of vegetative propagation in pomegranate.</li> <li>3. Important considerations or points to be remembered before procuring planting material</li> </ol>	<b>Dr. N.V. Singh, Sr. Scientist, Fruit Science, ICAR-NRCP</b>
<b>Day2 S2</b>	Orchard establishment in pomegranate	<ol style="list-style-type: none"> <li>1. Agro-climatic and edaphic conditions required for pomegranate cultivation</li> <li>2. Site selection and layout</li> <li>3. Important prerequisites before pomegranate orchard plantation</li> <li>4. Pit digging and pit treatments, planting density and method of planting, raised bed preparation, etc</li> <li>5. Characteristics of important pomegranate varieties</li> </ol>	<b>Dr. K. Dhinesh Babu, Pr. Scientist, Fruit Science, ICAR-NRCP</b>
<b>Day2 S3</b>	INM in pomegranate and utility of Soil Sampling and interpretation of soil health card	<ol style="list-style-type: none"> <li>1. Integrated Nutrient Management (Macro &amp; Micro) / Manuring including Bio-fertilizers for newly established and bearing orchards: Basal application, fertigation and nutrient spray schedule, plant beneficial microbes and their role in plant nutrition, technique of microbial multiplication and activation before field application, nutrient deficiency symptoms.</li> <li>2. Role and utility of growth regulators and bio-stimulants in pomegranate</li> <li>3. Care to be taken in procuring inputs.</li> <li>4. Practical exposure on soil sampling, pH and EC estimation, water analysis, interpretation of soil health card and nutrient analysis and their utility in successful and sustainable pomegranate orchard establishment</li> </ol>	<b>Dr. Ashis Maity, Sr. Scientist, Soil Science, ICAR-NRCP</b>
<b>Day2 S4</b>	Visit to ICAR-NRCP Farm Farm mechanisation & Automation	<p>Visit to ICAR-NRCP demonstration-cum-experimental blocks, pomegranate orchard and drip irrigation layout</p> <p>Farm mechanisation&amp; Automation- Tools and equipment for nursery, production &amp; harvesting, Annual Maintenance &amp; Service centre, hands on practice on canopy management, etc</p>	<b>Dr. N.V. Singh, Sr. Scientist, Fruit Science, ICAR-NRCP Mr. Yuvraj Shinde, Sr. Technical Assistant., and Mr. Mahadev Gogaon, ICAR-NRCP</b>
	Discussion	Evaluation of Assignment and observations	
	Quiz	Learning on yesterday and today	
	Reading for	Production technology of pomegranate, Canopy	

	next day	Management, Bahar Regulation, Water management, IDIPM Schedule	
	Assignment for next day	Difference between Applicants DPR and NHB's Model DPR- What are the learnings. Understanding one's own DPR and Model DPR format- critical comments. Role of Banker in NHB Schemes	



<b>Day 3 S 1</b>	Bahar Regulation and Canopy Management in Pomegranate	Flowering/bahar regulation in pomegranate: practice, issues and strategies  Canopy Management in Pomegranate	<b>Dr. N.V. Singh, Sr. Scientist, Fruit Science</b>  <b>Dr. K. Dhinesh Babu, Pr. Scientist, Fruit Science, ICAR-NRCP</b>
<b>Day 3 S 2</b>	Water Management in Pomegranate	1. Water requirement, critical stages, Irrigation & drainage/ soil & water conservation/ RWH; irrigation schedule 2. Subsurface drip irrigation and partial root zone drying in pomegranate	<b>Dr. D.T. Meshram, Sr. Scientist, Land and Water Management Engineering, ICAR-NRCP</b>
<b>Day 3 S 3</b>	Integrated Disease Management in pomegranate (L)	1. Integrated Disease Management with special reference to blight and wilt 2. Effective microbial formulations against pomegranate diseases. 3. Issue of spurious plant protection chemicals, market linkage, food safety issues etc.	<b>Dr. Jyotsana Sharma Pr. Scientist, Plant Pathology and Director (Acting), ICAR-NRCP</b>
<b>Day 3 S 4</b>	Integrated Disease Management in pomegranate (P)	1. Identification of important disease symptoms and Bordeaux mixture and paste preparation 2. Preparation of spray solutions at optimum concentration	<b>Dr. Jyotsana Sharma Pr. Scientist, Plant Pathology and Director (Acting), ICAR-NRCP</b>
	Discussion	Evaluation of Assignment and observations	
	Quiz	Learning on 3 days	
	Reading for next day	Integrated pests management Factors that decide harvesting time. Post-harvest management practices, technologies and infrastructure – specific to each trainee. Issues in Pomegranate Export ANARNET	
	Assignment	Technologies for Water, Integrated Nutrient and Disease management in pomegranate	

<b>Day 4 S1</b>	Integrated Pest and Nematode Management in Pomegranate (L and Practical)	Identification of important insects-pests, their damage symptoms and natural enemies	<b>Mr. Mallikarjun. Scientist, Entomology, ICAR-NRCP</b>
<b>Day 4 S2</b>	Pomegranate Export	Issues of Traceability, food safety, residue free production, PHI, MRL, label claims in pomegranate export  ANARNET and its utility for pomegranate export  Important export destinations for Indian pomegranate and their requirements	<b>Subject Matter Expert</b>
<b>Day 4 S3 and S4</b>	Harvesting, Post-Harvest Management to reduce post-harvest losses	<ol style="list-style-type: none"> <li>1. Post-Harvest losses and Waste scenario in the country and measures to minimise the same.</li> <li>2. Proper technique &amp; do's and don'ts of Harvesting;</li> <li>3. Factors affecting harvesting in pomegranate.</li> <li>4. Careful Post-harvest handling / practices including use of crates, reception area, washing/cleaning, sorting (parameters), grading (standards), waxing, Packaging, labelling, pre-cooling &amp; Preservation &amp; Traceability.</li> <li>5. Fresh product: Minimal processing.</li> <li>6. Processing / Preservation- &amp; Value Addition</li> <li>7. Total utilization in pomegranate</li> <li>8. Visit to Pilot Plant</li> </ol>	<b>Dr. N.N. Gaikwad, Scientist, Agricultural Structure and Process Engineering, ICAR-NRCP</b>
	Discussion	Evaluation of Assignment and observations	
	Quiz	Learning on 4 days	
	Reading for Next Day	<ul style="list-style-type: none"> <li>• Marketing of pomegranate</li> <li>• Agricultural credit -Term loan credit: Process and dos and don't</li> </ul>	
	Assignment	Technologies for Integrated pest management  Preparation of Crop calendar including Pest, disease & Nematode management  Technologies for Post Harvest Management, value addition and total utilization in pomegranate  Commercialized and economically	

		viable pomegranate processing and value addition technologies in pomegranate	
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<b>Day 5 Morning</b> <b>6:00-8:00</b>	<b>Marketing</b>	Visit to APMC (Market Yard, Solapur and discussion with traders)	<b>Mr. Mahadev Gogaon (Sr. Technician, ICAR-NRCP)</b>
<b>Day 5 S1 &amp;2</b>	<b>Marketing and value chain development</b>	<ol style="list-style-type: none"> <li>1. Value Chain Analysis of product / commodity in State / UT- Current scenario and the best possible solutions</li> <li>2. Identification of markets- Export, Distant Market, Local markets-Mandis/ Traders, Processing units.</li> <li>3. Demand – seasons / days etc.</li> <li>4. Market differentiation- Organic, Residue free, etc.</li> <li>5. Market Driven Production- Concept: What? How? Challenges? Solutions</li> <li>6. Promotion strategy: Branding; Differentiation of product</li> <li>7. e-marketing</li> </ol> <p>Market Intelligence / Transparency in Market prices/ Assimilation of Market Information /</p> <ol style="list-style-type: none"> <li>1. Knowing end market prices- Local market and distance market; from reliable sources, Mandis, competitors through Media-print, AIR, TV, internet, commission agents etc.</li> <li>2. Analyse market information season wise.</li> <li>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.</li> <li>4. Arranging cost effective transportation. Also use market information for growing next crop, area and release of produce into market etc.</li> </ol> <p>Demand assessment and management:</p> <ol style="list-style-type: none"> <li>1. Need to consolidate demand from all sources- retail outlets, chain, hawkers etc.</li> <li>2. Assured quantum can be vertically integrated with producers.</li> <li>3. Variable demand is linked with indirect or Mandi based procurement.</li> <li>4. To know a balance sheet: demand and supply of commodity if possible if possible.</li> </ol> <p>Causes of market instability and measures to</p>	<b>Exporter/ Ag. Economist/ Trader/ SMS/ Expert from Market Yard/ Successful FPOs</b>

		<p>address</p> <ol style="list-style-type: none"> <li>1. Causes: Low cost supplies from new production areas, Fluctuating demand in Transport availability, Market manipulation, weather vagaries, local disruptions (Bandhs etc.) etc.</li> <li>2. Measures: Building brand loyalty, Efficient supply chain with dedicated transport on pre-determined schedules, Complementary storage option for buffers for 2 weeks; For perishables- back end sources and reefer transport, modern pack houses; Food processing capacity, Export markets.</li> <li>3. Measures to check gluts.</li> </ol> <p>Marketing models / Measures to minimise price spread / enhance price realisation.</p> <ol style="list-style-type: none"> <li>1. Direct-       <ol style="list-style-type: none"> <li>1. Bulk sale- fast tracked without any pre-cooling with daily dispatches.</li> <li>2. Bulk or retail outlets- owned/ franchisee.</li> <li>3. Through wholesale trader / Retail chain/ Exporter/Importer/ Street vendors/ vegetable sellers.</li> <li>4. Mode of disposal: APMC/ on farm disposal to trader/ collective disposal with the help of Pomegranate Grower's Association/ self sale at farm</li> </ol> </li> <li>2. Marketing with /without legal contract with buyers, supply chain agents etc.</li> <li>3. Models:       <ul style="list-style-type: none"> <li>• NDDDB-Mother Dairy/ SAFAL Model- Front end distribution hub and retail outlets.</li> <li>• HOCOMS model: Both back end ownership of collection centres and transport and front end distribution, outlets.</li> <li>• Big Basket Model.</li> <li>• Study of pricing / price realisation across the models</li> </ul> <p>Supply to Distribution hub by Buyer like HOPCOMs or by FPO as in case of Mothers; dairy SAFAL.</p> </li> </ol> <p>Private partnership- Success stories</p> <p>Potential niche Export markets</p> <ol style="list-style-type: none"> <li>1. Global Scenario- product wise; Success story,</li> <li>2. State/UT s potential, Challenges for Export markets- sea based;</li> </ol>	
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		<p>3. Interaction with Exporters and Importers.</p> <p>4. Linkage with Distribution hubs</p> <p>Potential niche Domestic markets:</p> <ol style="list-style-type: none"> <li>1. Indian Scenario- product wise; Challenges for Domestic – road based</li> <li>2. List of processors, value added companies.</li> </ol> <p>Exposure / Networking visits/Trade Fairs/ Exhibitions_ India &amp; Abroad- CDB support</p> <p><b>Economics of Pomegranate Cultivation</b></p>	
S 3	Producing Quality produce	<p>Food Safety &amp; Certification &amp; Traceability activities: at pre-planting, Crop husbandry, Harvesting and Post-harvest.</p> <ul style="list-style-type: none"> <li>• Good Agricultural Practices-GLOBAL GAP/ INDIGAP</li> <li>• BRC/IFS/ FSSC/SQF/</li> <li>• Codex Alimentarius/</li> <li>• Organic certification</li> </ul> <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 &amp; 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><b>Standards</b></p> <ul style="list-style-type: none"> <li>• GSCP- Global Social Compliance Program;</li> <li>• Social code: GRASP</li> <li>• Fair food</li> <li>• Standards</li> <li>• EU MRL; FAO-IPM</li> <li>• Sea based logistics certification: IFOAM; Cargo hand book</li> </ul> <p>GMP- for processed / value added products</p>	<b>Subject Matter Expert</b>
S4	Government organisations and Schemes and applicable laws.	<p>List of Institutions for promotion of Horticulture: State/ UT Govt., DAC&amp;FW-CDB, NHB, CPCRI, UT Government, Central Schemes – SFAC, NCDL, MoFPI, APEDA, NABARD etc.</p> <p>Applicable laws / clearances etc. for Horti-business- As may be applicable-</p> <ul style="list-style-type: none"> <li>• Crops: IPR, PPVFR,</li> </ul>	<b>Dr. NN Gaikwad</b> <b>Dr. Shilpa P.</b>

		<ul style="list-style-type: none"> <li>• Technology: TM, Patent, licensing.</li> <li>• Cold Storage: Fire Safety, Pollution, Agriculture Marketing, Conversion of Land use etc.</li> </ul>	
	Discussion	Evaluation of Assignment and observations	
	Quiz	Learning on 5 days	
	Reading for next day	Pomegranate supply and value chain, innovation and entrepreneurship development	
	Assignment	Important Issues and strategies related to pomegranate marketing, export and quality	

<b>Day 6 Session 1</b>	Supply/ Cold-chain development both for fresh and processed produce  Agri/Horti-Logistics          Technology Entrepreneurship & innovation	<ol style="list-style-type: none"> <li>1. What is Supply Chain and Cold Chain? Advantages.</li> <li>2. <u>For Local sale</u>: where product selling cycle is &lt; 48 hrs- to have aggregation, staging platforms at village level for sorting and grading and to consolidate volume for viable truck loads.</li> <li>3. <u>For Long distance</u>: where product selling cycle is &gt; 48 hrs- require aggregation platforms, pre-conditioning supply &amp; cold chain management- Modern pack house, integration with reefer transport.</li> <li>4. Required infrastructure Gaps,</li> <li>5. Strategy for phase wise Supply/ Cold Chain development in trainees context.</li> <li>6. For domestic market- Local &amp; Distant</li> <li>7. For export market.</li> <li>8. Annual Maintenance, Contract of Infrastructure.</li> </ol> Avenues of Entrepreneurship Development in Pomegranate	<b>Dr. N.N. Gaikwad and successful pack house/ cold store operator/ exporter</b>								
<b>Day 6 Session 2</b>		Guest Lecture by Successful Entrepreneurs Question and Answer Session on queries related to learnings from the training programmes	<b>All Scientists</b>								
<b>S 3</b>	Evaluation 1 Hour          Total Marks Final Assessment          Feedback 30 Min  Discussion on Feedback	Training evaluation /Test on <ol style="list-style-type: none"> <li>1. Knowledge</li> <li>2. Skills</li> <li>3. Attitude</li> </ol> Marks in the test are <table border="1" data-bbox="579 1451 1187 1675"> <tr> <td>1. Class room participation</td> <td>25%</td> </tr> <tr> <td>2. Timely submission of assignments</td> <td>25%</td> </tr> <tr> <td>3. Final evaluation</td> <td>50%</td> </tr> <tr> <td colspan="2">Total Marks (recorded in Completion Certificate )</td> </tr> </table>	1. Class room participation	25%	2. Timely submission of assignments	25%	3. Final evaluation	50%	Total Marks (recorded in Completion Certificate )		<b>ICAR-NRCP NV Singh and DT Chaudhari</b>          <b>3-4 Successful entrepreneurs</b>
1. Class room participation	25%										
2. Timely submission of assignments	25%										
3. Final evaluation	50%										
Total Marks (recorded in Completion Certificate )											
<b>S 4</b>	Valediction										



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

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

S.No	Module	Reading Material	
		For the Trainer	For the trainee
1.	Economic Potential and Specific State/ UTs context and Success stories.	<p>Horticulture Statistics at a glance:  <a href="http://agricoop.gov.in/statistics/publication-reports">http://agricoop.gov.in/statistics/publication-reports</a></p> <p>World fruit and vegetable map: 2018: Robo Bank  <a href="https://research.rabobank.com/far/en/sectors/regional-food-agri/world_fruit_map_2018.html">https://research.rabobank.com/far/en/sectors/regional-food-agri/world_fruit_map_2018.html</a></p> <p>APEDA AGRIEXCHANGE: <a href="http://agriexchange.apeda.gov.in/">http://agriexchange.apeda.gov.in/</a></p> <p>ICAR institutions publications on specific crop            CII / FICCI/ASSOCHAM/ PHDCC reports</p> <p><a href="http://www.fao.org/docs/eims/upload/210971/global_issues_paper.pdf">http://www.fao.org/docs/eims/upload/210971/global_issues_paper.pdf</a></p> <p>Success stories:  <a href="http://agritech.tnau.ac.in/success_stories/sstories_horti_2015.html">http://agritech.tnau.ac.in/success_stories/sstories_horti_2015.html</a></p>	
2.	Personal skills development	Internet and youtbue	
3.	Pomegranate Propagation, Production and protection practices for high productivity	<p>Sharma, J.,Chandra, R., DhineshBabu, Meshram, D.T., Maity, A., <b>Singh, N.V.</b> and Gaikwad, N.N. 2014. Pomegranate: cultivation, marketing and utilization. Technical Bulletin No. NRCP/2014/1. 88p.</p> <p><b>Pal, R.K., Singh, N.V.</b>, Sharma, J.,Babu, K.D., Maity, A., and Chaudhary, D.T. 2015. Anar: Utpadan, VipnanavemUpyogita. Technical Bulletin No. NRCP/2015/2. 97p.</p> <p>Technology specific video films of ICAR-NRCP</p> <p>Mobile Application Solapur-Anar</p> <p>Pal, R.K. and <b>Singh, N.V.</b> 2017. Pomegranate for nutrition, livelihood security and entrepreneurship development, Daya Publishing House (A division of Astral International Pvt. Ltd), New Delhi, 288 p.</p> <p><b>Singh, N.V.</b>,Chaurhari, D.T. and Pal, R.K.2017.Gunvaktayukt ropansamigrikitaiyari. NRCP/Ext. Folder 2017/1, 4p.</p> <p><b>Singh, N.V.</b>,Sahu, P., Chaurhari, D.T., Goswami, A.A. and Pal, R.K. 2017.Anar kenayebagichayekisthapna. NRCP/Ext. Folder 2017/2, 4p.</p> <p>Meshram, D.T., <b>Singh, N.V.</b>,Chaurhari, D.T, Goswami, A.A. and Pal, R.K. 2017.Jal prabandhan. NRCP/Ext. Folder 2017/3, 4p</p> <p>Pal, R.K., Sharma, J., Babu, K.D., Maity, A and <b>Singh, N.V.</b> 2017. Pomegranate for health, growth and prosperity. ICAR-NRCP, 244p.</p> <p>ICAR e-courses: <a href="https://ecourses.icar.gov.in/">https://ecourses.icar.gov.in/</a></p>	
4.	Harvesting, Post-Harvest Management / Infrastructure	<p>Analysis of FPO model for Vegetables  <a href="https://nccd.gov.in/PDF/Analysis_FPO_model.pdf">https://nccd.gov.in/PDF/Analysis_FPO_model.pdf</a></p> <p>Doubling of Farmers Income Report: Vol.III and IV  <a href="http://agricoop.gov.in/doubling-farmers">http://agricoop.gov.in/doubling-farmers</a></p>	
5.	Processing / Value Addition	<p>Gaikwad,N.N. and Meshram, D.T. 2017. Dalimb: Utpadan, vipnananiupyogita. ICAR-NRCP Technical Bulletin/2017/1, pp. 47-51.</p> <p>Technology specific video films of ICAR-NRCP</p>	
6.	Supply/ Cold-chain development both for fresh and processed produce	<p>Cold Chain Awareness program  <a href="https://nccd.gov.in/PDF/Cold-chain%20Awareness%20Booklet.pdf">https://nccd.gov.in/PDF/Cold-chain%20Awareness%20Booklet.pdf</a></p> <p>Analysis of NDDB Model for Vegetables  <a href="https://nccd.gov.in/PDF/Analysis_NDDB_veg_model.pdf">https://nccd.gov.in/PDF/Analysis_NDDB_veg_model.pdf</a></p> <p>All India Cold Chain Infrastructure Capacity : Gap Analysis</p>	

		<a href="https://nccd.gov.in/PDF/CCSG_Final%20Report_Web.pdf">https://nccd.gov.in/PDF/CCSG_Final%20Report_Web.pdf</a>	
7.	Marketing and value chain development	Directorate of Marketing and Inspection website: <a href="http://agmarknet.gov.in/">http://agmarknet.gov.in/</a> Crop specific market information sources	
8.	Maintain quality of produce: Health & Food Safety / Traceability and Standards	TNAU AgriTech portal on Food Safety: <a href="http://agritech.tnau.ac.in/gap_gmp_glp/gap_fresh%20_%20fruits%20&amp;%20veg.html">http://agritech.tnau.ac.in/gap_gmp_glp/gap_fresh%20_%20fruits%20&amp;%20veg.html</a> <a href="http://agritech.tnau.ac.in/food_safetyindex.html">http://agritech.tnau.ac.in/food_safetyindex.html</a>  Global Gap: <a href="https://www.globalgap.org/uk_en/">https://www.globalgap.org/uk_en/</a>  INDGAP: <a href="http://www.qcin.org/CAS/INDGAP/">http://www.qcin.org/CAS/INDGAP/</a>  Global gap India facilities: <a href="http://agriexchange.apeda.gov.in/Market%20Profile/Market_Intelligence/Annexure_III.pdf">http://agriexchange.apeda.gov.in/Market%20Profile/Market_Intelligence/Annexure_III.pdf</a>  Food Traceability in India: <a href="http://face-cii.in/sites/default/files/final_report-version_2.pdf">http://face-cii.in/sites/default/files/final_report-version_2.pdf</a>  FAO International Code of Conduct on Pesticide Management <a href="http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/code/en/">http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/code/en/</a>  TRACEABILITY IN FOOD AND AGRICULTURAL PRODUCTS: ITC, Switzerland publication at <a href="http://www.intracen.org/">http://www.intracen.org/</a>  GRASP: Global GAP Risk Assessment on Social Practice The Global Social Compliance Programme GSCP <a href="https://www.gscpequivalenceprocess.com/">https://www.gscpequivalenceprocess.com/</a>  ANARNET on APEDA website	
9.	Finance, Credit & Farm/ Project & Risk Management	Model DPR Templates for NHB Schemes <a href="http://www.nhb.gov.in">www.nhb.gov.in</a>	
10.	Cluster development : Collaborative farming/ FPOs/ FPC	NHB Website: Proposed scheme: Horticulture Business Cluster and Supply chain development Programme  FAO (2010) Agro-based clusters in developing countries: staying competitive in a globalized economy <a href="http://www.fao.org/docrep/012/i1560e/i1560e.pdf">http://www.fao.org/docrep/012/i1560e/i1560e.pdf</a>  World Bank: Agriculture Clusters <a href="https://www.innovationpolicyplatform.org/sites/default/files/rdf_imported_documents/Agricultural_Clusters.pdf">https://www.innovationpolicyplatform.org/sites/default/files/rdf_imported_documents/Agricultural_Clusters.pdf</a>  How Can the Poor Benefit from the Growing Markets for High Value Agricultural Products? FAO / UN Paper <a href="https://papers.ssrn.com/sol3/papers.cfm?abstract_id=944027">https://papers.ssrn.com/sol3/papers.cfm?abstract_id=944027</a>  Crop specific Producers Society and company online authentic sources	
11.	Government organisations and Schemes	<a href="http://agricoop.gov.in/">http://agricoop.gov.in/</a> <a href="http://mofpi.nic.in/">http://mofpi.nic.in/</a> <a href="http://apeda.gov.in/">http://apeda.gov.in/</a> <a href="http://nhb.gov.in/">http://nhb.gov.in/</a>	
12.	Knowledge and Statistics	ICAR Indian Horticulture Magazine: <a href="https://icar.org.in/node/9420">https://icar.org.in/node/9420</a> IIHR: <a href="https://iihr.res.in/documentary-video-clips-for-farmers">https://iihr.res.in/documentary-video-clips-for-farmers</a> FAO: <a href="http://www.fao.org/e-agriculture/stub-28">http://www.fao.org/e-agriculture/stub-28</a>	
13.	Technology and Entrepreneurship	Visit ICAR – Institutions / Directorates/ Bureaux/ NRCs: <a href="https://icar.org.in/">https://icar.org.in/</a> <b>Innovation in Agriculture:</b> <a href="http://www.fao.org/3/CA2460EN/ca2460en.PDF">http://www.fao.org/3/CA2460EN/ca2460en.PDF</a> Specific technologies: <a href="https://icar.org.in/content/agricultural-technologies">https://icar.org.in/content/agricultural-technologies</a> e-learning: <a href="https://ecourses.icar.gov.in/">https://ecourses.icar.gov.in/</a> ICAR Publications: <a href="https://krishi.icar.gov.in/jspui/">https://krishi.icar.gov.in/jspui/</a> Local University publications Local University success stories	
14.	Protected (Greenhouse / Shade net / Walk in Tunnel) cultivation:	National Committee on plasticulture Agriculture with the Horticulture <a href="https://www.ncpahindia.com/">https://www.ncpahindia.com/</a> Agriculture Skill Council of India: Curriculum and Occupational / Qualification standards: <a href="http://asci-india.com/National%20Occupation%20Standards.php">http://asci-india.com/National%20Occupation%20Standards.php</a>	
15.	Cold Storage / Cold Chain Development:		

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

**Success Stories: Illustrative**

Sharma Jyotsana, KK Sharma, DTMeshram, NV Singh Ram Chandra, K Dhinesh Babu, NN Gaikwad.2014.*Pomegranate: Cultivation, Marketing and Utilization*, Technical Bulletin No. NRCP/2014/1, ICAR-NRCP, Solapur.88p.

Pal, R.K. , Nilesh N. Gaikwad, AshisMaity, NV Singh, D. T. Meshram, Jyotsana Sharma and K. DhineshBabu. 2017. Innovation, Capacity Building and Success Stories in Pomegranate. *ICAR-NRCP e- Publication 2017/1*, 21p.

[https://www.innovationpolicyplatform.org/sites/default/files/rdf\\_imported\\_documents/Agricultural\\_Clusters.pdf](https://www.innovationpolicyplatform.org/sites/default/files/rdf_imported_documents/Agricultural_Clusters.pdf)

## **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 :
- 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: Ten (10) Research and Extension Scientists from ICAR-NRCP having rich experience on various aspects of pomegranate, 3 subject matter specialists from relevant organizations for DPR, marketing and export related issues.**

### **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 with in 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

### R & D Infrastructure Developed

ICAR-National Research Centre on Pomegranate, Solapur (Maharashtra)



**Pilot plant:** Juice prod. cap.100



**MAP system:** Aril Packaging



**Trainees hostel:** 43 bed facility with 1VVIP 2 VIP rooms



**Laboratory facilities**

### Extension Infrastructure and facilities developed

ICAR-National Research Centre on Pomegranate, Solapur (Maharashtra)



**ATIC-Centre**



**LED Boards:** Bilingual in all subjects



**Mobile App**

"Solapur Anar" launched in 6 languages



**ICAR-NRCP Website**

[www.nrcpomegranate.icar.gov.in](http://www.nrcpomegranate.icar.gov.in)  
user friendly, Govt. server based

### R & D Infrastructure Developed (Farm Facilities)

ICAR-National Research Centre on Pomegranate, Solapur (Maharashtra)



**Polyhouses and nethouses**



**Experimental blocks + Crop Cafeteria**  
New plantation 8 ha pomegranate + 1 ha  
10 fruit crops



**Farm facilities:** Tractors, sprayers etc

## **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 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 Targetted 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**