

# Detailed Project Report (DPR)

## :Model template

for NHB Scheme No.1  
for LIME/LEMONS

Scheme.1	<b>Development of Commercial Horticulture through Production and Post-Harvest Management of Horticulture Crops:</b> <ol style="list-style-type: none"> <li>1. Open field condition</li> <li>2. Integrated Post Harvest Management</li> </ol>
----------	--

Crop			Tick mark
Scheme components	1. Open field condition of NHB specified crops	Within overall cost ceiling	
		+Farm Mechanisation	
		+Good Agri. Practices (GAP)	
		+Plastic Mulching	
	2. Integrated PHM		
	3.1.Integrated Pack House		
	3.2.Pack house		
	3.3.Pre-cooling unit		
	3.4. Cold Room (Staging)		
	3.5. Primary Processing		
	3.6.Refer Van		
	3.7 Retail outlet		

Submitted by

.....Applicant with full correspondence Address

Detailed Project Report (DPR) will have to be signed by the applicant (s) / authorised person ( in case of legal entity) on each page with date -along with Horticulture and Project Finance Expert wherever applicable.

## INDEX

	<b>Project at a Glance</b>	
1	<b>About the Applicant /Promoter and his/her entrepreneurship</b>	
2	<b>Details of benefits availed by the Applicant / Promoter</b>	
3	<b>About Project -Name, Rationale, Management and Description</b>	
	1. Name of Project, Activity, Objectives and expected Outcomes	
	2. Rationale / Justification for the project	
	3. Site/ Land details- RoR/ Ownership / Registration of lease/ Map etc.	
	4. Location of the Project- Identification	
	5. Current usage of land of proposed Project Area	
	6. Current infrastructure and assets possessed by the Applicant:	
	7. Lay out plan of the project	
	8. Conversion of Land Use (CLU)	
	9. Whether project site is part of production belt / cluster / hub	
	10. Rationale for the location of the project	
	11. Compliance of project site for food safety	
	12. Components / Activities of the Project with justification	
	13. Operations planning	
	14. Month wise operational chart / Implementation schedule	
	15. Backward and Forward linkages.	
	16. Manpower (Skilled & Unskilled labour etc.) availability	
	17. Employment generation	
	18. Infrastructure & Connectivity	
	19. SWOT Analysis	
	20. Monitoring and evaluation	
4	<b>NHB Scheme under which the project is proposed with rationale / justification.</b>	
5	<b>Project details</b>	
5.1	<b>Agro-climatic suitability/feasibility</b>	
	1. Origin, introduction and distribution of crop in the said location, India and in the world (briefly)	
	2. Agro-climatic / Horticultural zones and suitability of the crop (s)	
	3. Soil type and latest health-suitability for the crop	
	4. Water (irrigation) source, availability, Quality and suitability	
5.2	<b>Market viability</b>	
	1. Commercial and Nutritive importance / significance, composition and Uses	
	2. Target Market (s)	
	3. Statistics: India and State: Area, Production and Productivity in the District, State and India for the last 5 years	
	4. Clusters of the project crop in the state.	
	5. Demand and Supply gap	
	6. Global producers- Country, Area, Production, Productivity and global market share in the last available 5 years.	
	7. International trade and potential (for export oriented projects)	
	8. Seasonality of crop / produce and its comparison with other available crop/ produce	
	9. Price variation of commodity in the State and nearby markets	

	10. Balance sheet of commodity in the State	
	11. Transportation	
	12. Value Addition scope	
	13. Central and State Government policy	
	14. Value chain in the commodity	
	15. Proposed Business strategy for Market viability	
<b>5.3</b>	<b>Financial viability</b>	
	1. Due diligence status	
	2. Project Cost	
	3. Means of Finance	
	4. Investment in Horticulture	
	5. Key financial Indicators	
	6. Project Financing	
	1. Rate of Interest	
	2. Percentage of Term loan against total project cost	
	3. Internal Rate of Return (IRR)	
	4. Cost of Production and Profitability	
	5. Yield and Sales Chart	
	6. Proposed Balance Sheet	
	7. Proposed Cash flow Statement for repayment period.	
	8. Proposed Profit & Loss Account	
	9. Proposed Repayment of Term loan and Schedule	
	10. Break Even Analysis	
	11. NPV (Net Present Value)	
	12. Economic Rate of Return	
	13. Depreciation	
	7. Risk Analysis and management	
	8. Statement of Assets and liabilities	
	9. Farm record keeping/ Maintenance proposed	
<b>5.4</b>	<b>Land development and Crop Husbandry</b>	
	<b>5.4.1.Land development</b>	
	<b>5.4.2.Selection of Quality Planting Material</b>	
	1. Recommended and popular Cultivars- varieties/hybrids, their specific characteristics, requirements and yields.	
	2. Cultivar/Hybrid/Variety selected and Criterion adopted for selection	
	3. Propagation methods.	
	4. Accredited / Good Nurseries in the area	
	5. Planting material-source, quality and suitability	
	<b>5.4.3.Orchard / Site planning, Lay out and management</b>	
	1. Planning, establishment and layout systems	
	2. Land preparation	
	3. Planting Season / time and density and transplanting	
	4. Water and Nutrient management	
	5. Intercultural operations including Weed management	
	6. Plant canopy architecture management/ training and pruning	
	7. Use of Pollinators & pollinisers	
	8. Use of Plant growth regulators	
	9. Flowering& fruiting	

	10. Integrated Pest and Disease Management and Food Safety measures	
	11. Physiological disorders- causes, preventive and management measures.	
	12. Special problems if any	
	<b>5.4.5. Farm Structures and Mechanisation</b>	
	1. Protective cover /structure ( if applicable)	
	2. Farm Mechanisation	
	<b>5.4.6. Harvesting and Fruit / flower care management</b>	
<b>5.5</b>	<b>Post-Harvest Management</b>	
	1. Post-Harvest infrastructure scenario in horticulture sector in the State and specially for the proposed crop / component	
	2. Product/ Process Flow chart	
	3. Lay out / Floor Plan of post-harvest operations	
	4. Post-harvest operations	
	1. Pre-cooling	
	2. Curing	
	3. Cleaning / Washing	
	4. Sorting and Grading	
	5. Packing and labelling	
	6. Ripening	
	7. Transport	
	8. Storage- Low cost / cold storage/ CA	
	5. Post-harvest infrastructure – Integrated Post-harvest Management	
	1. Integrated Pack house	
	2. Pack House	
	3. Pre-cooling unit	
	4. Cold Room (Staging)	
	5. Mobile Pre-cooling unit	
	6. Ripening Chamber	
	7. Primary Processing	
	8. Refer van	
	9. Retail outlet	
	10. Labour/ Store room	
<b>5.6</b>	<b>Marketing</b>	
	1. Connectivity	
	2. Aggregation & Assembling: Marketing infrastructure	
	3. Market Institutions and agents	
	4. Demand and Supply trends and forecast both in local and National markets.	
	5. Traceability record	
	6. Proposed value chain / method of Marketing by the Applicant	
<b>5.7</b>	<b>Value addition / Processing</b>	
<b>6</b>	<b>Technology providers</b>	
	1. ICAR /CAU/ SAU/SHU / Research Stations and Experts names	
	2. Experts-whose services are availed	
	3. Agri/Horti-Business incubators	
<b>7</b>	<b>Food Safety -With /Without GAP certification</b>	

	1. GAP Certification if any	
	2. Food safety measures	
	1. Pre-planting	
	2. Crop husbandry	
	3. Harvestings	
	4. Post-harvest	
8	Innovation if any	
9	Profitability of the project (Horti-business): Critical observations of Applicant	
10	Checklist	
11	Declaration from Crop Expert and Project Finance Expert	
12	Self-declaration by the Applicant	

	<b>Annexure: Proposed stages in NHB Scheme Implementation</b>	
--	---	--

Checklist of documents to be submitted at Market Viability and Financial Viability stage and during JIT.

### Project at a Glance

1.	Applicant (s)/ Legal entity Name		
2.	Constitution / Applicant nature / beneficiary		
3.	NHB Scheme for which DPR is made		
4.	Project Activity		
5.	Nature of project- Green field/ pre-existing- expansion / component specific		
6.	Products, By-products and services		
7.	Land		
	1. Land ownership: Owned or on registered lease for minimum of 10 effective years from the date of IPA. In other words ideally one should have 11 Years of registered lease including a processing period of 1 Year from the time of application for Technical feasibility.		
	2. Project Area and Survey /khasra/ Gat/Dag No.		
	3. Project Site Address with Postal Code and Police Station Name		
8.	Technical feasibility		
	1. Agro-climatic suitability		
	2. Research institution whose technology and package of practices are proposed to be followed		
	3. Crop husbandry / PHM is based on evidence based R&D		
9.	Existence of similar project activity in the said District		
10.	Whether the project is located in the crop cluster/ hub/ belt		Yes/No
11.	Project economic period/ economic life		
12.	Total Project Cost of the proposal		
13.	<ul style="list-style-type: none"> <li>• Open field condition or Protected Cover</li> <li>• Integrated Post Harvest Management</li> <li>• Total</li> </ul>		
14.	Project completion period ( in months)		
	Expected Implementation timeline	Commencement	
		Completion	
15.	Total Eligible Project cost as assessed by the Applicant as per NHB guidelines		
16.	Bank/ Financial Institution identified for Term loan		
17.	Proposed Means of Finance	Promoters contribution (in Lakh Rs.)&%	
		Bank Term loan (in Lakh Rs.) &%	
		Un secured loan (in Lakh Rs.) &%	
		Total	
18.	Gestation period		
19.	Projected Key Financial Parameters	Current Ratio other than export units	
20.		CR-Export units	
		IRR /BCR	
		DSCR*	
		Average DSCR	
		Debt to Equity Ratio i.e. DER	
		TOL/TNW	
		Promoters Contribution	
	Break Even Point		

		Security Coverage Ratio	
		Repayment period	
21.	Productivity expected (in MT/Qtl/Kg/numbers)		
22.	Likely Gap in productivity compared to National /Global average		
23.	Potential Market (s)for the commodity and distance from the project site		
24.	Employment generation	Direct- regular per annum	
		In-direct – Man days per annum	

## 1. About the Applicant / Promoter and his/her entrepreneurship

### A. About Applicant / Promoter

<b>1.1.In case of Individuals or Group of farmers (if applicable)</b>		
Individual		
1. Name of Farmer / Entrepreneur/Individual/ Proprietor		
2. Parents or spouse name of Individual		
Group of Farmer growers / SHG- Promoters		
1. Name of Group		
2. Names of all members of group with their father, mother/husband/ wife name		
<b>1.2.In case of Legal entity (if applicable)</b>		
Name / Title		
1. Incorporation / Registration number/ CIN& date of registration		
2. Act under which Registered		
3. Registering authority		
4. Name of Promoter / CEO/CMD/MD/		
5. If it is FPO/ FPC/ Producers Co-op society / Growers Co-operative Marketing federation- Please specify		
6. If it is Reg. Society/ Company/ Corporation / Partnership firm / Proprietary firm- Please specify		
7. Name of Promoter (s)/ Board of Directors/ Partners etc.		
8. Status of the promoter / applicant in the legal entity-please specify		
9. Whether the promoter / applicant is authorised by the Legal entity- Yes/No		
10. In case of Company/partnership firms / legal person <ul style="list-style-type: none"> <li>a. Certified copy of Company/Partnership incorporation/ registration certificate issued by Competent Authority, as applicable</li> <li>b. Certified copy of MoA/Bye Laws</li> <li>c. Certified copy of Board of Directors Resolution duly passed and authorizing signatory of application to apply for IPA</li> <li>d. Certified copy of latest Audit Report, if applicable             <ul style="list-style-type: none"> <li>i. (are to be made available in case the project and the application is considered for processing.- State Yes/No</li> </ul> </li> </ul>		
11. NGO- Specify- give details of registration		
<b>1.3.Government Institutions / Organisations-- Please specify (if applicable)</b>		
(i)	Marketing Board / Agricultural Produce Marketing Committee APMC	
(ii)	Municipal Corporation	
(iii)	PSU/ Agro-Industries Corporation	
(iv)	ICAR/CAU/SAU/ Government R&D Institution	



1.4.Statutory registration	( As per applicability)	
a. PAN No		
b. Aadhaar No.	Yes/No	
c. Udyog Adhaar No.		
d. GST		
1.5.Correspondence Address	Postal Address with PIN code	
	Telephone	
	Mobile	
	Email id	
	Fax if any:	
1.6.Project / Site Address		
1.7.Social Category ( In case of legal entity the CEO and Board of Directors social category is to be mentioned)	General / SC/ST	
	OBC	
	Minority (Muslim/Christians/Sikhs/Buddhists/Parsis/Jains)	
	In case of SC/ST applicants a Certified copy of Caste Certificate issued by Competent Authority is to be enclosed. In case of others a self- declaration is to be enclosed.	
1.8.Location: TSP / NE Region / Hilly States	In case of TSP a self-attested copy of notification is to be enclosed.	
1.9.Gender	Male / Female/Transgender	

## B. Applicant/ Promoters' Entrepreneurship:

1.10. CV / Biodata of Applicant (s) / Promoter (s) (Authorised by legal entity) in brief: (If applicants are more than one, all are to provide their CV / Biodata)

- a. Name of Applicant/ Promoter:
- b. Fathers' & Mothers' name:
- c. Spouse name:
- d. Date of Birth
- e. Place of Birth (village/town/city, District and State)
- f. Permanent Address:
- g. Educational qualification (Higher Secondary, Under graduation Degree and above)

Education Metric/ U	Name of education / specialisation	Board / College / University/ Institute	Year of Pass	Remarks

- h. Horticulture and project proposal specific Trainings if any undergone

Training	Duration and Period	Institute with address	Purpose for undergoing training

- i. Current profession with details of Turnover, Accomplishments if any.
- j. Previous profession during the last 5 Years with details of Turnover, Accomplishments if any
- k. Experience- General and Horticulture
  - a. General (Other than Horticulture) specify the activity, establishment/ Office, location etc.
  - b. Horticulture-General: State specific activity- crop production, PHM etc. including project site, area, number of years, accomplishments etc.
  - c. Horticulture-Experience in proposed activity: provide the name of establishment/office, location, number of years, specialisation etc.
- l. Any information that establishes the applicants' entrepreneurship (Should be able to enclose evidence during Market & Financial Viability stage and during JIT):

1.11. Registrations with any Government Agency if any

Government Agency	Provide registration No. details with date and location of registration
a. SFAC	
b. NDDB	
c. MSME	
d. MSME/SSI	
e. Any other	

**1.12. Commitment by the applicant:** In case the project is approved for pre-IPA, the promoter / CEO/CMD should undergo a 2 Weeks (min.10 working days)project specific training programme in one of the ICAR/CAU/SAU/SHU/ Research Station/ Centres of Excellence/ related Central or State Government institution/ others as found appropriate / approved by NHB.

**In case of a Partnership firm/ Company / Legal person**

- a. Whether the proposed activity is covered under the objectives as per Memorandum of Association (MoA) / Rules explicitly: If so please provide the Article and Rule in verbatim.
  
  
  
  
  
  
  
  
  
  
- b. Professional history of Legal entities Farmers Producer Organisations (FPOs), Self Help Groups, Partnership/ Proprietary Firms, NGOs, Companies (as a Board of Director), Corporations, Cooperatives, Co-operative Marketing federations/ Government Institutions.
  
  
  
  
  
  
  
  
  
  
- c. Management structure if it is a company/ firm etc depicting the position of the applicant.

**2.Details of benefits availed/ proposed to be availed by the applicant-** either individually or as a member of Association of growers, Group of Farmer Growers/consumers, Farmers Producer Organisations (FPOs), Self Help Groups, Partnership/ Proprietary Firms, NGOs, Companies (as a Board of Director), Corporations, Cooperatives, Co-operative Marketing federations from (i) NHB and (ii) other Ministries/ organisations of Central Government and (iii) State Governments including NHM for Horticulture related projects.

Note: The beneficiary should be truthful. In case any information is received later on at any stage about his/her availing of benefit which is not disclosed hereunder will entitle NHB to reject the current proposal and recover the funds if already released.

**2.1. In this / proposed project and location:**

1. Whether the proposed project proposal has been submitted for consideration under any State Government or Central Government Scheme for financial grant? If yes give details.
2. Whether any subsidy has been availed from the Board, other Central Govt. organisation or State Government for the same activity on the same piece of land, khasra/ Gat/Dag/ etc. either in his / her own name individually or in the name of his/her family members or through any legal entity in which he/she is the beneficiary either in the same location, project. - Yes/ No. If Yes, Please provide details

Constituti on – Individual ly or in any form	Ministr y/ Organi sation	Sche me Name	Projec t code & Activit y	Project Locati on	Land Surve y No	Eligib le Projec t cost  ( Rs.in lakhs)	Total subsid y/ grant  ( Rs.in lakhs)	Current status of project- Operationa l / underutilis ed / closed

**2.2.In earlier/ any other Project (s) :** Either in his / her own name individually or in the name of his / her family members or through any legal entity or in any form or constitution, in which he / she is the beneficiary either in the current proposed project location or any other location.

2.2.1. From NHB: Whether any assistance in the form of soft loan and subsidy has been availed earlier from the National Horticulture Board? If yes, give details thereof

Year	Scheme Name	Project code & Activity	Project Location	Land Survey No	Eligible Project cost	Total subsidy /grant availed	Current status of project- Operational / underutilised / closed

2.2.2.From Central Government- Ministries / Organisations:

Year	Scheme Name	Project code & Activity	Project Location	Land Survey No	Eligible Project cost	Total subsidy / grant availed	Current status of project- Operational / underutilised / closed

2.2.3.From State Governments:

Year	Scheme Name	Project code & Activity	Project Location	Land Survey No	Eligible Project cost	Total subsidy /grant availed	Current status of project- Operational / underutilised / closed

2.3. Operational status of earlier projects under NHB scheme and other Central Ministries and State Government.

Year	Organisation / Ministry which released assistance	Activity for which assistance is available & code	Dates			As on date Project Operational status (Running or Closed)	Annual Turnover (of previous Year)	Exports if any	Profitable or loss making	Remarks / Reasons
			Subsidy received	Project completed	Commenced production					

\* in case of completed projects and where proposals envisioning expansion/ modernisation are proposed, Annual Reports and Audited Statement of Accounts of the last 3 years are to be made available along with Bank appraisal during Market and Financial Viability stage both online and offline.

2.4. Please provide map of earlier / other subjects and this project- Key map of project land showing project details and land boundary details

2.5. Provide the following details:

- a. Have you ever been refused / denied subsidy claim from NHB, NHM, APEDA, NCDC, MoFPI? If Yes please provide details of (i) Project code, (ii) Name of Applicant, (iii) Address (iv) Project activity etc. and the reason for such refusal / denial:
  
- b. If you were a recipient of Government subsidy, have you / your Bank/FI ever been asked to refund the subsidy / call back ? If Yes please provide details of (i) Project code, (ii) Name of Applicant, (iii) Address (iv) Project activity etc. and the reason for such refusal / denial:

Attention:

1. In case the project application is considered for Pre-IPA, the applicant shall have to enclose No Objection Certificate from State Government / State Horticulture Mission that there is no duplication of funding for the project and the applicant shall also submit self-declaration that he/she is not availing government subsidy / grant / assistance from any other ministry.



#### 4. About the Project, Rationale, Management and Description

##### 2.1.About the Project

1. Name of the Project	
2. Correspondence Address:	
3. Address of Project Site :	
4. Project Activity and Scheme components (Should be as per NHB scheme latest scheme guidelines- please verify):	

No.	Name of the scheme and component	Unit	Tick mark relevant component
5	Development of Commercial Horticulture through Production and Post-Harvest Management of Horticulture Crops		
	1. Open field condition		
	2. Integrated PHM		
	a. 3.1. Pack House		
	b. 3.2. Integrated Pack house		
	c. 3.3. Pre-cooling unit		
	d. 3.4. Cold Room (Staging)		
	e. 3.5. Primary Processing		
	f. 3.6. Refer Van		
	g. 3.7. Retail outlet (environmentally controlled)		

##### 6. Details of Crop in case of Open field condition / Protected cover

Name of the Crops	Variety / Hybrid/ Cultivar	Area ( acres )	No. of plants	Source of Planting Material

##### 7. Products, product Mix, by products and Services of the Project

##### 8. Objectives of the Project

##### 9. Expected Outcomes of the Project

##### 10. Socio-economic benefit to the region /District / State

### **3.2.Rationale / Justification for the project**

#### **3.2.1. Rationale**

**3.2.2. Details of similar projects / crop in the neighbourhood and the District -Area, Production and Productivity briefly.** Provide more details in Market viability chapter.

**3.2.3.Raw Materials: How quantity and quality of inputs/ raw materials is assured.**

### 3.3.Project Site/ Land details:

#### 3.3.1.Proposed Project Area:

	Activity	Area proposed
1	Cultivation –	
	Open Cultivation (Ha)	
2	PHM	
3	Plant and Machinery	
4	Any other activity	

#### 3.3.2.Land details- RoR/ Ownership / Registration of lease/ map etc.

<b>A</b>	Name of Owner of land proposed for the project as per Land Revenue Records				
	Whether title of the land is clear in the name of applicant and is free from any litigation				
	How Title is derived	Ancestral			
		Purchased (with details of date)			
	Encumbrances if any				
<b>B</b>	Name of the Owner in case of joint ownership	Survey/ Gat /khasraNo etc.	Area in Sq.mt / Ha	Share	
	Whether land boundaries are demarcated for the applicant clearly.		Yes/No		
	Whether land is in possession of the Applicant				
<b>C</b>	In case of Partnership				
	1. Whether land is owned by Partnership firm or jointly by its partners		Yes/No		
	2. NOC: If land is owned by one of the partner, an undertaking by land owner is required stating that he/she will not withdraw, sale or transfer his/her land during currency period of the project				
	Whether land is in possession of the Applicant				
<b>D</b>	In case of Lease				
	1. In case the land is that of leased, Registration details of the said leased land in the office of Sub-Registrar				
	2. No.of Years of lease				
	3. Whether lease is entered in RoR		Yes/No		
	Whether land is in possession of the Applicant				

<b>E</b>	Whether land is mortgaged? If yes provide details of mortgagor and mortgagee	
----------	--	--

**3.4.Location of the Project- Identification** (Longitude, Latitude, Altitude, Village, GP, Block, District, State), Area, Number of growers.

1.	Location Address	
2.	a. Survey/Khasra/ Dag/ Other No	
3.	b. Habitation/ Village	
4.	c. Gram Panchayat / Urban body	
5.	d. Block / Urban body	
6.	e. Sub-Division	
7.	f. District	
8.	g. State /UT	
9.	Location Longitude, Latitude& Altitude	
10.	Total Area of land owned (ha)	
11.	Total Area proposed for project (ha)	

**Google map with coordinates:**

### **3.5.Current usage of land of proposed Project Area**

<b>Proposed Project</b>			<b>Current usage</b>		
Survey / Dag etc.No	Nature of land Dry/ Irrigated/ Waste land	Area (ha)	Activity / Crop	Area (ha)	Mortgage Yes/No If Yes with whom

**3.6.Current infrastructure and assets possessed by the Applicant:**

Category	Asset Name	Year of Purchase	Make	Capacity	Cost
Fixed Assets	Tube well				
	Dug Well				
	Drip irrigation				
	Electric Motors				
	Tractor				
	Tiller				
	Transport vans				
	Vermi compost shed				
	Stores				
	Pack house				
	Labour room				
	Water harvesting pond				
	Installation/digging				
	Pipeline				
	Others				
Operating Assets	Planting Material				
	Support system				
	Tools and implements				

**3.7.Lay out plan of the project/** Map of Farm / production/ Operations unit / project land showing project details and land boundary details

**3.8.Conversion of Land Use (CLU) if applicable**

Whether Land in possession of the applicant is with/ without approval for industrial use/Whether CLU permission for the project has been received from competent authority: If Yes- Please provide details of the authority approved with full designation, address contact numbers and email id, approval No. and date

**3.9.Whether project site is part of production belt / cluster / hub ? If yes, provide details of working relations with other farmers**

3.10.Rationale for the choosing the said Location for implementation of the project / Location advantages and disadvantages

**Connectivity:**

Road connectivity- Distance from	National High way	
	State Highway	
	Fright Corridor	
	Golden Quadrilateral	
Rail connectivity		
Air connectivity		
Water ways		
Market connectivity		

**Supply side suitability:** Raw material Catchment area

Whether project site is part of production belt / cluster / hub ? If yes, provide details of working relations with other farmers

Road connectivity- Distance from  (Range)	National High way	
	State Highway	
	Fright Corridor	
	Golden Quadrilateral	
Rail connectivity		
Air connectivity		
Water ways		
Market connectivity		

**Map of Catchment Area:**

**Demand side suitability:**

Proximity and connectivity of project site to major consumption centres /Mandies

Demand centres	Names	Distance from the proposed site
Agriculture Primary Market Committees - APMCs / Mandies		
Tier-1, 2 and 3 cities		

Map of consumption Centres

**Other Merits/ Advantages:**

### **3.11.Compliance of project site for food safety**

The information on soil condition and site on water logging, industrial waste and effluents.

Run off and contaminated water is not allowed to enter fields.

3.12.Components / Activities of the Project with justification (Please refer NHB scheme guidelines)

No.	Name of the scheme and component	Justification
1	Development of Commercial Horticulture through Production and Post-Harvest Management of Horticulture Crops	
	1. Open field for specified crops	
	2. Integrated PHM	
	3.1.Integrated Pack house	
	3.2.Pack House	
	3.3.Pre-cooling unit	
	3.4. Cold Room (Staging)	
	3.5 Refer Van	
	3.6.Retail outlet (environmentally controlled)	



### Component wise cost of the Project and NHB Norms

Scheme Component	Items	Sub- items	Capacity/ Area/ spacing/ size Etc.	Units/ Numbers	Likely / unit cost	NHB Norm
Open field Cultivation	Cultivation Expenses	Planting material				
		Input cost (Labour, Manure & Fertilisers, pesticides etc.)				
		Others				
	Irrigation	Tube well/ bore well/ Open well (Nos.)				
		Cost of Pipeline from source of irrigation to production unit (Length, Size & Material)				
		Water harvesting structure / Water tank min. 300 microns				
		Non lined ponds/tanks				
		Others				
	Drip / Sprinkler					
	Civil Infrastructure	Functional pack house				
		Store & Pump house (Area in sq.ft with size)				
		Labour room & go down (Area in Sq.ft with size)				
		Others				
	Farm Mechanisation (AC)	Tractor upto 20 BHP				
		Power Tiller	HP			
		Equipment's-driven by Tractor/ Power Tiller				
		Mulch laying machine				

		Self-propelled hort. Machinery				
		Other tools and equipment's as per Sub Mission on Agriculture Mechanisation (SMAM)				
		Others				
	Land Development	Soil levelling / Digging/Fencing etc.				
		Others if any				
	Land if newly purchased but not before one year from date of sanction of Term loan (indicate year)					
	Vermi Compost Unit					
	• 1. Permanent Structure					
	• 2, HDPE Vermibed(12ft X 4ft X2 ft)					
	Certification of Good Agricultural Practices (GAP) including infrastructure (AC)					
Scheme	Plastic Mulching					
	Others					
	Grand Total					
			Capacity/ Area/ Spacing etc.	Units/ Number	Likely /Unit cost	NHB Norm
Integrated PHM	1. Integrated PHM					
	3.1.Pack House					
	3.2.Integrated Pack house					
	3.3.Pre-cooling unit					
	3.4.Cold Room (Staging)					
	3.5 Primary Processing					
	3.6 Refer Van					
	3.7.Retail outlet (environmentally controlled)					
	Others					

Note: NHB Norm: means over all ceiling in project mode with add on component as per NHB Scheme guidelines. (Appendix 1-A)

AC: Add on component: Over and above the cost ceiling.

### 3.13. Operations Planning

1.	Name of Farm / Project Manager (working directly under the applicant / CEO) if any.- optional	
2.	Name of agency providing technical know-how and turn key for cultivation- and contact person Name and contact numbers	
3.	Operations:	
	1. Land preparation	Own / custom hiring
	2. Procuring planting material/ seeds	Own / outsourcing
	3. Orchard planning, layout	Own / outsourcing
	4. Water and nutrient management	Own / outsourcing
	5. Pruning & Training	Own / outsourcing
	6. Pollinators&Pollinisers	Own / outsourcing
	7. Plant growth regulators	Own / outsourcing
	8. Integrated Pest & Disease management	Own / outsourcing
	9. Physiological disorders	Own / outsourcing
	10. Farm Mechanisation	Own / outsourcing
	11. Harvesting/ Fruit/Flower care management	Own / outsourcing
	12. Post-Harvest Management	Own / outsourcing
	a. Pre-cooling	Own / outsourcing
	b. Cleaning / Washing	Own / outsourcing
	c. Sorting and Grading	Own / outsourcing
	d. Packing and labelling	Own / outsourcing
	e. Transport	Own / outsourcing
	f. Storage- Low cost / Cold Room/ CA	Own / outsourcing
	g. Refer van	Own / outsourcing
	h. Retail outlet	Own / outsourcing
	i. Cold chain	Own / outsourcing
	13. Marketing	Own / outsourcing
	14. Processing	Own / outsourcing

**3.14. Profile of Agency executing erection of Protected Structure/ Post Harvest Infrastructure (based on project / applicability etc.**

1.	Name of agency providing technical know-how and turn key basis with full address of its Hq	
2.	Agency local Address	
3.	CIN / Company Incorporation No.	
4.	GST No.	
5.	CEO of the Agency	
6.	Contact person Name and contact numbers	
7.	Technical Manpower available	(Desirable)
8.	Number of years of experience	(Desirable)
9.	No of plants set up till date during the last 5 years in the State	(Desirable)
10.	Turnover of the Agency	(Desirable)
11.	Whether firm has been blacklisted ever by any government or corporate firm	(Desirable)

### 3.15.Month wise operational chart / Implementation schedule: Commencement to completion:

Project Implementation period in case of approval: Months.

Proposed/ Tentative dates of	Bench mark / Activity	Approximate date
Project Commencement	Land development or Land/ Site Preparation	
First Commercial Crop / plantation / operations if any / Plant & Machinery etc.		
Project Completion		

Activity	Units	Months					
		JF	MA	MJ	JA	SO	ND
1. Land development							
2. Erection of Protected structure in case of Protected cultivation							
3. Land preparation							
4. Procuring planting material/ seeds							
5. Orchard planning and layout							
6. Water and nutrient management							
7. Pruning & Training							
8. Pollinators& Pollinisers							
9. Plant growth regulators							
10. Integrated Pest & Disease management							
11. Physiological disorders							
12. Farm Mechanisation- procurement							
13. Farm Mechanisation operations							
14. Harvesting/ Fruit care management							
15. Post-Harvest Management							
a) Pre-cooling							
b) Cleaning / Washing							
c) Sorting and Grading							
d) Packing and labelling							
e) Transport							
f) Storage- Low cost / cold storage/ CA							
g) Cold chain							
16. Marketing							
17. Value/ addition Processing							

Note: The table can be extended as per need. JF: January/ February; MA: March/April and similarly other abbreviations.

### 3.16.Number of days of Operation / Crop etc:

### 3.17.Backward and Forward linkages

1. Backward linkages -with growers, input suppliers etc.

Operations	Agency / Agents / providers (specify the proposed location)	Distance	Remarks
Seed/ Planting Material			
Manure			
Fertilizers			
Bio fertilizers			
Bio pesticides			
Fertilizers			
Pesticides / Insecticide			
others			

2. Forward linkages- for Domestic and Export Market

Operations	Agency / Agents / Service providers (specify the proposed location)	Distance	Remarks
Storage Unit			
Processing Unit			
Local Market			
Terminal market			
Farm Market			

3. Briefly explain as to how the produce will be consolidated (backward linkages) and marketed/exported (forward linkages)

4. How transportation of raw material and produce is planned?

3.18.Manpower (Skilled Labour, Expertise etc.), Required, Already available, Gaps and the management in an Year.

#### 3.18.1.Managerial and Technical

	Managerial				Technical				Gap	
	Requirement		Availability		Requirement		Availability		S	US
	Number	No.of Days	Number	No.of Days	N	D	N	D		
a)										
b)										
c)										

#### 3.18.2.Skilled and Unskilled Labour

	Skilled Labour				Unskilled labour				Gap	
	Requirement		Availability		Requirement		Availability		S	U
	Number	No.o f Days	Number	No.o f Days	N	D	N	D		
<b>Operations/ activity</b>										
d) Administration										
e) Manager										
f) Finance & Accounts										
g) Typing / IT operations										
h) Watch man										
<b>Crop husbandry</b>										
a)										
b)										
c)										
d)										
e)										
f)										
g)										
h)										

#### 3.19.Employment Generation per annum

No.of man days / Annum	
Permanent man power -Permanent (on rolls)	
Casual / Temporary	

3.20.Infrastructure and connectivity (Power, Fuel, Water, Plant and Machinery, Effluents treatment etc.)- Required, Already available, Gaps and the management.

Utility	Requirement	Remarks
Power	Likely requirement per month for the purposes of .....	
	Source of Power	
	Whether renewable alternate energy to power is under consideration	
	Access to Power is assured or not	
	Alternative Source of Power in case of breakdowns	
Water	Source – Ground Water /Surface Water	
	Existing or New source	
Plant & Machinery		
Fuel	Access to fuel to power- Generators- Yes/No	
	Nearest fuel depot	
Effluent treatment	Facility and method adopted for effluent treatment.	
Road connectivity- Distance from	National High way	
	State Highway	
	Frighr Corridor	
	Golden Quadrilateral	
Rail connectivity		
Air connectivity		
Market connectivity		
Vermi compost	If available Numbers and Capacity. Types:1. Permanent Structure and 2, HDPE Vermi bed (12ft X 4ft X2 ft)	
Animal Husbandry	Details of Animals Capacity / Income	
Environmental issues of the project if any		
Fencing		
Any other		



### 3.21.SWOT Analysis

1	Strengths	
2	Weaknesses	
3	Opportunities	
4	Threats	


**Attention of the applicant:**

1. Applicant has to intimate the Board before effecting change of project land, crop, area, bank etc in the proposal before claim of subsidy. (page 121 of guidelines point 10(vi). Thus Any change in crop or project site without prior approval of NHB shall make the component or project, as the case may be, ineligible for getting subsidy.
2. Even the change in FI / Banker should be done with prior approval of NHB.

**(Signature of the Applicant) with  
date and time.**

4	<b>NHB Scheme under which the project is proposed with rationale / justification.</b>	
---	---	--

1. Scheme.1: Copy paste scheme guidelines



National Horticulture Board

## SCHEME-1

- 1. Development of Commercial Horticulture through Production and Post Harvest Management of Horticulture Crops**

Credit linked projects relating to establishment of commercial production units in open field as well as under protected conditions and projects on Post harvest Management and primary processing of products are eligible for assistance under this scheme as per cost norms given in Annexure- III. However, release of Subsidy need not be credit linked in North Eastern States and for the institutions like Public Sector Units, Panchayats, cooperatives, registered societies/trust and public limited companies provided they can meet remaining share of the project cost out of their own resources. Such projects will have to be appraised by appraising agency approved by NHB.

**Description of components and Pattern of Assistance**

  - 1.1 Commercial Horticulture Development in open field conditions on project mode**

National Horticulture Board will take up integrated commercial horticulture development projects in open field conditions on project mode , including components viz planting material, plantation, irrigation, fertigation, mechanization, precision farming, GAP etc. for projects covering area over 2.00 ha. (5 Acres) Integration of production unit with on farm PHM components and primary processing unit shall also be allowed in project mode. Cost of raising new plantation will vary from crop to crop, which will be taken into consideration while providing assistance to the beneficiary. Integrated production unit on Mushroom and tissue culture shall also be eligible for assistance under this component. The components like farm machinery and PHM infrastructure, irrigation and micro irrigation etc shall be eligible under the scheme for assistance in existing/new orchards/projects to increase productivity.

**Pattern of assistance**

Credit linked back-ended subsidy @ 40% of the total project cost limited to Rs 30.00 lakh per project in general areas and @ 50% of project cost limited to Rs. 37.50 lakh in NE Region, Hilly and Scheduled areas.
  - 1.2 Commercial Horticulture Development in protected cover on project mode**

The Board will also take up commercial horticulture development projects under protected cover on project mode including components viz planting material, plantation, irrigation, fertigation, mechanization, etc for projects having area over 2500 sq meter. Activities like construction of green houses, shade net house, plastic mulching, and plastic tunnel, anti bird /hail nets etc would be promoted. Provision has been made for selecting a variety of construction material for green houses and shade nets houses. Preference will be given to using locally available material to minimize cost of construction of such structures. However, for availing subsidy, all material /technology should conform to prescribed standards.

**Pattern of assistance**

Credit linked back-ended subsidy @ 50% of the total project cost limited to Rs 56.00 lakh per project as per admissible cost norms for green houses, shade net house, plastic tunnel, anti bird /hail nets & cost of planting material etc.
  - 1.3 Integrated Post Harvest Management projects**

The Board will take up Integrated Post Harvest Management projects relating to Pack House, Ripening Chamber , Refer Van , Retail Outlets, Pre- cooling unit, Primary processing etc . NHB will also take up projects in component mode and for standalone projects of PHM components.

4

**Pattern of assistance**

Credit linked back-ended subsidy @ 35% of the total project cost limited to Rs 50.75 lakh per project in general area and @ 50 % of project cost limited to Rs. 72.50 lakh per project in NE , Hilly and Scheduled areas.

**1.4 General conditions**

- I. Credit component as means of finance of the project should be term loan from banking or non banking financial institutions. For credit linked projects under NHB, eligible subsidy amount to be capped at par with term loan sanctioned by the lending Banks/FI
- II. Normative cost of various components shall be prescribed by NHB.
- III. Benefit of exclusive components of cold storage scheme shall also be available to the promoters over and above the assistance that will be provided under Commercial Horticulture Scheme to set up integrated projects for production and PHM components.
- IV. Projects relating to setting up of new units shall be technically and financially appraised to ensure and enable entrepreneur to incorporate latest available technology.
- V. Assistance can also be availed for a combination of PHM infrastructure components by a beneficiary, within the prescribed norms of individual items.

**1.5 Detailed instructions for making application and other relevant information are given at Chapter-I (Pages 19 to 26 of this booklet)**

## 2. Cost Norms and pattern of assistance: Copy paste scheme guidelines



### APPENDIX- 1

## **COST NORMS AND PATTERN OF ASSISTANCE UNDER MIDH FOR NATIONAL HORTICULTURE BOARD RELATED ACTIVITIES DURING XII PLAN**

S.No.	Item	Cost Norms*	Pattern of Assistance#
<b>A.</b>	<b>Development of Commercial Horticulture ##</b>		
A. 1	Commercial Horticulture Development in open field conditions, including components viz planting material, plantation, irrigation, fertigation, precision farming, GAP etc.	Rs. 75.00 lakh /per project (Rs 125.00 lakh for date palm, olive and saffron) for projects covering area over 2 ha.	Credit linked back ended subsidy @ 40% of project cost limited to Rs.30.00 lakh per project in general area and @ 50% of project cost limited to Rs. 37.50 lakh for NE and Hilly and scheduled areas.  Component-wise/crop-wise cost norms are given at Appendix - 1. Add on component given in appendix-1-A may be added in project mode within over all cost ceiling
A. 2	Commercial Horticulture Development in protected cover.	Rs 112.00 lakh per project covering area above 2500 Sq.mt.	Credit linked back-ended subsidy @ 50% of cost limited to Rs.56.00 lakh per project.
	Protected cultivation		
	1. Green House structure		
	(a) Fan & Pad system	Rs. 1400/Sq. m and Rs. 1610/Sq. m for hilly areas	50% of cost for above 2500 Sq.m
	(b) Naturally ventilated system		
	i) Tubular structure	Rs. 844/Sq. m and Rs.970/Sq. m for hilly areas.	50% of cost for above 2500 Sq.m
	ii) Wooden structure	Rs. 540/Sq. m and Rs. 621/Sq. m for hilly areas	50% of cost for above 2500 Sq.m
	iii) Bamboo structure	Rs. 450/Sq. m and Rs. 518/Sq. m for hilly areas	50% of cost for above 2500 Sq.m
	2. Shade Net House		
	(a) Tubular structure	Rs. 710/Sqm and Rs. 816/Sqm for hilly areas	50% of cost for above 2500 Sq.m
	(b) Wooden structure	Rs. 492/Sqm and Rs. 566/Sqm for hilly areas	50% of cost for above 2500 Sq.m
	(c) Bamboo structure	Rs.360/Sqm and Rs.414/Sqm for hilly areas	50% of cost for above 2500 Sq.m
	3.Plastic Tunnel	Rs.60/Sq.m and Rs.75/sq. m for hilly area	50% of cost for above 2500 Sq.m
4	Walk in Tunnel	Rs.600/ Sq. m	50% of cost for above 2500 Sq.m
5	Anti Bird/Anti Hail Nets	Rs.35/Sq.m	50% of cost for above 2500 Sq.m

6	Cost of Planting Material and cultivation of High Value vegetables grown in Poly House/Shade net House	Rs.140/Sq.m	50% of cost for above 2500 Sq.m
7	Cost of Planting Material and cultivation of Orchid and Anthurium grown in Poly House/Shade net House	Rs.700/Sq.m	50% of cost for above 2500 Sq.m
8	Cost of Planting Material and cultivation of Carnation & Gerbera grown in Poly House/Shade net House	Rs.610/Sq.m	50% of cost for above 2500 Sq.m
9	Cost of Planting Material and cultivation of Rose & Lilium grown in Poly House/Shade net House	Rs.426/Sq.m	50% of cost for above 2500 Sq.m
10	Plastic Mulching	Rs.32000/Ha and Rs.36800/Ha for Hilly Areas	50% of cost for above 2500 Sq.m
A. 3	Integrated Post Harvest Management Projects e.g. Pack House, Ripening Chamber, Refer Van, Retail Outlets, Pre-cooling units, Primary Processing etc.	Rs. 145.00 lakh per project. The add-on components of pre-cooling, pack house, grading, packing, cold room can be taken up as individual components.	Credit linked back ended subsidy @ 35% of cost limited to Rs.50.75 lakh per project in general areas and @ 50% of project cost limited to Rs. 72.50 lakh per project in NE, Hilly and scheduled Areas, ensuring backward and forward linkage.
Component wise cost norms of Integrated Post Harvest Management			
1	Pack house	Rs. 4.00 lakh/unit with size of 9Mx6M	50% of the capital cost.
2	Integrated pack house with facilities for conveyer belt, sorting, grading units, washing, drying and weighing.	Rs. 50.00 lakh per unit with size of 9Mx18M	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas for individual entrepreneurs.
3	Pre-cooling unit	Rs. 25.00 lakh / unit with capacity of 6 MT.	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas for individual entrepreneurs.
4	Cold room (staging)	Rs. 15.00 lakh/ unit of 30 MT capacity	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas
5	Mobile pre- cooling unit	Rs. 25.00 lakh	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas
6	Ripening Chamber	Rs. 1.00 lakh/MT (11 CuM of chamber volume shall be equivalent of 1 MT of storage capacity)	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas



## APPENDIX I-A

## Cost norms for open field cultivation under NHB Scheme

Cost in Rs. per acre

Crop	Plant spacing (m)	No. of Plants/Acre	Planting material /Acre	Overall All ceiling in project mode with add on component
Almond	4.0 × 4.0	100	15000	150000
	3.0 × 3.0	177.76	26664	160000
Aonla	6.0 × 6.0	44.4	4003.2	125000
	4.0 × 5.0	80	7200	130000
	3.0 × 3.0	177.6	15984	170000
Apple	6.0 × 6.0	111.2	6672	150000
	4.0 × 4.0 (RS- MM 111)	250	15000	160000
	3.5x3.5 (RS- MM 111)	325.6	19536	175000
	3.0 × 3.0 (RS- MM 106)	444.4	26664	185000
	3.0 × 1.5 (RS- M9)	888.8	53328	200000
	2.5 × 2.5 (RS- MM 106)	640	38400	190000
	1.5 x 1.5 (RS- M9)	1777.6	106656	275000
Apricot	4.0 × 4.0	250	15000	160000
	3.5 × 3.5	326.4	19584	175000
Banana (Sucker)	2.0 × 2.0	1000	10000	125000
Banana (TC)	1.8 × 1.8	1234.4	20984.8	150000
	1.5 × 1.5	1777.6	30219.2	175000
Ber	6.0 × 6.0	111.2	3336	125000
	5.0 × 5.0	160	4800	125000
	4.0 × 4.0	250	7500	130000
Cherry	4.0 × 4.0	250	7500	125000
(a) Lime & Lemons	3.0 × 3.0	444.4	15998.4	200000
	4.0 × 4.5	222	7992	175000
(b) Mandarin / Orange	6.0 × 6.0	111.2	4003.2	175000
	5.0 × 5.0	160	5760	175000
	5.0 × 4.5	177.6	6393.6	175000
	4.5 × 4.5	197.6	7113.6	175000
	4.0 × 5.0	200	7200	175000

Crop	Plant spacing (m)	No. of Plants/Acre	Planting material /Acre	Overall All ceiling in project mode with add on component
Pineapple (TC)	0.6 × 0.3	18000	72000	225000
	0.3 × 0.6 × .9	17200	68800	200000
	.225 × .6 × .9	21200	84800	220000
Plum	3.5 × 3.5	326.4	13056	125000
	2.5 × 2.5	640	25600	150000
Pomegranate	5.0 × 5.0	160	6400	175000
	5.0 × 3.0	266.8	10672	185000
	4.0 × 3.0	266.4	10656	185000
Sapota	5.0 × 5.0	160	5760	150000
Strawberry	0.9 × 0.45	9876.4	49382	200000
	0.6 × 0.25	26666.4	133332	275000
	0.5 × 1.0	800	4000	175000
Walnut	6.0 × 6.0	111.2	16680	150000
	5.0 × 5.0	160	24000	150000
Jack Fruit	10x10	40	600	125000
Cashew nut	Normal	85	5740	200000
Coconut	Normal	95	6650	150000
Olive	Normal	105	3150	150000
Date Palm	Normal	71	2840	150000
Black Pepper	Normal	880	2500	150000
Cardamom	Normal	2030	12180	230000
Citronella	Normal	11000	5500	125000
Geranium	Normal	11000	5500	125000
Stevia	Normal	28350	141000	300000
Palmarosa	Normal	11000	5500	125000
Mint *Kg	Normal	100	2000	150000
Celery	Normal		2500	125000
Tamarind	10 x 10	40	2000	125000

**Note:**

1. Wherever cost norms are not given, cost norms available under MIDH scheme for similar activity shall be followed. In case norms are not available under MIDH schemes also, cost appraised by bank as per bank norms or approved by Competent Committee of NHB shall apply.
2. In project mode, applicant may opt for add on components as per norms given Appendix-1C but unless otherwise specified, cost ceiling, as prescribed for each crop/activity shall be applied where cost of add on components exceeds prescribed ceiling.



## Appendix -1-C

**Norms for Technology Add-on components and other essential components of Integrated Commercial Horticulture projects**

S.No.	Item	Description	Admissible Cost
	<b>Cutoff date for implementation</b>		
I	Cost of Land * #	Admissible only if purchased newly but not before one year from date of sanction of loan.	Actual or up to 10 % of Eligible Project Cost (EPC) (Excluding cost of Land and Development) whichever is less subject to maximum of Rs. 50,000/- per acre.
I (i)	Land Development * #	Includes cost of Land leveling, digging of pits, fencing, gates etc.	Actual or up to 15% of Eligible Project Cost (EPC) (Excluding cost of Land and Land Development) whichever is less subject to maximum of Rs. 50,000/- per acre.
II	Cultivation expenses * #	Includes cost of Planting material, cost of input (labour, fertilizer and manures, pesticides etc)	As per MIDH (NHM) cost norms as given at Appendix- 1
III	Drip system with internal pipeline	Component includes mainline, valve, backflow preventer pressure regulator, filter, tubing adapters and fittings, drip tubing, emitters and an end cap	<ul style="list-style-type: none"> <li>• Actual or Rs. 20,000/- per acre for plant density up to 200 plants</li> <li>• Actual or Rs. 25,000/- per acre for plant density &gt; 200 plants / acre</li> <li>• Sprinkler @ Rs 15,000/ per acre</li> </ul>
III (i)	Irrigation infrastructure excluding micro irrigation * #	Irrigation infrastructure like tube-well/bore well/open well, pipeline, water harvesting structure, water tank etc, admissible only if newly created with loan component	<ul style="list-style-type: none"> <li>• Actual or up to Rs. 50,000/- per acre for open field cultivation.</li> <li>• Rs. 4.00 lakh per project in case of protected cultivation.</li> </ul> Component-wise cost norms will be as under <ol style="list-style-type: none"> <li>1. Tube-well – up to Rs 2.50 lakh per unit</li> <li>2. Water harvesting structure- @ Rs.100/- CuM.with use of minimum 300 microns plastic films or RCC lining.</li> <li>3. Cost of non lined ponds/tanks will be 30% less.</li> <li>4. Pipe line-Rs 150/- per running meter only from source (min. 4" diameter) of irrigation to production unit</li> </ol>

S.No.	Item	Description	Admissible Cost
IV	Horticulture Mechanization * # # #	<ul style="list-style-type: none"> <li>Power/hydraulic operated machine/tools including small farms tractor with rotavator / equipments etc.</li> <li>Machineries Identified by NHB under farm mechanization component may be considered for subsidy in standalone mode</li> </ul>	<ul style="list-style-type: none"> <li>Tractor (up to 20 BHP) @ Rs.3.00 lakh/unit</li> <li>Power Tiller below 8 BHP @ Rs.1.00 lakh/unit</li> <li>Power tiller 8 BHP &amp; Above @ Rs.1.50 lakh/unit</li> <li>Tractor/Power Tiller (below 20 BHP) driven equipments               <ul style="list-style-type: none"> <li>Land development, tillage and seed bed preparation equipments -@ Rs.0.30 lakh per unit</li> <li>Sowing, planting reaping and digging equipments - @ Rs.0.30 Lakh per unit</li> </ul> </li> <li>Plastic mulch laying machine - Rs.0.70 Lakh per unit</li> <li>Self-propelled Horticulture machinery - @ Rs.2.50 lakh per unit</li> <li>Other tools and equipments as per norms as per norms of Sub Mission on Agriculture mechanization (SMAM)</li> </ul>
V	Civil Infrastructure * #	Includes Functional Pack House/ On farm collection unit and labour quarter	1. Functional Pack house @ Rs. 4.00 Lakh/unit with size of 9 x 6 Meter (Pro rate basis for lower size) 2. Labour Quarter/ Store room @ Rs. 20,000/- per acre Maximum up to 3.00 lakh. Cost norm as per pack house
VI	Vermi Compost unit * #	Permanent structure and HDPE vermibed	Rs.60,000/- per unit for permanent structure and Rs.10,000/- for HDPE vermibed (96 cft (12'x4'x2' and IS 15907:2010 to be administered on prorate basis).
VII	Certification for Good Agriculture Practice (GAP), including infrastructure * ##		Rs.4000/- per acre.
VIII	Support system for Grapes (trellis, telephone, bawar and other system etc. *	Permanent structure made up of MS angles and stainless steel wire.	Rs. 1,50,000/- per acre

S.No.	Item	Description	Admissible Cost
IX	Plastic Mulching * ##		Rs.12800/- per acre and Rs.14729/- acre for hilly areas
X	Bed Preparation Cost in the cases requiring Soil replacement #	Protected Cultivation projects only in cases involving removal and replacement of top soil by red soil or cultivation is done on media/Pots/ Concrete bed	Rs.100/- per Sq. m.

Components categorization:

\* Commercial Horticulture, within overall cost ceiling

# Protected Cultivation, within overall cost ceiling

# # Over and above overall cost ceiling

Any other add on component as may be decided by Project Approval Committee for inclusion of new item(s) may be suitably incorporated from time to time.

3. Rationale for justification for taking up the proposed project under the scheme No.1 and its components.

# 5.Project details

## For acid lime

5.1	Agro-climatic suitability	
-----	---------------------------	--

### **5.1.1.Origin, History, and Distribution**

#### **1. Origin of the crop and its introduction into India:**

Citrus plants are native to subtropical and tropical regions of Asia and the Malay Archipelago and they were first domesticated in these areas. Some citrus species have been present in the Mediterranean basin for centuries. This group of species has reached great importance in some of the Mediterranean countries and, in the case of orange, mandarin and lemon trees, they found here soil and climatic conditions which allows them to achieve a high level of fruit quality, even better than in the regions where they came from.

#### **2. Distribution of crop across the country:**

Commercially, acid lime is grown in almost all the states which are free from frost. Acid lime is grown mainly in Khera district of Gujarat, Ahmednagar, Amravati and Akola Distt. in Maharashtra, Periyakulam in Tamil Nadu; Jabalpur and adjoining areas of Madhya Pradesh;. The states of Andhra Pradesh, Maharashtra and Karnataka contribute more than 90% towards total production of acid lime. Cultivars which have adapted in different geographical regions of the country are - Pramalini, Vikram, Sai Sarbati, Balaji, NRCC- acid lime – 7 and acid lime – 8 are the basis of commercial plantations.

**5.1.2. Agro-climatic / Horticultural zones including Rainfall, temperatures at critical stages and suitability of the project** *(Not applicable to standalone PHM projects)*

1.	Parameter	Recommended@	Project location parameters#	Remarks / deviations
2.	Climate			
3.	Altitude	<b>100 – 2000 ft</b>		
4.	Climatic / Non Climatic			
5.	Thermosensitive ness of crop	<b>15-37 °C</b>		
6.	Photosensitive	Photosensitive		
7.	Temperature			
8.	1. Mean monthly temperature of the year	<b>29.24 °C</b>		
	2. Mean max.temperature of the year	<b>35.28 °C</b>		
	3. Mean minimum temperature of the year	<b>24.14 °C</b>		
	4. Mean monthly temperature during crop duration season (Jan-Nov.)	<b>29.71 °C</b>		
	5. Flowering (Jan-Feb)	<b>25.78 °C</b>		
	6. Fruiting (March-April)	<b>33.58 °C</b>		
	7. Maturity (Aug-Sep.)	<b>27.83 °C</b>		
	8. Fruit quality(Oct-Nov)	<b>26.69 °C</b>		
9.	Rainfall / Water	<b>700-900 mm</b>		
10	1. Land preparation	<b>0</b>		<b>7 -9 year age Tree daily water req.</b>
	2. Flowering (Req. in lit)	<b>200 lit / plant</b>		
	3. Fruiting (Req. in lit)	<b>154 lit / plant</b>		
	4. Maturity (Req. in lit)	<b>71.5 lit / plant</b>		
	5. Season(Total Req. in lit)	<b>3745</b>		<b>Total</b>
11	Humidity (%)			
	1. Flowering	<b>40-60</b>		
	2. Fruiting	<b>40-60</b>		
	3. Maturity	<b>40-60</b>		
	4. Season	<b>48</b>		
12	Winds during crop season			
13	1. Wind velocity (Km/hr)	<b>11.06</b>		
14	Shade loving?	-		

@ Note: Organisation / Institution (ICAR/CAU/SAU/SHU/ other) making recommendation and its source should be specified.

#: Provide source (could be IMD/Agric.Univ/State Govt.) and weblink if possible.

**Risk management/ Deviation Management if any:**

<b>Conclusion:</b> Whether project crop is recommended for the project location	<b>Yes/No</b>
---	---------------

### 5.1.3. Soil Type and health -requirements and that of project suitability

(Not applicable to standalone PHM projects)

#### Acid Lime (Central India)

	As recommended by ICAR /CAU/SAU/SHU ICAR-CCRI	Project location data as per latest Soil health test	Deviation if any and Management	Date on which soil health is tested and the name of the Institute
Soil type	Sandy, sandy loam, medium black soil , red soil			
Texture	Sandy loam, loam, medium clay loam			
pH (1:2)	7.0- 8.4			
Organic carbon (%)	0.52 – 0.78			
Electrical conductivity (dS/m)	0.34 – 0.48			
Chlorine	-			
Sodium	-			
Potassium (NH <sub>4</sub> OAc)	102-147 kg / ha			
Nitrogen (KMnO <sub>4</sub> )	106-118 kg / ha			
Phosphorus (Olsen)	9-15 kg / ha			

@ Note: Organisation / Institution (ICAR/CAU/SAU/SHU/ other) making recommendation and its source should be specified.

#: Provide details of Soil Test Laboratory (should be that of Agriculture Dept/ Agric. Univ/ Central or State Government) where Soil is tested with contact details of Head of Laboratory/ Analyst with telephone and mobile details and weblink if possible. A self-attested copy of the laboratory results should be submitted in case project is qualified for processing for subsidy claim.

**Whether project location is a problematic soil- Alkalinity/Salinity/Others: if Yes.**

1. Causes
2. Reclamation / Management/ Amendments proposed:

<b>Conclusion:</b> Whether project location soil is suitable for the crop / activity.	
--	--

#### 5.1.4. Water/ Irrigation water Quality -requirements and that of project suitability

(Not applicable to standalone PHM projects)

##### Acid Lime

	As recommended by ICAR /CAU/SAU/SHU ICAR-CCRI	Project location data as per latest Water Analysis test#
pH	7.2-7.6	
EC (dS/m)	< 0.58	
Total salt concentration, (mg/L)	<1150	
Sodium Absorption Ratio (SAR)	<6.0	
Bi-Carbonate (mg/L)	<180	
Boron concentration (ppm)	<0.21	
Heavy metals	-	
Pesticide residue	-	

@ Note: Organisation / Institution (ICAR/CAU/SAU/SHU/ other) making recommendation and its source should be specified.

#: Provide details of Laboratory (should be that of Agriculture Dept/ Agric.Univ/ Central or State Government) where water is tested with contact details of Head of Laboratory/ Analyst with telephone and mobile details. A self-attested copy of the laboratory results should be submitted in case project is qualified for processing for subsidy claim.

Conclusion: Whether project location water source is suitable for the crop / activity.	Yes / No
--	----------



## 5.2.Project- Market viability of the Project

(To be facilitated and certified by Horticulture Expert)

5.2.1.Commercial (and nutritive –where ever applicable) importance / significance, composition and uses.

In addition to its thirst-quenching ability and refreshing taste, citrus fruits also have therapeutic value. Citrus fruit and juice are excellent sources of health-promoting substances like vitamins. Even a small amount of vitamins can prevent the appearance of sub-clinical signs of deficiencies. Nutrients from a fresh source are immediately available to the body in a small amount. Citrus fruits contain carbohydrates in the form of sugars: sucrose, glucose, and fructose. The ratio of sodium and potassium in orange juice plays an important role in maintaining electrolyte balance. An average-size orange can provide 0.8 g of fibre in the diet. Fibre has its own importance for the people of industrialized nations who eat high-fat, low-fiber diets full of highly refined and processed carbohydrates that move slowly through the intestines. The role of citrus fruit in reducing risk of human diseases like heart diseases, cancer, and urinary disorders is well documented.

**5.2.2.Targetted market (s) :** Domestic or International. In case of International market, the applicant have to refer APEDA export requirements and should specify compliance appropriately with in the document. In case of domestic market specify the intended market briefly while more details be provided in Marketing chapter.

1. Quality grades/ specifications/ kinds of products and their targeted Domestic/ International market.
2. Existing / Proposed Market linkages:
3. MOUs/ Contract documents / undertakings/ LoA if any
4. Target consumption centres/ key domestic markets
5. Export targets/ Plans if any
6. In case of export, details of volume to be exported / export destination / statutory norms of export destination should be provided in the DPR.

5.2.3.Statistics: India and State.

India: Area, Production and Productivity in the area, State and India for the last 5-10 years

1.National picture : Area in thousand ha and production in thousand tonnes

Year	Area in ha	Production MT	Productivity T/ha	Global Productivity dataT/Ha		
				Highest	Average	
2012-13	255.2	2523.5	9.9			
2013-14	286.4	2835.0	9.9			
2014-15	268.4	2950.4	11.0			

2015-16	258.0	2978.2	11.5			
2016-17	259.3	2789.0	10.8			

<http://agricoop.nic.in/statistics/publication-reports>

## 2.State wise picture- Top 10 producing states

State	Area in ha (2015-16)	Production MT ( 2015-16)	Productivity Tonnes/ha	
Andhra Pradesh	33.45	550.59	16.66	
Gujarat	43.27	480.61	11.16	
Karnataka	13.17	313.76	24.10	
Telangana	12.12	312.41	26.00	
Madhya Pradesh	12.90	284.34	22.00	
Odisha	26.96	261.35	10.03	
Maharashtra	20.08	201.12	10.00	
Assam	15.02	139.40	9.27	
Bihar	18.00	128.70	7.11	
Chattisgarh	12.17	89.03	7.42	

Source: <http://agricoop.nic.in/statistics/publication-reports>

## 3.Project State Picture (Mandatory)

Year	Area in ha	Production MT	States' contribution to Nation	Productivity T/ha	Gap in Productivity (T/Ha)		
					State Av.	National Av	Global Highest

Multiple sources: <http://agricoop.nic.in/statistics/publication-reports> / State Horticulture Dept./ District Horticulture Officer.

## 4.Project State- district wise performance in the said crop producing districts in Last Year (Mandatory)

Area			Production			Productivity		
District	Area (ha)	% of State Area	District	Production (MT)	% of State Production	District	Productivity (T/ha)	Ranking

Multiple sources: <http://agricoop.nic.in/statistics/publication-reports> / State Horticulture Dept./ District Horticulture Officer.

5.Project crop in the state: Time trend of Area, Production and Productivity (Mandatory)

District	Item	Current Year	CY-2	CY-3	CY-4
District.1	Area				
	Production				
	Productivity				
District.2					

Multiple sources: <http://agricoop.nic.in/statistics/publication-reports> / State Horticulture Dept./ District Horticulture Officer.

6.Share of project Crop- in terms of Area and Production in overall fruits/vegetables.

Crop	Area		Production		
	Ha	%	MT	%	
Total		100		100	

Multiple sources: <http://agricoop.nic.in/statistics/publication-reports> / State Horticulture Dept./ District Horticulture Officer.

7.Availability of Storage facilities in the project area / District / StateSource: (Desirable Data)

Year	Commodity	Low cost storage structures			Cold storage			CA Storage		
		No.	Capacity	Capacity utilisation	No.	Capacity	Capacity utilisation	No.	Capacity	Capacity utilisation

Source: Multiple sources: <https://ncdd.gov.in/#> and District Horticulture Office.

Gap Analysis in Project Area:

	Commodity / produce	Storage required in the area	Storage available in the area	Gap	Remarks

#### 6.2.4. Clusters/ Zones

##### 5.2.4.1.Crop clusters in the State (Mandatory)

Name of Crop	District	No.of villages	No.of farmers	Total Area
1				
2				
3				
4				

Source: State / District Horticulture Office/ APEDA / MoFPI

##### 5.2.4.2.Crop Agricultural Economic Zones in the State / UT, if any (Desirable)

Crop AEZ	District	No.of villages	No.of farmers	Total Area
1				
2				
3				
4				

5.2.5.Demand for the commodity:( based on the available data- minimum for the project area, district and the state)

Demand -Supply gap for the commodity

Unit	Demand	No.of growers		Supply / production	Gap	Remarks
		Nos.	Area			
Project area*						
District where project is located						
State						
Country						
Globally						

Source: Multiple sources.

<http://agricoop.nic.in/>

APMC/ Agriculture Marketing Board/ District Horticulture Officer

\*: Project area could be a block / District based on the crop / commodity/ activity and its spread area and numbers.

Note: Applicant may take the help of District Horticulture Officer.

5.2.5.A.Projections of production, productivity, targets for domestic and export market (Desirable)

Year	Production	Productivity	Local Market	Value in Rs.	Terminal market	Value in Rs.	Export Market	Value in Rs.

5.2.6.Global producers- Country, Area, Production, Productivity and global market share for the last 5-10 years

Major producing country	Area	Production	Productivity	% share in global market
India				

Source:

<http://agricoop.nic.in/statistics/publication-reports>

[http://agriexchange.apeda.gov.in/;](http://agriexchange.apeda.gov.in/)


5.2.7.International trade market and potential:

(collect from APEDA Agri-exchange website at <http://agriexchange.apeda.gov.in/>; including product profile, statistics and market intelligence sites esp. International trade and Global Analytical report in brief to the extent of relevance; may also refer DGCIS site <http://www.dgciskol.gov.in/>for more information)

### 5.2.8. Seasonality matrix of acid lime (Desirable Data):

Seasonality matrix of the crop with reference to other fruits / vegetables/flowers

Acid lime	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Acid lime												
Acid lime												
Acid lime												
Acid lime												
Acid lime												
Acid lime												
Acid lime												
Acid lime												
Acid lime												
Acid lime												
Acid lime												

 Lean Season

 Peak Season

Demand and Supply issues specific to project area:



### **5.2.9 Price variation of Commodities at State / UT Capital or at a Major Fruit & Vegetables/ Flower Market**

#### **A.At local Market**

	Local Market: 1 Unit=Rs. Per Qtl/MT/Kg											
Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Source: Concerned APMC / Marketing Board website or <http://agmarknet.gov.in/>

If no reliable source is available, the above data may be collected from District Marketing / Horticulture Officer

#### **B.At nearest / Major Terminal Market**

	Major Terminal Market: 2 Unit=Rs. Per Qtl/MT/Kg											
Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Source: Concerned APMC / Marketing Board website or <http://agmarknet.gov.in/>

If no reliable source is available, the above data may be collected from District Marketing / Horticulture Officer

#### **C.Projected prices of project produce (if Possible)**

	Market: ..... Unit=Rs. Per Qtl/MT/Kg											
Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Source: Could be applicants' own assumption / horticulture expert etc.by giving justification

**5.2.10. Balance sheet of commodity in the State / District** (Desirable Data/ Voluntary)

	Year: Qty: 000Tons											
	Ja n	Fe b	Ma r	Ap r	Ma y	Jun e	Jul y	Au g	Sep t	Oc t	No v	De c
Stored/ Carry in												
Fresh Production/ Arrivals												
Imports												
Availability												
In LT Storage												
Consumptio n												
Exports												
Post Production losses												
Total Usage												
Carry out												

Source:

Note:

**5.2.11. Whether transportation infrastructure is available.**

1. Mode of transportation / arrangement:
2. Whether cold chain facility available locally if so details of service providers and contact person name.

**5.2.12. Value Addition scope/ potential**

**5.2.13. Central and State Government policies to promote the commodity:  
(towards its promotion, area expansion and organised marketing, processing and export).**

5.2.14.Value chain in the commodity

5.2.15.Proposed Business Strategy by the Applicant for Marketing and Market viability

**5.3.Financial Viability of the Project**  
**( To be prepared and certified by Project Finance Expert on each page)**

**5.3.1: Due Diligence Status**

	Date of Due Diligence		Remarks
1	Examination of CIBIL report	Yes/No	
2	Credit rating / scoring is done	Yes/No	
3	Whether name of promoters/company appearing in the list of- a) RBI defaulter list b) RBI willfull defaulter list c) ECGC SA list	Yes/No Yes/No Yes/No	
4	a)Verification of CERSAI (Central Registry of Securitisation Asset Reconstruction and Security Interest)	Yes/No	
	b) In case of company whether financial data verified with ROC .	Yes/No	

**5.3.2.Project Cost (Rs in Lakhs) – (subitems are to be decided based on need)**

Scheme Component	Items	Sub- items	Capacity/ Area/ spacing Etc.	Units/ Numbers	unit cost	Cost	Cost as per NHB norms
Open field Cultivation	Cultivation Expenses	Planting material					
		Input cost (Labour, Manure & Fertilisers, pesticides etc.)					
		Others					
	Irrigation	Tube well/ bore well/ Open well (Nos.)					
		Cost of Pipeline (Length, Size & Material)					
		Water harvesting structure / Water tank min. 300 microns					
		Non lined ponds/tanks					
		Others					
	Drip / Sprinkler						
	Civil Infrastructure	Functional pack house					
		Store & Pump house (Area in sq.ft					

		with size)					
		Labour room & go down (Area in Sq.ft with size)					
		Others					
	Farm Mechanisation (AC)	Tractor upto 20 BHP					
		Power Tiller	HP				
		Equipments- driven by Tractor/ Power Tiller					
		Mulch laying machine					
		Self-propelled hort. Machinery					
		Other tools and equipment's as per Sub Mission on Agriculture Mechanisation (SMAM)					
		Others					
	Land Development	Soil levelling / Digging/Fencing etc.					
		Others if any					
	Land if newly purchased but not before one year from date of sanction of loan (indicate year)						
	Support system for Grapes						
	Vermi Compost Unit						
	Certification of Good Agri Practices Good Agricultural Practices (GAP) including infrastructure (AC)						
	Plastic Mulching						
	Others						
	Grand Total						
Scheme			Capacity/ Area/ Spacing etc.	Units/ Number	Likely /Unit cost	NH B Norm	
Integrated PHM	2. Integrated PHM						
	3.1.Pack House						
	3.2.Integrated Pack house						
	3.3.Pre-cooling unit						

	3.4.Cold Room (Staging)					
	3.5 Primary Processing					
	3.6 Refer Van					
	3.7.Retail outlet (environmentally controlled)					
	Others					

### Summary of Project Cost

		Project Cost	Max.possible NHB support (self-appraisal)
3. Open field condition	With add on components		
	Without add on components		
4. Protected Cover of NHB specified crops	With add on components		
	Without add on components		
5. Integrated PHM			
3.1.Integrated Pack House			
3.2.Pack house			
3.3.Pre-cooling unit			
3.4. Cold Room (Staging)			
3.5. Mobile Pre-cooling unit			
3.6.Ripening Chamber			
3.7 Primary Processing			
3.8.Refer Van			
3.9 Retail outlet			
Grand Total			

### 5.3.3 Means of Finance (Rs.in Lakhs)

S.No	Item	Components			
1	Promoters share				
2	Bank/FI Term loan				
3	Un secured loan/VCA				
	Total				

### 5.3.3. A Information on subsidy available under different schemes:- (For information)

1.	Subsidy from NHB				
2.	Subsidy from State	*			
3.	Subsidy from Centre	*			
4.	Subsidy from other sources	*			
	Total				

#### 5.3.4.Hypothecation Security if any:

#### 5.3.5.About Bank/ FI: Name of the Bank/FI, branch and its code identified for Term loan and Rationale

Name of Bank/ FI	
Bank/FI Branch Address	
Bank/FI Branch contact Number	
IFSC code	

#### 5.3.6.Investment in Horticulture Sector

#### 5.3.7 Projected / existing operational profitability of the Project : (Rs. In Lakhs)

	Estimated projections							
	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8
Capital								
Reserves								
Intangibles								
Tangible Net Worth								
Net Working Capital								
Current Ratio								
Net Sales								
Op. Profit								
Net Profit Before Tax								
Net Profit After Tax								
TOL/ TNW								
Debt-equity ratio								
Depreciation								
Dividend								
Retained Profit								

Justification for the above (wherever figures are on higher side)

NOTE:- In case of existing business / project, the promoter has to provide the audited data for the last three years apart from estimated and projected data for covering the entire repayment period.



#### 5.3.8 Project Financing:

- 1) Rate of Interest :
- 2) Percentage of Term loan against total project cost
- 3) Internal Rate of Return (IRR):
- 4) Cost of Production and Profitability (Annexure)
- 5) Yield and Sales Chart (Annexure)
- 6) Proposed Balance Sheet: (Annexure)
- 7) Proposed Cash flow Statement for repayment period (Annexure)
- 8) Proposed Profit & Loss Account: (Annexure)
- 9) Proposed Repayment of Term loan and Schedule (Annexure)
- 10) Break even Analysis (Annexure)
- 11) NPV (Net Present Value)
- 12) Economic Rate of Return
- 13) Depreciation

### 5.3.9 Sensitivity analysis of the project.

Base Case	2018-19 (First Full Year of Operation)				
Case I	Decrease in capacity utilization by 10%.				
Case II	Decrease in Sales by 10%.				
Case III	Increase in Raw Material Cost by 10%				
	Base Case	Case I	Case II	Case III	
PBIDT					
PBT					
PAT					
Min DSCR					
Max DSCR					
Overall DSCR					

### 5.3.10 Key Financial Parameters for the proposal:

Sl. No.	Ratio	Benchmark	As calculated by Project Finance Expert				
			1 <sup>st</sup> yr	2 <sup>nd</sup> yr	3 <sup>rd</sup> yr	4 <sup>th</sup> yr	5 <sup>th</sup> Yr
1.	Current Ratio other than export units	1.25:1					
2.	CR-Export units	1.10:1					
3	IRR /BCR						
4	DSCR*	1.50:1					
5	Average DSCR						
6	Debt to Equity Ratio i.e DER	3:1					
7	TOL/TNW	4:1					
8	Promoters Contribution	25% minimum					
9	Break Even Point	Lower the % is better					
10	Security Coverage Ratio	More than 100% of Loan Amount					
11	Repayment period	Up to 7 Years excluding moratorium, but not to exceed an overall tenor of 10 years					

### 5.3.11 Statement of Assets & liability as on.....

#### 1. Immovable Assets

(Rs. In lakh)

Sl.No	Description	Extent	Location	Face value	Market value
1	Land				
2	Building				
3	Plant & machinery				
4	Commercial plots				

#### 2. Movable Assets

Sl.No	Description	Modle	Face value	Market value
1	Car/Scooter/Truck/Bus/Mobile phone			

#### 3. Bank/FI balances and cash

Sl.No.	Name of the institutions	Date of opening	Face value	Market value/Present value

#### 4. Shares & debentures

Sl No	Name of the Company/Institutions	Date of purchase	Face value	Market value

#### 5. Investment in business & other associates concern

Sl No	Name of the Company/Institutions	Date of Investment	Face value	Market value

Total assets.....

#### 1. Liabilities

Sl.No.	Nature of the loan	Name of the institution	Date of loan	Face value	Market value/ Present value

Total liabilities.....

Net of assets & liabilities.....

Date: Signature of the Promoter/Guarantors/Directors /partner

### 5.3.12.Risk Analysis& Management

- A. Promoters & Management Risks:
- B. Project Completion and Operational Risk:
- C. Other Risks:

	<b>Risk</b>	<b>Management</b>
	Excess production / Glut situation in Market	
	Crop failure	Crop insurance
	Price volatility-low prices	
	Pests and Diseases	
	Natural calamities- fire, cyclone, Floods etc.	

### 5.3.13.Farm record keeping/ Maintenance proposed

## 5.4: Land development and Crop husbandry

5.4.1.Land development: ( in case of waste/ barren land)

### 5.4.2. Selection of Quality Planting Material

Recommended and popular Cultivars- varieties/hybrids, their specific characteristics, requirements and yields and list of reputed / accredited Nurseries

1. Recommended and popular cultivars/ varieties/ Hybrids State wise	Name of variety / Hybrids/ cultivar (with potential yield)
a. Acid lime	Phule Sharbati, NRCC-7 and 8, Sai Sharbati, Vikram and Pramalini
2. Classification of cultivars based on crop maturity	---
a. Early	
b. Mid	
c. Late	
3. Classification of cultivars / Varieties/ Hybrids based on purpose	
a.	
b.	
c.	
d.	

Cultivar/Hybrid/Variety / Planting material Selected:

Cultivar/Hybrid/Variety / Planting material	Parentage	Area	Medium/ High/ Ultra High density	Requirement Quantity

#### Method of Propagation / technology

Method recommended by ICAR / CAU/SAU/SHU	seedlings for acid limes
Proposed method under the project	
Do's and Don't's proposed / taken in propagation	
Expert guiding the project	

#### List of Nurseries having Virus Indexing

Central Citrus Research Institute, Amravati Road, Nagpur-440033

List of NHB accredited Nurseries :availability of quality seeds / planting material.

List of reputed / authorised store / Nursery from where quality seeds / planting material is planned to source in the project:

Planting material-source, quality and suitability

1. Proposed cultivar / variety/Hybrid	acid lime varieties as given above
2. Criterion / Rationale for Selection	
3. Nursery / Shop from where seeds/ planting material is procured/ purchased	Name of Nursery/ Shop:  Proprietor Name Contact Number:
4. Warranty provided if any	
5. Whether variety/ hybrid/ cultivar registered under Section 39 (2) of The Protection of Plant Variety and Farmers Right Act, 2001 (PPVFR Act)	
6. Authority which provides compensation to the farmers in case a registered variety does not perform as per the claim made by the breeders.	Registrar General, PPV & FRA is the designated officer for redressal of Public Grievances and can be addressed to: Registrar General Protection of Plant Varieties and Farmers' Right Authority S-2, A Block, NASC Complex, Opp. Todapur Village New Delhi -110012
7. Applicability of Seed Act and any State Act on nursery/ planting material	
8. Authority which provides compensation to the farmers in case a registered variety does not perform as per the claim made by the breeders under Seed Act / State Nursery Act if any	
9. Parentage if known	
10. Original manufacturer / Source of planting material	
11. Name of Tests with date and lab-conducted to assure pest and disease free ness of seeds/ propagation by the nursery	
12. Whether the planting material is imported. If Yes, whether plant quarantine and disease free certification was done	



5.4.3.	Orchard/ Site planning Lay out and management / Sowing	
--------	--	--

**5.4.3.1.Planning of orchards / Site establishment and layout systems / Types of orchards-  
Or Sowing in case of seeds**

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	<p>Land should be having adequate drainage and there should not be any hard pan up to a depth 6 feet. The planting should be done on raised beds in square system with microirrigation arrangements. For proper economic management, citrus trees should be planted in straight rows. The planting system should be such as to provide the maximum number of trees per unit area with sufficient space for proper development of each trees and convenience in cultural operations. Fruits ripen at the same time should be clubbed together for convenience in harvesting and handling. There are a number of different planting system which can be used for planting of citrus orchard such as square, rectangular, quincunx, triangular and hexagonal which can be adapted only on flat land but not on uneven land and submontane areas. Out of all these system, rectangular system of planting is most common practice, easy in layout and in cultural operations. Such planted orchard can be cultivated in two directions easily and varieties in them can be planted in compact block of row, making it easy to keep track of them in spraying or harvesting.</p> <p>On undulating land and hill slopes, the trees are to be set on terraces or along the contour. Under terrace and contour planting, a standard system of planting becomes impossible. The tree position are therefore best decided on the spot. In contour system, the trees are planted in rows along lines of equal elevation or contour. The trees will not be equidistant and the number per unit area will generally be less as compared to other systems.</p> <p>Raised-bed planting should be preferred to avoid <i>Phytophthora</i> root rot, Gummosis</p> <p>(Improved cultivation of acid lime). An extension bulletin in English of NRC for Citrus, Nagpur-2016. Further reading : CCRI CITRUS APP and CCRI website <a href="http://www.ccringp.org.in">www.ccringp.org.in</a></p>
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

#### 5.4.3.2.Land preparation including bed preparation

<p>As recommended by ICAR Institute/ CAU/SAU/SHU/ Others</p>	<p>Citrus being perennial in nature its orchard is a long term investment and needs careful and well planning in respect o proper selection of site, provision of suitable drainage, layout , proper selection cultivars suitable to the particular area, proper planting in order to ensure constant good performance. Any mistakes made initially in planning con considerable reduces t he return on investment and growers may suffer badly. Apart from this it will be costly to rectify the mistake detected after the trees started bearing. On the other hand with a carefully prepared planning for the establishment of orchard, the growers may not only able to provide most economic orchard management but also for economic layout and location of roads, drains irrigation channels, fences wind breaks etc. it is therefore, considered important to plan establishment an orchard.</p> <p>Land should be levelled so as ensure proper drainage. To manage the <i>Phytophthora</i> diseases raised bed method of planting is preferred.</p> <p>Improved cultivation of acid lime. An extension bulletin in of CCRI, Nagpur-2016.</p> <p>Further reading : CCRI CITRUS APP and CCRI website <a href="http://www.ccringp.org.in">www.ccringp.org.in</a></p>
<p>Action taken / proposed by the applicant</p>	
<p>Points of Deviation if any and justification</p>	

#### 5.4.3.3.Planting Season / time and density

	Recommended @	Proposed	Remarks in case of deviation
Planting Season / Time	July-September and January		
Spacing	6x6 m and 6x3 m		
Seed/ seedling rate/ Density per Acre	110/acre and 220 /acre		
Seed / Planting Material treatment	Dipping in Ridomil and carbendazim for five minutes		
Depth of sowing			
Seedling/grafts age	Acid lime seedlings should be one year old.		

@ Improved cultivation of acid lime. An extension bulletin in of CCRI, Nagpur-2016.

Further reading : CCRI CITRUS APP and CCRI website [www.ccringp.org.in](http://www.ccringp.org.in)

#### 5.4.3.4. Water and Nutrient Management

##### 1. Water requirements, Source and irrigation methods&

###### a. Critical stages for Irrigation and Water required under Drip Irrigation

<u>Critical Stages</u>	<u>Recommendation</u>	<u>Proposed practice</u>	<u>Remarks</u>
Flowering	<u>Table No. 1</u>		
Fruit set			
Fruit Development			
Fruit Development			
Maturity			

**Table 1 :** Water requirement of acid lime \* (Litres/tree /day)

Month	Crop stage	Young trees (Age: 1 - 5 years)	Middle age trees (Age: 6 - 10 years)	Mature trees (Age: 11 years and above)
January		9 - 15	20 - 25	50 - 75
February		15 - 20	25 - 50	75 - 90
March		20 - 26	50 - 70	90 - 110
April		26 - 30	70 - 90	110 - 140
May		30 - 35	90 - 110	140 - 160
June		35 - 40	110 - 125	160 - 175
July		15 - 20	50 - 65	80 - 90
August		10 - 15	40 - 45	60 - 75
September		9 - 14	25 - 40	45 - 65
October		10 - 15	30 - 50	60 - 70
November		9 - 15	25 - 50	35 - 70
December	Irrigation like November month			

\*The water requirement of acid lime is 20% less than mandarin and sweet orange; Flowering and fruiting continuously take place in acid lime provided it is irrigated and provided nutrition

###### b. Method of Irrigation:

<u>Methods</u>	<u>Recommendation</u>	<u>Proposed practice</u>	<u>Remarks</u>
Drip irrigation	8 lph 6 drippers per plant		Two on the lateral line and 4 with micro-tube extensions

c. Water source, demand and availability

Water Source	Water Quality	Water Availability	Last Year consumption	Current Year demand

d. Water harvesting measures

**2.Nutrient management**—Manure, Bio-/ Chemical fertilizers including micro nutrients:/ Fertigation. Dosage and method and time of application for efficacy, food safety and environment sustainability.

Soil Health Analysis: Soil nutrient range

**Acid Lime**

Dated		Institute	
Soil Health Parameters	Values	Recommended range	Remarks
pH (1:2)		8.0-8.4	
Org. C (%)		0.52-0.78	
KMnO <sub>4</sub> - N (mg/kg)		106.3-118.2	
Olsen - P (mg/kg )		9.2-14.6	
NH <sub>4</sub> OAc – K (mg/kg)		102.4-146.6	
NH <sub>4</sub> OAc – Ca (mg/kg)		210.3-318.7	
NH <sub>4</sub> OAc– Mg (mg/kg)		89.6-106.3	
DTPA - Fe(mg/kg)		4.6-12.3	
DTPA - Mn(mg/kg)		3.2-10.1	
DTPA - Cu(mg/kg)		0.80-1.40	
DTPA - Zn(mg/kg)		0.78-0.89	

Dated		Institute	
Soil Health Parameters	Values	Recommended range	Remarks

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	800:400:400 N: P : K gram / plant / year
	FYM during monsoon season; 40-50 kg /plant/year for grown up plant
	Sulphates of Zinc, iron, manganese 100 gram /plant/ year for grown up plant, Foliar prays of micronutrient as and when required
	(Mention source of publication with date/Year)
	Further reading : CCRI CITRUS APP and CCRI website <a href="http://www.ccringp.org.in">www.ccringp.org.in</a>
Action taken / proposed by the	

applicant	
Points of Deviation if any and justification	

Availability of Water and Nutrient management plan: Yes/ No

#### 5.4.3.5. Intercultural operations including Weed management

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	<p>The newly planted young plants need to be protected during the initial 3-4 years. From excessive heat, moisture and cold. Thatches may be erected over and around the young plants to protect them from scorching sun and hot winds during summer. Frequent irrigation should be given during this period. Basin should always be kept free from weeds and suckers arising from rootstock should around the plant during rainy season as it is injurious to roots and graft union. Good drainage during rainy season is very essential.</p> <p><b>Pre-emergence weed control :</b> Diuron 3 Kg/ha or Simazine 4 Kg/ha give complete control of weeds beyond 300 days when applied two times as pre-emergence sprays, first before commencement of monsoon in the first week of June and second after 120 days of first spray in September.</p> <p><b>Post-emergence weed control :</b> Glyphosate @ 4 l/ha or paraquat @ 2 l/ha as post-emergence weedicide when used kill both monocot and dicot weeds.</p>
	1. Weed Management in citrus orchards, 2002 (CCRI Extension bulletin)
	Further reading : CCRI CITRUS APP and CCRI website <a href="http://www.ccringp.org.in">www.ccringp.org.in</a>
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

#### 5.4.3.6.Plant canopy architecture management/ training and pruning

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	<ol style="list-style-type: none"> <li>1. Follow pruning of rootstock sprouts below the bud union at regular intervals</li> <li>2. Allow 4-6 scaffold branches at every 3-4 inches around the plant stem</li> <li>3. Head back the tall, fast growing grafts if necessary at 4 feet height in third year of planting.</li> </ol>
	Improved cultivation of acid lime. An extension bulletin of CCRI, Nagpur-2016.
	Further reading : CCRI CITRUS APP and CCRI website <a href="http://www.ccringp.org.in">www.ccringp.org.in</a>
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

#### 5.4.3.7. Use of Pollinators & Pollinizers

Impact of pollinators in enhancing pollination and increasing yield and to provide supplementary income to farmers.- No need of special pollinators in citrus

Item	Recommended	Proposed	Remarks
No.of Hives			
Name of Pollinisers			
No.of Pollinisers			



#### 5.4.3.8. Use of Plant growth regulators (including waiting period)

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	<b>Follow given schedule at crucial stages :</b> I. Spray gibberellic acid 10 ppm + urea 1 % at the time of flowering.
	Improved cultivation of acid lime: An extension bulletin of CCRI, Nagpur-2016.
	Further reading : CCRI CITRUS APP and CCRI website <a href="http://www.ccringp.org.in">www.ccringp.org.in</a>
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

#### 5.4.3.9. Flowering & Fruiting

Including Problem of unfruitfulness / Growth, fruiting habits and methods for inducing fruitfulness

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	For Hasta bahar crop, Use foliar application of chlormequat chloride @ 2000 ppm two times at 15 days interval during August- September , Resume irrigation in second week of October
	Improved cultivation of acid lime: An extension bulletin of CCRI, Nagpur-2016.
	Further reading : CCRI CITRUS APP and CCRI website <a href="http://www.ccringp.org.in">www.ccringp.org.in</a>
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

#### 5.4.3.10. Integrated Pest and Diseases Management including Biological control and Food Safety

<p>As recommended by ICAR Institute/ CAU/SAU/SHU/ Others</p>	<p><b>1. Fungal diseases and Management:</b></p> <p><b><i>Phytophthora</i> Gummosis, Foot rot and Root rot:</b> Being soil-borne nature, once <i>Phytophthora</i> enters in nursery or orchard, it becomes as endemic problem and difficult to eradicate. 'Prevention is better than cure' should be followed strictly. Plant should be procured from <i>Phytophthora</i>-free certified nurseries. The nursery soil beds should be either solarized in summer months and/or fumigated with soil fumigant like Dazomet to eliminate the chances of pathogen in it. Soil solarization and fumigation technology has been successfully used in raising <i>Phytophthora</i>-free nursery stocks commercially at ICAR-Central Citrus Research Institute (CCRI), Nagpur. Raised-bed planting systems also provide substantial control of <i>Phytophthora</i> root rot since this site modification promotes water drainage. For integrated control of <i>Phytophthora</i> diseases at the orchard CCRI CITRUS APP guidelines may be followed.</p> <p><b>Twig blight</b> is more of a problem of negligence and mismanagement of the orchard. Affected plants show drying of twigs after one or two bearings. A number of stress factors like nutritional deficiencies, drought, attack of insect pests, virus and virus like diseases and root rot infection by <i>Phytophthora</i> spp. together contribute to the problem. The plants affected with one or more of the above factors show drying of twigs starting from the tip and die back. The best management strategy of this problem is to remove the predisposing factors responsible for weakening the plant vigour. Regular pruning of dead twigs 1 - 2 cm below the dead portion after harvest and spray of benzimidazole fungicides (carbendazim, benomyl or Thiophenate methyl @ 0.1 %) twice at monthly interval after pruning keep the problem under control.</p> <p><b>2. Bacterial diseases and Management:</b></p> <p><b>Citrus greening</b> (also called <i>Huanglongbing</i>, HLB) infected leaves are small, upright, and show a variety of chlorotic patterns resembling those induced by zinc and iron deficiencies. Infected fruits are small, misshapen and have a bitter taste. Many fall prematurely, while those that remain on the tree do not colour properly, remaining green on the stylar/lower end of the fruit (Hence the name 'greening'). Very small fruits are either devoid of seed or contain abortive seeds. Integrated application of Tetracycline hydrochloride 600 ppm (6g / 10 litres water) + ZnSO<sub>4</sub> + FeSO<sub>4</sub> (200 g each). Tetracycline hydrochloride should be applied as foliar spray during Oct to Dec twice at 45 Days interval. ZnSO<sub>4</sub> and FeSO<sub>4</sub> should be applied in tree basins.</p> <p><b>Citrus Canker</b> causes extensive damage to acid lime plantations in India. The diseased plants are characterized by the occurrence of conspicuous raised necrotic lesions that develop on leaves, twigs and fruits. Canker incidence can be reduced considerably by taking integrated management approach consisting of (i) using canker-free nursery stock, (ii) Pruning and destruction of infected twigs, (iii) three to four sprays with copper oxychloride (COC) 0.3% or Bordeaux mixture 1% and streptocycline 100 ppm at monthly intervals after the onset of monsoon and (iv) sprinkling or spraying of neem cake solution (1 kg/20 l water), especially at the nursery.</p>
--	--

	<p><b>3. Viral diseases and Management:</b> In India, major such pathogens of concern are citrus tristeza virus (CTV), Indian citrus ring sport virus (ICRSV), Citrus mosaic badna virus (CMBV), Citrus exocortis viroid (CEVd) and Citrus greening (HLB, Huanglongbin) that play a significant role in causing citrus decline particularly in sweet orange and mandarin cultivars. The most important step in preventing problems with many systemic diseases of citrus is the use of certified pathogen-free planting material. Many of these systematic pathogens/virus and virus like pathogens spread in the field by different insect vectors viz. Aphids, psylla, mealybugs, whitefly and leafhoppers. Chemicals or biological control of these insect vectors may be effective to minimize disease spread in certain situation.</p>
	<p><b>4. Phytoplasma diseases and Management:</b> Phytoplasma infection of citrus particularly in acid lime and Nagpur mandarin have also been recorded that needs immediate attention before it can cause serious damage.</p>
	<p><b>5. Pests and Management:</b> About a dozen insect-pests like psylla, citrus leaf miner, blackfly, lemon butterfly, bark eating caterpillar, aphids, thrips, fruit sucking moth and citrus mites attack citrus trees regularly right from nursery stage to the harvest causing cognizable damage thereby posing a serious threat to citrus cultivation and hence considered of major importance. The ICAR-CCRI app illustrates all these and their control measures.</p>
	<p><b>6. Nematodes and management:</b> Nematodes are not a major threat in many of the citrus growing regions in India. However presence of <i>Tylenchulus semipenetrance</i> and <i>Melodogyne indica</i> may pose serious problems. Disease free planting material is the best alternative to keep the orchards free from nematodes since chemical control measures are not viable.</p>
	<p><b>7. Pesticide residue management</b> (including waiting period): ICAR-CCRI CITRUS APP may be followed for this information.</p>
	<p>Technical and Extension bulletins on plant protection of the ICAR-CCRI, Nagpur. Improved cultivation of acid lime: An extension bulletin of CCRI, Nagpur-2016.</p>
	<p>Further reading : CCRI CITRUS APP and CCRI website <a href="http://www.ccringp.org.in">www.ccringp.org.in</a></p>
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

Residue Analysis: Address and contact details of NABL approved laboratory proposed for testing pesticide residue:

#### 5.4.3.11. Physiological disorders- causes, preventive and management measures.

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	<b>Fruit cracking:</b> This occurs after the onset of monsoon wherein the fruits skin is ruptured after first rains. Light watering either with drip irrigation or conventional means before the arrival of monsoon is desired. Application of 2,4-D 1.5 g +KNO <sub>3</sub> 1.5 Kg in 100 litres of water controls this disorder.
	CCRI technologies for doubling farmers income-Extension bulletin
	Improved cultivation of acid lime: An extension bulletin of CCRI, Nagpur-2016. Further reading : CCRI CITRUS APP and CCRI website <a href="http://www.ccringp.org.in">www.ccringp.org.in</a>
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

#### 5.4.3.12. Special problems if any

Special Problem	Recommendation by ICAR/ CAU/SAU/SHU	Proposal / action taken by applicant	Points of deviation and justification

### 5.4.5. Farm Structures and Farm Mechanisation

#### 5.4.5.1. Farm Structures- Protected Cover- Structure, Design and Layout( *Not applicable in case of Open field condition project*)

#### 5.4.5.2.Farm Mechanisation

Available Machinery and equipment's / implements

	Operations	Available Machinery and equipment's / implements	Proposed use	justification

Plant & Machinery proposed to be used or procured on outsourcing and on his own

	Operations	Plant & Machinery proposed to be used	Out sourcing / own purchase	Cost	justification

## 5.4.6. Harvesting and Fruit / Flower care management

### 5.4.6.1. Harvesting season- Across India

Citrus Fruit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Acid Lime		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓

### 5.4.6.2. Harvesting season- Across the project state /UT

District/ Production area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

### 5.4.6.3. Harvesting stage based on purpose and market (local/distant market):

Careful harvesting and handling is the key to success for getting desired results from post harvest treatments of citrus fruits. Post harvest quality and shelf life of fruits is becoming increasingly important aspect as the consumers expect availability of quality fruits throughout the year. It is important to harvest lime and lemon fruits only of proper size, peel color and internal quality ( juice content and acidity)

### 5.4.6.4. Harvesting technology and Fruit care management

Global best practices	(Mention source of publication with date/Year)	
As recommended by ICAR Institute/ CAU/SAU/SHU	Pre-harvest Management	--
	Maturity Index / determination Technique	Indices for maturity TSS content 6-7%, and juice content 50%.
	Devices	Mechanized Citrus packing line,
	Skills and training	ICAR-CCRI Nagpur affiliated with Agricultural skill council of India for conducting skill development training to stakeholders
	Time/ Period	200 hours
	Handling	Careful harvesting and handling is the key to success for good shelf life
	Containers	Plastic crates
	Others	CFB boxes for packaging
(Mention source of publication with date/Year)		

Relevant Photographs if any	
Action taken/proposed by the applicant	
Points of Deviation if any and justification	

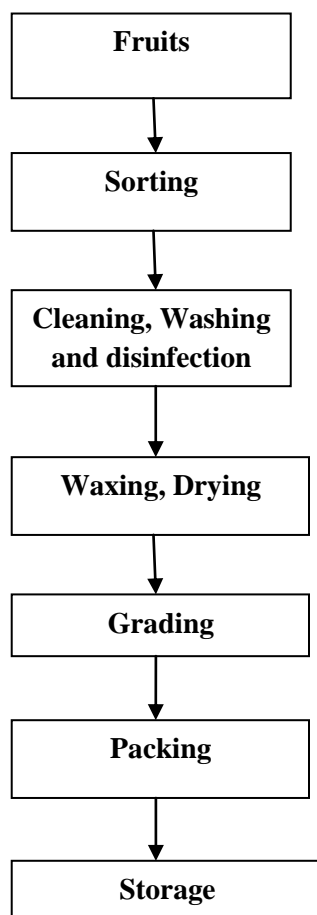
5.4.6.5.Expected Yield / Acre and for the project area in a Year:



5.5.	<b>Post-Harvest Management</b>	
------	--------------------------------	--

5.5.1. Post-Harvest infrastructure scenario in horticulture sector in the State and specially for the proposed crop / component

5.5.2.Product / Process Flow chart- Illustrative ( It should be crop and project specific)  
(Unidirectional)



Source: <http://www.fao.org/docrep/005/y4358e/y4358e04.htm#bm04.6>

### 5.5.3.Lay out/ Floor Plan of Post-harvest operations

1. Arrival Area
2. Sorting
3. De-sapping/De-latexing
4. De-handing
5. Cleaning / Washing
6. Grading
7. Pre-treatments (HW, waxing, chemical treatment, etc.)
8. Packing
9. Cold Storage
10. Transport

#### 5.5.4.Post-harvest operations

##### 1. Arrival Area

Activity	Recommended	Proposed practice	Remarks

##### 2.Pre-Cooling ( Also specify protocols to be followed)

Activity	Recommended	Proposed practice	Remarks
	Pre-cooling of acid lime at 13-14 °C with 90-95 % RH reduces losses of fruit during transit. Pre-cooling unit has been developed for forced-air cooling of limes packed in vented corrugated boxes.		

##### 4.Cleaning / Washing– manual/mechanised; model/make, size, capacity and protocols.

Activity	Recommended	Proposed practice	Remarks
	Minimum decay was recorded in fruit washed with chlorine solution (1000 ppm; .		

##### 5.Sorting and grading including manual/mechanised; model/make, capacity and protocols.

Activity	Recommended	Proposed practice	Remarks
	Grading of fruits on the basis of physical characteristics like weight, size, colour, shape, and freedom from diseases depending upon agro climatic conditions.		

##### 6.Pre-treatments (HW, waxing, chemical treatment, etc.) and protocols.

Activity	Recommended	Proposed practice	Remarks

##### 7.Packaging and Labelling

(including steps/ processes, norms, protocols, manual/mechanised; model/make, capacity, turn over / hour; palletisation; wooden/plastic / any other. In case of exports are you aware of compliance requirements as provided by APEDA-

[http://apeda.gov.in/apedaweb/site/six\\_head\\_product/FFV.htm](http://apeda.gov.in/apedaweb/site/six_head_product/FFV.htm))

Activity	Recommended	Proposed practice	Remarks
	Plastic (HDPE) crates, Jute bags of 15 kg capacity		

#### 9. Mode of Transport including the requirement of Refrigerated vans

	Recommended	Present status	Gap / Remarks
Transport method-	Plastic crates		
Local Market	Plastic (HDPE) crates, Jute bags of 15 kg capacity		
District Market	Plastic (HDPE) crates, Jute bags of 15 kg capacity		
Distant Market	Refrigerated van (13 to 14°C and 90-92 % RH)		
Exports	Refrigerated containers in ship (13 to 14°C and 90-92 % RH)		

#### 10. Storage Cold room and Cold Chain

Activity	Recommended	Proposed practice	Remarks
	Storage at 12 to 14°C and 90-92 % RH for acid lime/ lemon fruits		

#### 5.5.5. Post-harvest Infrastructure – Integrated Post-harvest Management

1. Type of project	New Project/ Expansion/Modernisation
2. Location of the Project	
3. Man power employed	

4. (On rolls and on contract)		
5. Business model -	Rental, Captive, Part of Supply chain service, mixed	
6. Components of project submitted		
	Infrastructure under the scheme	Tick mark
	1. Integrated PHM	
	2. Integrated Pack house	
	3. Pack House	
	4. Pre-cooling unit	
	5. Cold Room (Staging)	
	6. Refer van	
	7. Retail outlet	
7. Types of products to be handled	Frozen, chill, Mild chill Temperature zones	

Note: In case the project includes any of the post-harvest infrastructure units. Only the relevant details and data sheet should be part of the DPR.

Certificates to enclosed during Market and Financial viability stage and JIT:

1. For Civil Works: Chartered Engineer (Civil) Certificate- component wise cost break up for Civil Works.
2. For Plant & Machinery: Chartered Engineer (Mechanical) Certificate on component wise cost break up for Plant & Machinery showing basic cost and Taxes separately.

### 5.5.5.1.Integrated Pack house:

1. Rationale for the proposal
2. Stages / process flow chart.
3. Proposed project location:
4. Number of days proposed to be operational:
5. Raw Material:
  - a. Types/ Quality of raw material- Grades/ Specifications
  - b. Raw material availability and procurement: Details of own production if any and local production annually with 5 years data with future projections. Markets and farm areas of procurement and reliability. (Obtain past data from Local District Horticulture Officer. In the absence of scientific data, the authority can give estimated/projected data with stated assumptions)
  - c. Catchment area:

S.No	Location of Catchment (Cluster- Primary / Secondary)	Name of Village, Block, District	Commodities to be sourced	Qty to be sourced

- d. Quality control/ assurance /testing
6. Pack house/ Sorting and Grading unit:
  - e. Existing number of units, available capacity and utilisation in the project block, district and the State.
  - f. Products and services and projections.
  - g. Statutory requirements / licensing details if any.
7. Products, Bi products and services
  - h. Various products – Quality, specifications etc.
  - i. Annual output for the last 3 years in the project block, district and state.
  - j. Projections for 7 years.
  - k. Packing and labelling
8. Market :
  - a) Quality grades/ specifications/ kinds of products
  - b) Demand and Supply data for the products and services.
  - c) Existing / Proposed Market linkage
  - d) MOUs/ Contract documents / undertakings/ LoA
  - e) Target consumption centres/ key domestic markets
  - f) Export targets/ Plans if any
  - g) In case of export, details of volume to be exported / export destination / statutory norms of export destination should be provided in the DPR.
9. Business model for the unit.
10. Source of Technology
11. Pack house unit: Type and Lay out (show the drawing)
12. Technical standards-Civil infrastructure and Plant and Machinery, accessories: Refer NHB guidelines on Technical Standards

(Proposed Design, layout and Photographic evidence certified by chartered engineer is required to be submitted in case the project is considered for processing)

Plant & Machinery	Recommended technical standards	Proposed	Make	No.of units	Unit cost	Total cost

13. List of Manufacturers / Suppliers of Plant and Machinery (enclose quotations during Market viability and Financial viability stage)

Plant & Machinery	Manu- facturer	Offer product Technical Specifications	Compliance with the NHB standards	Quotation cost	Dealers location	Quotation is in possession of the applicant

14. Protocols

Activity	Recommended	Proposed practice	Remarks

15. Compliance to relevant BIS code and standards- Electrical, Mechanical- Yes/No.

16.Requirement and Availability of

- a. Managerial manpower
- b. Technical manpower
- c. Skilled manpower
- d. Un skilled manpower



## Reference Data Sheet

#	Component: Integrated Pack house	Description
1	Pack house Handling capacity	Specify total incoming volume of raw produce in MT/day.
2	Products to be handled	Describe the details of the products planned for value addition.
3	Area of the pack house	Specify the total Plinth area of the construction in m <sup>2</sup> .
4	Receiving Area (L x W x H)m	Provide the dimensions of the receiving, weighing and preliminary handling area.
5	Dimension of the building (L x W x H) m	Provide the total covered area of the building.
6	Handling Area (L x W x H)m	External dimensions of the designated sorting, grading, cleaning and packing area.
7	Roof Details	Provide the construction material and specifications of roof.
8	Outer walls and Flooring Details	Description of the outer walls and flooring of enclosed area (food grade materials).
9	Lighting - Internal and External	Type of lighting used (CFL/LED/Normal – total numbers and wattage).
10	Door/ Window Details	Number and Dimensions of openings - doors and windows.
11	Pest control details	Number and details of pest control used (air curtains, other equipment, etc.).
12	Fumigation Details	Specify the details of fumigation if used.
13	De-sapping tables	Specify use of de-sapping tables if used.
14	Mechanised Conveyor system & capacity	Dimensions of conveyor system – belt or roller based, and throughput handling capacity in tons/hour.
15	Washing and Drying machinery (if used)	Specify the details of throughput capacity/motors/pumps/belts used.
16	Power generating unit	Details of electric generator installed (kVA). If using alternate energy or hybrid systems, provide specifications.
17	Inclusion of Pre-cooling chamber in pack-house	Yes/No
18	Inclusion of staging cold-room in pack-house	Yes/No
19	Layout Drawing	Provide layout drawings of the complete pack house including pre-cooler and staging cold room.

### 5.5.5.2.Pack house:

1. Rationale for the proposal
2. Stages / process flow chart.
3. Proposed project location:
4. Number of days proposed to be operational:
5. Raw Material:
  - a. Types/ Quality of raw material- Grades/ Specifications
  - b. Raw material availability and procurement: Details of own production if any and local production annually with 5 years data with future projections. Markets and farm areas of procurement and reliability. (Obtain past data from Local District Horticulture Officer. In the absence of scientific data, the authority can give estimated/projected data with stated assumptions)
  - c. Catchment area:

S.No	Location of Catchment (Cluster- Primary / Secondary)	Name of Village, Block, District	Commodities to be sourced	Qty to be sourced

- d. Quality control/ assurance /testing
6. Pack house/ Sorting and Grading unit:
  - a. Existing number of units, available capacity and utilisation in the project block, district and the State.
  - b. Products and services and projections.
  - c. Statutory requirements / licensing details if any.
7. Products, Bi products and services
  - a. Various products – Quality, specifications etc.
  - b. Annual output for the last 3 years in the project block, district and state.
  - c. Projections for 7 years.
  - d. Packing and labelling
7. Market :
  - a) Quality grades/ specifications/ kinds of products
  - b) Demand and Supply data for the products and services.
  - c) Existing / Proposed Market linkage
  - d) MOUs/ Contract documents / undertakings/ LoA
  - e) Target consumption centres/ key domestic markets
  - f) Export targets/ Plans if any
  - g) In case of export, details of volume to be exported / export destination / statutory norms of export destination should be provided in the DPR.
8. Business model for the unit.
9. Source of Technology
10. Pack house unit: Type and Lay out (show the drawing)
11. Technical standards-Civil infrastructure and Plant and Machinery, accessories: Refer NHB guidelines on Technical Standards(Proposed Design, layout and Photographic evidence certified by charter engineer is required to be submitted in case the project is considered for processing)

Plant & Machinery	Recommended technical standards	Proposed	Make	No.of units	Unit cost	Total cost

13. List of Manufacturers / Suppliers of Plant and Machinery (enclose quotations during Market viability and Financial viability stage)

Plant & Machinery	Manu- facturer	Offer product Technical Specifications	Compliance with the NHB standards	Quotation cost	Dealers location	Quotation is in possession of the applicant

14. Protocols

Activity	Recommended	Proposed practice	Remarks

15. Compliance to relevant BIS code and standards- Electrical, Mechanical- Yes/No.

16.Requirement and Availability of

- e. Managerial manpower
- f. Technical manpower
- g. Skilled manpower
- h. Un skilled manpower

17.Data sheet if any.

### 5.5.5.3.Pre-cooling unit

1. Rationale for the proposal
2. Stages / process flow chart.
3. Proposed project location:
4. Number of days proposed to be operational:
5. Raw Material:
  - a. Types/ Quality of raw material- Grades/ Specifications
  - b. Raw material availability and procurement: Details of own production if any and local production annually with 5 years data with future projections. Markets and farm areas of procurement and reliability. (Obtain past data from Local District Horticulture Officer. In the absence of scientific data, the authority can give estimated/projected data with stated assumptions)
  - c. Catchment area:

S.No	Location of Catchment (Cluster- Primary / Secondary)	Name of Village, Block, District	Commodities to be sourced	Qty to be sourced

- d. Quality control/ assurance /testing
6. Pre-cooling unit:
  - a. Existing number of units, available capacity and utilisation in the project block, district and the State.
  - b. Products and services and projections.
  - c. Statutory requirements / licensing details if any.
7. Products, Bi products and services
  - a. Various products – Quality, specifications etc.
  - b. Annual output for the last 3 years in the project block, district and state.
  - c. Projections for 7 years.
  - d. Packing and labelling
7. Market :
  - a) Quality grades/ specifications/ kinds of products
  - b) Demand and Supply data for the products and services.
  - c) Existing / Proposed Market linkage
  - d) MOUs/ Contract documents / undertakings/ LoA
  - e) Target consumption centres/ key domestic markets
  - f) Export targets/ Plans if any
  - g) In case of export, details of volume to be exported / export destination / statutory norms of export destination should be provided in the DPR.
8. Business model for the unit.
9. Technology / Source/ Company/Make
10. Pre-cooling unit: Type and Lay out (show the drawing)
11. Technical standards-Civil infrastructure and Plant and Machinery, accessories: Refer NHB guidelines on Technical Standards (Proposed Design, layout and Photographic evidence certified by charter engineer is required to be submitted in case the project is considered for processing)

Plant & Machinery	Recommended technical standards	Proposed	Make	No.of units	Unit cost	Total cost

12. List of Manufacturers / Suppliers of Plant and Machinery (enclose quotations during Market viability and Financial viability stage)

Plant & Machinery	Manu- facturer	Offer product Technical Specifications	Compliance with the NHB standards	Quotation cost	Dealers location	Quotation is in possession of the applicant

13.Requirement and Availability of

- i. Managerial manpower
- j. Technical manpower
- k. Skilled manpower
- l. Un skilled manpower

### Reference Data Sheet

#	Component: Pre-cooling unit	Description
1	Produce to be pre-cooled	Name the produce types to be handled.
2	Unit Package load	Specify packaging used- Pallet, Boxes, others.
3	Pre-cooler volumetric capacity	Provide pre-cooler physical volume in cubic meters. Specify the (L x B x H) of pre-cooling unit in metres
4	Cooling System used	Describe type of precooling - forced-air cooling, hydro-cooling / icing / vacuum cooling / room cooling.
5	Temperature and RH levels.	Temperature in degree Celsius and relative humidity in % designed for.
6	Pull down time (batch time)	Time duration per batch to bring the initial product temperature to the storage temperature.
7	No of batches planned in a day	List the number of batches planned per day.
8	Refrigeration Load	Estimated refrigeration load in kW.
9	Insulating material used	Type of insulating material, thickness and 'U Value'.
10	Evaporator/Chiller make	Maker name and model of the evaporator/chiller unit.
11	Air flow & static pressure.	Pre-cooler air flow in cubic meter per hour and static pressure in kPa.
12	No of fans	Specify the quantity of evaporator fans and connected motor power.
13	Water pump capacity	Specify the water flow in m <sup>3</sup>
14	Motor rating	Specify the pump motor capacity in kW.
15	Make of condensing unit	Maker name and model of condensing unit.
16	Refrigeration of condensing	Specify the capacity of condensing unit in kW.
#	Component: Pre-cooling unit	Description
	Unit	
17	Condensing unit type	Specify the whether it is air cooled or water cooled.
18	Door details	Dimensions, insulation material and thickness of the door.
19	Controls Used	Specify the electronic controller for room temperature and relative humidity monitoring & control.
20	Refrigerant used	Technical name of refrigerant.
21	Total connected Power	Specify the total connected power in kW.
22	Power generating unit	Details of electric generator used (kVA). Capacity must be sufficient for operating pre-cooler and staging cold room.
23	Layout Drawing	Provide layout drawings of the pre-cooling unit including pack-house and staging cold room.

#### 5.5.5.4.Cold room

1. Rationale for the proposal
2. Stages / process flow chart.
3. Proposed project location:
4. Number of days proposed to be operational:
5. Raw Material:
  - a. Types/ Quality of raw material- Grades/ Specifications
  - b. Raw material availability and procurement: Details of own production if any and local production annually with 5 years data with future projections. Markets and farm areas of procurement and reliability. (Obtain past data from Local District Horticulture Officer. In the absence of scientific data, the authority can give estimated/projected data with stated assumptions)
  - c. Catchment area:

S.No	Location of Catchment (Cluster- Primary / Secondary)	Name of Village, Block, District	Commodities to be sourced	Qty to be sourced

- d. Quality control/ assurance /testing
6. Cold room unit:
  - a. Existing number of units, available capacity and utilisation in the project block, district and the State.
  - b. Products and services and projections.
  - c. Statutory requirements / licensing details if any.
7. Products, Bi products and services
  - a. Various products – Quality, specifications etc.
  - b. Annual output for the last 3 years in the project block, district and state.
  - c. Projections for 7 years.
  - d. Packing and labelling
7. Market :
  - h) Quality grades/ specifications/ kinds of products
  - i) Demand and Supply data for the products and services.
  - j) Existing / Proposed Market linkage
  - k) MOUs/ Contract documents / undertakings/ LoA
  - l) Target consumption centres/ key domestic markets
  - m) Export targets/ Plans if any
  - n) In case of export, details of volume to be exported / export destination / statutory norms of export destination should be provided in the DPR.
8. Business model for the unit.
9. Technology / Source/ Company/Make
10. Pre-cooling unit: Type and Lay out (show the drawing)
11. Technical standards-Civil infrastructure and Plant and Machinery, accessories: Refer NHB guidelines on Technical Standards (Proposed Design, layout and Photographic evidence certified by charter engineer is required to be submitted in case the project is considered for processing)

Plant & Machinery	Recommended technical standards	Proposed	Make	No.of units	Unit cost	Total cost

### **Reference Data Sheet**

#	Component: Staging Cold Room	Description
1	Products to be stored	Name the produce types to be precooled and stored.
2	Temperature and RH levels.	Temperature in degree Celsius and relative humidity in % designed for.
3	Staging cold room dimension	Dimensions of the insulated cold room (L x B x H) in mtrs.
4	Insulation used	Type of insulating material and thickness along with 'U Value'.
5	Refrigeration Load	Total refrigeration load in kW.
6	Evaporator/Air-cooler make	Maker name and model of the evaporator/air-cooler unit.
7	Evaporator construction	Details for heat exchange coil, fans.
8	Air flow	Air cooler air flow in cubic meter per hour.
9	No of fans	Quantity of evaporator fans and connected motor power.
10	Make of condensing unit	Maker name and model of condenser unit.
11	Refrigeration of condensing Unit	Refrigeration Capacity of condensing unit in kW.
12	Door details	Provide the dimensions, insulation material and thickness of the door.
13	Controls Used	List the electronic controller for room temperature and relative humidity monitoring & control.
14	Refrigerant used	Technical name of refrigerant.
15	Total connected Power	Total electric Load in kW.
16	Layout Drawing	Provide layout drawings of the staging cold room unit including pre-cooler and pack-house.

All mandatory rules & regulations (BIS, ISO, IS etc.) relevant to the item must be complied with.

12. List of Manufacturers / Suppliers of Plant and Machinery (enclose quotations during Market viability and Financial viability stage)

Plant & Machinery	Manu- facturer	Offer product Technical Specifications	Compliance with the NHB standards	Quotation cost	Dealers location	Quotation is in possession of the applicant

### 13.Requirement and Availability of

- Managerial manpower
- Technical manpower
- Skilled manpower
- Un skilled manpower



## DOCUMENTS FOR REFERENCE

Various codes and Standards of measures are listed for reference here

---

### ***Electrical: Bureau of Indian Standards (BIS)***

#	Title	Reference
1.	PVC Insulated cables (light duty) for working voltage up to 1100 volts	IS 694-1977 Part I & II
2.	PVC Insulated cables (heavy duty) for working voltage up to 1100 volts	IS 1554-1976 Part-I
3.	PVC Insulated cables for voltage 3.3 KV to 11 KV	IS 1554-1976 Part-II
4.	Specification of Polyurethane insulated PVC sheathed heavy duty electrical cables, voltage not exceeding 1100 V	IS 5959-1970 Part-I
5.	Specification of Polyurethane insulated PVC sheathed heavy duty electrical cables, voltage 3.3 KV to 11 KV	IS 5959-1970 Part-II
6.	Guide for making of insulated conductors	IS 5578-1970
7.	Code of practice for installation and maintenance of paper insulated power cables	IS 1255-1967
8.	Code of practice for earthing	IS 3043-1966
9.	Guide of practice for installation and maintenance of induction motors	IS 5216-1969
10.	Code of practice for installation and maintenance of AC induction motor starters	IS 5214-1969
11.	Code of practice for installation and maintenance of AC induction motors	IS 900-1965
12.	Code of practice for installation and maintenance of switchgears	IS 372-1975
13.	Code of practice for installation and maintenance of transformers	IS 1886-1967
14.	Code of practice for electrical wiring installation, voltage not exceeding 650V	IS 732-1963
15.	Code of practice for electrical wiring installation (system voltage exceeding 650V)	IS 2274-1963
16.	Guide for testing three-phase induction Motor	IS 4029-1967
17.	Three Phase induction Motors	IS 325
18.	Electrical measuring instruments and there accessories	IS 248
19.	Current transformers	IS 2705
20.	Dimensions of slide rails of electric motors	IS 2968
21.	Flexible Steel conduits for electric wiring	IS 3480
22.	Air-Break Switches	IS 4064
23.	Motor Starters for voltage not exceeding 1000 Volts	IS 8544
24.	Conduits for electrical installation	IS 9537
25.	Selection, installation & maintenance of Transformers	IS 10028
26.	Selection, installation & maintenance of switch gear & control gear	IS 10118
27.	National Electrical Codes	SP: 30

---

### **Mechanical: Bureau of Indian Standards (BIS)**

#	Title	Reference
1.	Safety codes for Mechanical Refrigeration	IS 660
2.	Code of practice for thermal insulation of cold storages	IS 661
3.	Code of practice for application of polyurethane insulation by in-situ pouring method	IS 13205
4.	Rigid phenolic foams for thermal insulation	IS 13204
5.	Application for spray applied insulation code of practice – Polyurethane / Poly-isocyanurate	IS 12432 Part-III
6.	Specifications for preformed rigid polyurethane (PUR) and poly isocyanurate (PIR) foams for thermal insulation	IS 12436
7.	Expanded polystyrene for thermal insulation	IS 4671
8.	Code for practice for fire safety of industrial buildings: General Storage and warehousing including cold storage	IS 3594
9.	Anhydrous ammonia	IS 662
10.	Industrial Bitumen	IS 702
11.	Gunmetal gate, globe and check valve for general purpose	IS 778
12.	Ball Valves including floats for water supply purposes	IS 1703
13.	Mild Steel Tubes, tubular and other wrought steel pipes fittings	IS 1239
14.	Steel Plates for pressure vessels used at moderate and low temperature	IS 2041
15.	Color code for identification of pipe lines	IS 2379
16.	V-belts for industrial purposes	IS 2494
17.	Hot dip galvanizing of iron and steel	IS 2629
18.	Code for unfired pressure vessels	IS 2825
19.	Glossary of terms for safety and relief valves	IS 3233
20.	Steel for pressure vessels and welded structures	IS 3503
21.	Steel tubes for mechanical and general engineering purposes	IS 3601
22.	Steel for general structural purposes	IS 2062
23.	Steel tubes for structural purposes	IS 1161
24.	Specifications for steel doors, windows and ventilators	IS 1038
25.	Code of practice for design loads (other than earthquake) for building and structures	IS 875 Part I to V
26.	Criteria for earthquake resistant design of Structures	IS 1893
27.	Specifications for cold formed light gauge structural steel sections	IS 811
28.	Code of practice for use of Steel Tubes in general building construction	IS 806
29.	Code of practice for use of cold form light gauge steel structural members in general building construction	IS 801
30.	Code of practice for general construction in steel	IS 800
31.	Glossary of terms used in refrigeration and air-conditioning	IS 3615
32.	Pressure and vacuum gauges	IS 3624
33.	Safety Codes for scaffolds and ladders	IS 3696
34.	Formed ends for tanks and pressure vessels	IS 4049
35.	Shell an tube type heat exchangers	IS 4503
36.	Code of safety for ammonia	IS 4544
37.	Expanded polystyrene for thermal insulation purposes	IS 4671
38.	Hot-dip Zinc coating on steel tubes	IS 4736
39.	Units and symbol for refrigeration	IS 4831
40.	HDPE pipes for potable water supplies, sewage and industrial effluents	IS 4984

#	Title	Reference
42.	Specification for sprayed aluminum and zinc coating on iron and steel surfaces	IS 5905
43.	Steel Pipe flanges	IS 6392
44.	Injection molded HDPE fittings for portable water supplies	IS 8008
45.	Vertical steel ladders	IS 8172
46.	Treatment of water for industrial cooling systems	IS 8188
47.	Nominal sizes of valves	IS 9520
48.	Selection, use and maintenance of respiratory protective devices	IS 9623
49.	Polythene floats for ball valves	IS 9762
50.	General purpose ball valves	IS 9890
51.	SI units	IS 10005
52.	Recommendations for general pipeline welding	IS 10234
53.	Ammonia valves	IS 11132
54.	Finned type heat exchanger for room air conditioner	IS 11329
55.	Refrigeration oil separators	IS 11330
56.	MS tubes for vertical condenser	BS 3059
57.	Specification for metal air duct	IS 655
58.	Specification for galvanized steel sheet	IS 227
59.	Specifications for Performed Rigid Polyurethane	IS 12436 -1988
60.	Glossary of Terms used in Refrigeration& Air conditioning	IS 3615: 2007
61.	Code of Practice for Fire Safety of Ware housing including cold storages	As per Relevant IS specification
62.	Food Hygiene – General Principle – Code of Practice	IS 2491-1998
63.	Self-blasted lamps for general lighting service	IS 15111 Part 1 and 2

***Publication by International Societies and Associations in relation to Building works***

#	Title	Reference
1.	Building Code	IBC 2006
2.	Design Code	AISC 2005
3.	Tolerance Code	MBMA 2002
4.	Purlin Code	AISI 2001
5.	Welding Code	ANS 2006
6.	Wind Load & Seismic Load	IS 875 & IS A893-2002&Relevant Codes

## 1.Introduction

### REEFER CONTAINER

---

#### ***Component Definition***

A reefer container describes a multi-modal insulated container box with integrated refrigeration equipment. Unlike fixed body trucks, reefer containers can be released from the trailer chassis and handled as a unit load or be stationed on site for localised use as a temporary temperature controlled store pending subsequent operations. This allows the prime motive and/or trailer to be utilised for other carriage.

---

#### ***Component Description***

A cost norm of Rs 6 lakh per 9 MT (20 foot container) as defined in code ISO/ TC 104, ISO 668:2013, ISO Code 22R1, 45R1 is applied as part of add-on components.

The component name “Reefer Container” is a temperature controlled unit whose insulating body is made of prefabricated insulating panels. The container is designed to be liftable for mounting on or unloading off a carrier-bed and has both forklift and top lift tolerant design. It has one fixed door at the end opposite to the reefer unit. The air transit pattern is bottom-up from floor to ceiling and the floor section is designed to allow air to circulate under the cargo. A fresh air intake system is in-built making it most suitable for horticulture produce.

Reefer container shall be designed for the full range of standard temperatures ranging from -25 degree Celsius to +25 degree Celsius. There shall be provision for temperature recording, capable to program set-point for either supply air or return air. As this equipment is a removable unit on a transport chassis, the corner posts must have locking facility to secure the container on its carrier.

Such container designs are of the same standard use for export and import of horticultural produce by sea and the design is considered optimal for long haul of perishables. All applicable safety norms shall apply to reefer containers.

---

#### ***Remarks/ Recommendations***

The subsidy is intended to incentivise use of reefer containers in domestic cold-chain and beneficiary should be advised not to view this as an option to procure containers for international haulage.

There are multiple advantages to utilising such reefer containers, some of which are enumerated-

1. Dimensions are optimised for standardised pallet carriage; thereby allowing for standardisation in handling of perishable cargo in cold stores and in transit.
2. Available on demand as prefabricated units (in use globally) and hence is delinked with fabrication (delivery delays) as in case of fixed body reefer trucks.
3. Design incorporates fresh air venting which is necessary for perishable crops under long haul movement, for e.g. Himachal to Bangalore, a road trip of more than 9 days (equivalent to a trans-Atlantic crossing by ship). Venting also helps minimise ethylene build up (fruits and vegetables).



4. Design allows for multi-modal utility – by road / rail / ship. This will help develop and optimise goods movement by rail or coastal shipping without undue handling of goods.
5. Designed for plug-in electricity source and can be used as mini storage at various locations, pending further activity.
6. Refrigerated body can be dismounted / delinked from primary vehicle, freeing the prime motive or vehicle for other gainful work or other carriage options.
7. There are other design aspects that allow for innovative application of this component.

The reefer containers have computerised cooling system controls, enabling precise temperature control which is important in case of long haulage of horticulture goods. The air ventilation port allows for high respiring perishable goods to continue to have life sustaining oxygen, especially when in-transit in enclosed space for longer than 3 days. These ventilation ports are adjustable to suit the varied demand pattern of fresh fruits and vegetables. It must be noted, that lack of oxygen and build-up of respired CO<sub>2</sub> cause demise of horticulture goods when enclosed over long periods.



Photographs sourced from NCCD members



2. Rationale for the proposal
3. Product / Process flow chart.
4. Proposed project location:
5. Number of days proposed to be operational:
6. Produce / Raw Material:
  - a. Types/ Quality of raw material- Grades/ Specifications
  - b. Raw material availability and procurement: Details of own production if any and local production annually with 5 years data with future projections. Markets and farm areas of procurement and reliability. (Obtain past data from Local District Horticulture Officer. In the absence of scientific data, the authority can give estimated/projected data with stated assumptions)

- c. Catchment area:

S.No	Location of Catchment (Cluster- Primary / Secondary)	Name of Village, Block, District	Commodities to be sourced	Qty to be sourced

- d. Quality control/ assurance /testing

7. Enterprise:

- a. Existing number of units, available capacity and utilisation in the project block, district and the State.
- b. Products and services and projections.
- c. Statutory requirements / licensing details if any.

7. Market :

- h) Quality grades/ specifications/ kinds of products
- i) Demand and Supply data for the products and services.
- j) Existing / Proposed Market linkage
- k) MOUs/ Contract documents / undertakings/ LoA
- l) Target consumption centres/ key domestic markets
- m) Export targets/ Plans if any
- n) In case of export, details of volume to be exported / export destination / statutory norms of export destination should be provided in the DPR.

8. Business model for the unit.

9. Source of Technology

10. Civil infrastructure, Plant and Machinery. Design, layout and Photographic evidence certified by chartered engineer is required to be submitted in case the project is considered for processing.

Facility / utility	Recommended	Proposed.	Remarks

11. List of Manufacturers / Suppliers of Plant and Machinery (enclose quotations during Market viability and Financial viability stage)

Plant & Machinery	Manufacturer	Offer product Technical Specifications	Compliance with the NHB standards	Quotation cost excluding Taxes	Dealers location	Quotation is in possession of the applicant

12. Skilled Manpower availability:

13. Data sheet:

### Reference Data Sheet

#	Component: Reefer Container	Description
1	Container dimensions	20 standard: 8' x 8.5' x 20', 27 to 28 cum
2	Insulation details	Thermal Conductivity value / mm
3	Tare weight	kgs
4	Gross weight	kgs
#	Component: Reefer Container	Description
5	Temperature recording	type
6	GPS System	Must be fitted
7	Refrigeration capacity	kW
8	Refrigerant used	Technical name of refrigerant
9	Fresh air exchange	Describe system fitted
10	Diesel/electric auto-switching	Describe dual power unit
11	Air flow cum/hr (CFM)	Evaporator air flow in CFM
12	Temperature control precision +/- °C	Precision in controls in °C
13	Name of Manufacturer	
14	Year of manufacture	
15	Any design enhancement	Describe design changes if any

Codes and References		
1	ISO/ TC 104	Freight containers
2	ISO 668:2013	Classification, dimensions and ratings
3	ISO/NP 1161:1990	Corner fittings
4	ISO 1496/2 : 1996	Specification and testing
5	ISO Code 22R1, 45R1	Size of container
6	ISO 6346: 1995	Coding, Identification and Marking
7	ISO-14001:2004	Environmental Management
8	ISO 1496/2	Performance test of thermal appliances

All mandatory rules & regulations (BIS, ISO, IS etc.) relevant to the item must be complied with.

## Retail outlet

### 1.Introduction:

#### RETAIL SHELF

---

##### ***Component Definition***

The Retail Shelf equipment's are temperature and/or humidity controlled cabinets or shelves that help in merchandising of fresh horticulture produce by maintaining the on-shelf quality of fruits and vegetables.

---

##### ***Component Description***

A maximum admissible cost norm of Rs 10 lac per establishment is applicable for a Retail shelf as part of add on components for credit linked subsidy. This does not limit the establishment from utilising more retail shelves as per requirement or from sourcing equipment with higher costs or options.

The Component name "Retail Shelf" can consist of individual items such as:

1. Multi-decks
2. Small Multi-decks
3. Roll In decks
4. Vertical Decks
5. Specialised cool shelving
6. Associated refrigeration and humidification equipment.

All applicable safety and performance norms shall apply to Retail Shelf component.

2. Rationale for the proposal
3. Product / Process flow chart.
4. Proposed project location:
5. Number of days proposed to be operational:
6. Produce / Raw Material:
  - a. Types/ Quality of raw material- Grades/ Specifications
  - b. Raw material availability and procurement: Details of own production if any and local production annually with 5 years data with future projections. Markets and farm areas of procurement and reliability.
  - c. Produce/ Raw material quality and assurance testing
7. Enterprise:
  - a. Existing number of units, available capacity and utilisation in the project block, district and the State.
  - b. Products and services and projections.
  - c. Statutory requirements / licensing details if any.
7. Market :
  - o) Quality grades/ specifications/ kinds of products
  - p) Demand and Supply data for the products and services.
  - q) Existing / Proposed Market linkage
  - r) MOUs/ Contract documents / undertakings/ LoA
  - s) Target consumption centres/ key domestic markets



- t) Export targets/ Plans if any
  - u) In case of export, details of volume to be exported / export destination / statutory norms of export destination should be provided in the DPR.
8. Business model for the unit.
  9. Source of Technology
  10. Civil infrastructure, Plant and Machinery. Design, layout and Photographic evidence certified by chartered engineer is required to be submitted in case the project is considered for processing.

Facility / utility	Recommended	Proposed.	Remarks

11. List of Manufacturers / Suppliers of Plant and Machinery (enclose quotations during Market viability and Financial viability stage)

Plant & Machinery	Manu- facturer	Offer product Technical Specifications	Compliance with the NHB standards	Quotation cost excluding Taxes	Dealers location	Quotation is in possession of the applicant

12. Requirement and Availability of

- e. Managerial manpower
- f. Technical manpower
- g. Skilled manpower
- h. Un skilled manpower

13. Data sheet:



Representative Photographs from www

### Reference Data Sheet

#	Component: Retail Shelf	Description
1	Name of Manufacturer	Provide the name of manufacturer and model.
2	Type	Specify the kind of Retail Shelf i.e. Multi-decks, Small Multi-decks, Roll In's.
3	Produce to be handled	Name types of produce to be handled
4	Capacity	Storable volume of fresh products the shelf can store in m <sup>3</sup> .
5	Dimension external	Specify the floor area occupied by the retail and height in mtr
6	Electronics	Specify energy saving electronics and the automatic cut-off/start are provided.
7	Temperature Range	Specify the operating Temperature Range of the Retail Shelf as specified by the Manufacturer.
8	RH control	Provide details of RH controls
9	Lighting system	Provide details and kW of lights used
10	Total Refrigeration capacity	Provide the capacity of refrigeration unit of the shelf in kW.
11	Refrigerant used	Provide the technical name of refrigerant.
12	Energy consumption	Total power consumption of the shelf in kW.
13	Years in business	Provide details of retail shop, years in business, annual sales volume, etc.

5.6	<b>Marketing</b>
-----	------------------

#### 5.6.1.Connectivity of project site and produce

1. Road connectivity	Distance
a. National Highway	
b. State Highway	
c. Fright corridor	
d. Quadri lateral	
2. Rail connectivity	
3. Air connectivity	

#### 5.6.2.Nearest produce Assembling / Aggregation unit/ place if any

#### 5.6.3.Existing Market Institutions – Agri.Produce Market Committees, .....

- a) Near to Project site
- b) Within the District / Neighbourhood districts
- c) Within the State
- d) In Adjacent State

#### 5.6.4.Alternative Marketing strategies;

- a. Pre-harvest contract
- b. On Farm Marketing
- c. Retail Marketing
- d. Wholesale marketing
- e. Online Marketing
- f. Exports

#### 5.6.5.Traceability Record/ system proposed if any for packs.

#### 5.6.6.Proposed value chain / method of Marketing by the Applicant

<b>5.7</b>	<b>Value Addition/ Processing</b>
------------	-----------------------------------

Potential for the processing of crop produce / commodity and facilities / infrastructure available

	Processing product (s)	Infrastructure / Processing units available	Capacity	% capacity utilisation	Remarks

<b>6</b>	<b>Technology providers</b>
----------	-----------------------------

6.1.Research Institute (s) [ ICAR/CAU/SAU/SHU etc.] providing / from which technical details are ascertained

6.2. Experts-whose services are availed -**Crop expert / Subject Matter Specialist (SMS) and other experts consulted DPR preparation.**

Crop Expert	Name of Horticulturist/ Crop Expert	
(Mandatory)	Current profession:	
	Educational Qualification and University passed out	
	Registration Number if any	
	Permanent Address:	
	Contact Number:	
	Email id	
Hi Tech Expert	Name of Expert	
(Desirable)	Current profession:	
	Educational Qualification and University passed out	
	Registration Number if any	
	Permanent Address:	
	Contact Number:	
	Email id	
Post-Harvest Management Expert (Mandatory)	Name of PHM Expert	
	Current profession:	
	Educational Qualification and University passed out	
	Registration Number if any	
	Permanent Address:	
	Contact Number:	
	Email id	
Cold storage / Infra Expert / Charter Engineer (Mandatory in case of Cold chain component)	Name of Expert	
	Current profession:	
	Educational Qualification and University passed out	
	Registration Number if any	
	Permanent Address:	
	Contact Number:	
	Email id	
Market Expert	Name of Expert	
(Desirable)	Current profession:	
	Educational Qualification and Univ.	
	Registration Number if any	
	Permanent Address:	
	Contact Number:	
Project Finance	Name of Expert	
(Mandatory)	Current profession:	
	Educational Qualification and University passed out	
	Registration Number if any	
	Permanent Address:	
	Contact Number:	
	Email id	

### 6.3. Agri-Business Incubators / Extension / Advisory services

1. Contact person address for Advisory / Extension/ Incubator services available on the said crop specific ICAR institution: Provide the details.

ICAR Institute / NRC/ Directorate contact Person for Extension / Advisory/ Business Incubatory services (Mandatory)	Designation of Horticulturist/ Crop Expert	
	Name of the Contact person	
	Postal Address	
	Postal PIN code	
	Contact Tel:	
	Contact Mobile Number:	
	Email id	

2. List of Incubators / Extension / Advisory service nearest to the project.
3. If any assistance is taken from the incubators, details

<b>7</b>	<b>Food Safety – With / Without Good Agricultural Practices Certification</b>
----------	---

7.1.	GAP	Optional
	Whether the applicant proposes to undertake Good Agricultural Practices?	Yes/No
	If Yes. What brand / kind GAP – Provide details of brand	
	Provide Certifying Agency details and contact person	
	NABL lab whose services are proposed to be availed to assure compliance with regard to pesticide / chemical residue.	

## 7.2.FOOD SAFETY MEASURES

### 7.2.1.Pre-Planting Measures

Activity	Action taken /Proposed to be in the project
1. Site selection Land or site for fruits and vegetable production should be selected on the basis of land history, previous manure applications and crop rotation.	
a) The field should be away from animal housing, pastures or barnyards.	
b) Farmers should make sure that livestock waste should not enter the produce fields via runoff or drift.	
2. Manure handling and field application Livestock manure can be a valuable source of nutrients, but it also can be a source of human pathogens if not managed correctly.	
a) Proper and thorough composting of manure, incorporating it into soil prior to planting, and avoiding top-dressing of plants are important steps toward reducing the risk of microbial contamination.	
3. Manure storage and sourcing	
a) Manure should be stored as far away as practical from areas where fresh produce is grown and handled.	
b) Physical barriers or wind barriers should be erected to prevent runoff and wind drift of manure.	
c) Manure should be actively compost so that high temperature achieved by well-managed, aerobic compost can kill most harmful pathogens.	
4. Timely application of manure Manure should be applied at the end of the season to all planned vegetable ground or fruit acreage, preferably when soils are warm, non-saturated, and cover-cropped. If manure is being applied at the start of a season, then the manure should be spread two weeks before planting, preferably to grain or forage crops.	



5. Selection of appropriate crop Farmers should avoid growing root and leafy crops in the year that manure is applied to a Field. Manure should be applied to perennial crops in the planting year only. The long period between application and harvest will reduce the risks.	
--	--

### 7.2.2. Production Measures

1. Irrigation water quality Ideally, water used for irrigation or chemical spray should be free from pathogen. However, potable water or municipal water is not feasible for extensive use for crop production.	
a) Hence, surface water used for irrigation should be quarterly tested in laboratory for pathogen.	
b) Farmers can filter or use the settling ponds to improve water quality.	
c) Fruit and vegetable crops should not be side dressed with fresh or slurry manure. If side dressing is required, well composted or well-aged (greater than one year) manure should be used for the application.	
2. Irrigation methods	
a) Drip irrigation method should be used, whenever possible to reduce the risk of crop contamination because the edible parts of most crops are not wetted directly.	
b) Plant disease levels also may be reduced and water use efficiency is maximized with this method.	
3. Field sanitation and animal exclusion	
a) Farmers should stay out of wet fields to reduce the spread of plant or human pathogens.	
b) Tractors, plant, machinery and equipments that were used in manure handling should be cleaned prior to entering produce fields.	
c) Animals, including poultry or pets should not be allowed to roam in crop areas, especially close to harvest time.	
4. Worker facilities and hygiene	
a) Farmers should get proper training to make them understand the relationship between food safety and personal hygiene. These facilities should be monitored and enforced.	
b) Ideally, farm workers should be provided clean, well-maintained and hygienic toilet facilities around	

the farming areas separately for the male and female.	
---	--

### 7.2.3.Harvest

1. Clean harvest aids	
a) Bins and all crop containers have to be washed and rinsed under high pressure. All crop containers should be sanitized before harvest.	
b) Bins should be properly covered, when not in use to avoid contamination by birds and animals.	
2. Worker hygiene and training	
a) Good personal hygiene is particularly important during the harvest of crops. Sick employees or those with contaminated hands can spread pathogens to produce.	
b) Employee awareness, meaningful training and accessible restroom facilities with hand wash stations encourage good hygiene.	

### 7.2.4.Post-Harvest Handling

1. Worker hygiene	
a) Hands can contaminate fresh fruits and vegetables with harmful microbes	
b) Packing area should be cleaned and sanitized.	
c) Supply liquid soap in dispensers, potable water, and single-use paper towels for hand washing.	
d) Packing area should be cleaned and sanitized. Supply liquid soap in dispensers, potable water, and single-use paper towels for hand washing.	
e) Workers should be properly educated about the importance of restroom use and proper hand washing.	
f) Encourage proper use of disposable gloves on packing lines.	
g) Sick employee should not be given food-contact jobs.	
2. Monitor wash water quality	
a. Potable water should be preferably used in all washing operations.	
b. Clean water should be maintained in dump tank by sanitizing and changing water regularly.	

c. Use chlorinated water and other labeled disinfectants to wash fresh produce.	
<b>3. Sanitize packinghouse and packing operations</b>	
a. Loading, staging, and all food contact surfaces should be cleaned and sanitized at the end of each day.	
b. Exclude all animals, especially rodents and birds from the packinghouse.	
c. Wash, rinse and sanitize the packing line belts, conveyors, and food contact surfaces at the end of each day to avoid buildup of harmful microorganisms.	
d. Packaging material should be stored in a clean area	
<b>4. Pre-cooling and cold storage</b>	
a. After harvesting, fruits and vegetables should be quickly cooled to minimize the growth of pathogens and maintain good quality.	
b. Water bath temperature for cooling should not be more than 10F cooler than the produce pulp temperature.	
c. Refrigeration room should not be overloaded beyond cooling capacity.	
<b>5. Transportation of produce from farm to market</b>	
a) Proper cleanliness of the transportation vehicles should be ensured before loading.	
b) Farmers have to make sure that fresh fruits and vegetables are not shipped in trucks which have carried live animals or harmful substances.	
c) If these trucks must be used, they should be washed, rinsed, and sanitized them before transporting fresh produce.	
d) For traceability norms, it must be ensured that each package leaving the farm can be traced to field of origin and date of packing	

Source: TNAU

[http://agritech.tnau.ac.in/gap\\_gmp\\_glp/gap\\_fresh%20\\_%20fruits%20&%20veg.html](http://agritech.tnau.ac.in/gap_gmp_glp/gap_fresh%20_%20fruits%20&%20veg.html)

**8. Innovation if any**

## **9.Profitability of the project (Horti-business): Critical observations of Applicant**

10	Checklist
----	-----------

### Check list for Detail Project Report (DPR)

		Mandatory Information	Document / Evidence *	Tick Mark
	<b>Project at a Glance</b>	√		
1	<b>About the Applicant /Promoter</b>	√		
2	<b>Details of benefits availedby the Applicant / Promoter</b>	√		
3	<b>About Project -Name, rationale, Management and Description</b>			
	1. Name of Project, Activity, Objectives and expected Outcomes	√		
	2. Rationale / Justification for the project	√		
	3. Site/ Land details- RoR/ Ownership / Registration of lease/ map etc.	√	Certified Land revenue documents	
	4. Location of the Project- Identification	√		
	5. Current usage of land of proposed Project Area	√		
	6. Current infrastructure and assets possessed by the Applicant:	√		
	7. Lay out plan of the project	√	Lay out Plan	
	8. Conversion of Land Use (CLU)	√	Certificate from competent authority	
	9. Whether project site is part of production belt / cluster / hub	√		
	10. Rationale for the location of the project	√		
	11. Compliance of project site for food safety	√		
	12. Components / Activities of the Project with justification	√		
	13. Operations planning	√		
	14. Month wise operational chart / Implementation schedule	√		
	15. Backward and Forward linkages.	√		
	16. Manpower (Skilled & Unskilled labour etc.) availability	√		
	17. Infrastructure (Power, Fuel, Water, Plant and Machinery, connectivity, Effluents treatment etc.)- Required,	√		

	Already available, Gaps and the management.			
	18. Employment generation	√		
	19. SWOT Analysis	√		
	20. Monitoring and evaluation	√	Certificate	
4	<b>NHB Scheme under which the project is proposed with rationale / justification.</b>			
5	<b>Project details</b>			
5.1	<b>Agro-climatic suitability / feasibility</b>			
	1. Origin and distribution of crop in the said location and India and in the world (briefly)			
	2. Agro-climatic / Horticultural zones and suitability of the crop (s)	√	IMD Data	
	3. Soil type and latest health-suitability for the crop	√	Latest Soil health card (not more than 1 month old)	
	4. Water (irrigation) source, availability, Quality and suitability	√	Latest Water Analysis report (not more than 1 month old)	
5.2	<b>Market viability</b>			
	1. Commercial and Nutritive importance / significance, composition and Uses			
	2. Target Market	√		
	3. Area, Production and Productivity in the District, State and India for the last 5 years			
	4. Clusters of the project crop in the state.	√		
	5. Demand and Supply Gap	√	State Horticulture Dept.	
	6. Global producers- Country, Area, Production, Productivity and global market share in the last available 5 years.			
	7. International trade and potential (for export oriented projects)	√ @		
	8. Seasonality of fruit and its comparison with other available fruits	√		
	9. Price variation of commodity in the State and nearby markets	√	State Govt.	
	10. Balance sheet of commodity in the			

	State			
	11. Central and State Government policy			
	12. Value chain in the commodity	√		
	13. Proposed Strategy by the Applicant for Marketing and Market viability	√		
<b>5.3</b>	<b>Financial viability</b>			
	1. Due diligence status	√	Certified by CA	
	2. Project Cost	√		
	3. Means of Finance	√		
	4. Investment into Horticulture	√		
	5. Key financial Indicators	√		
	6. Project Financing	√		
	a. Rate of Interest	√		
	b. Returns from the Project (IRR):	√		
	c. Cost of Production and Profitability (Annexure)	√		
	d. Yield and Sales Chart (Annexure)	√		
	e. Proposed Balance Sheet: (Annexure)	√		
	f. Proposed Cash flow Statement for next 7 years (Annexure)	√		
	g. Proposed Profit & Loss Account: (Annexure)	√		
	h. Proposed Repayment of Term loan and Schedule (Annexure)	√		
	i. Break even Analysis (Annexure)	√		
	j. NPV (Net Present Value)	√		
	k. Economic Rate of Return	√		
	7. Farm record keeping/ Maintenance proposed	√	Records	
<b>5.4</b>	<b>Land development and Crop Husbandry</b>			
	<b>5.4.1.Land development</b>			
	<b>5.4.2.Selection of Quality Planting Material</b>			
	1. Recommended and popular Cultivars- varieties/hybrids, their specific characteristics, requirements and yields	√		
	2. Cultivar/Hybrid/Variety selected and Criterion adopted for selection	√		
	3. Propagation methods	√		
	4. Accredited / Good Nurseries in the area	√		
	5. Planting material-source, quality and	√	Nursery /	



	suitability		Shop Invoice with Seed quality	
	<b>5.4.3.Orchard / Site planning, Lay out and management</b>			
	1. Planning, establishment and layout systems	√		
	2. Land preparation	√		
	3. Planting Season / time and density and transplanting	√		
	4. Water and Nutrient management	√	Written plan	
	5. Intercultural operations including Weed management	√		
	6. Plant canopy architecture management/ training and pruning	√		
	7. Planting systems and transplanting of horticultural crops	√		
	8. Use of Pollinators & pollinisers	√		
	9. Use of Plant growth regulators	√		
	10. Flowering & fruiting	√		
	11. Integrated Pest and Disease Management and Food Safety measures	√		
	12. Physiological disorders- causes, preventive and management measures.	√		
	13. Special problems if any	√		
	<b>5.4.5.Farm Structures and mechanisation</b>	√		
	1. Protective cover structure	√	Technical standards	
			Undertaking of expertise / competency by Agency	
	2. Farm Mechanisation	√	Company Brochures	
	<b>5.4.6.Harvesting and Fruit / flower care management</b>			
5.5	<b>Post-Harvest Management</b>	√		
	1. Post-Harvest infrastructure scenario in horticulture sector in the State and specially for the proposed crop / component			
	2. Product/ Process Flow chart	√		
	3. Lay out / Floor Plan of post-harvest operations	√		
	4. Post-harvest operations (Based on	√	Protocols	

	applicability)			
	5. Pre-cooling	√		
	6. Curing	√		
	7. Cleaning / Washing	√		
	8. Sorting and Grading	√		
	9. Packing and labelling	√	Models	
	10. Ripening	√		
	11. Transport	√		
	12. Storage- Low cost / cold storage/ CA	√		
	13. Post-harvest infrastructure – Integrated Post-harvest Management- (Which ever component is proposed)	√	Technical Standards	
	1. Integrated Pack house			
	2. Pack House			
	3. Pre-cooling unit			
	4. Cold Room (Staging)			
	5. Mobile Pre-cooling unit			
	6. Ripening Chamber			
	7. Primary Processing			
	8. Refer van			
	9. Retail outlet			
	10. Labour room			
<b>5.6</b>	<b>Marketing</b>			
	1. Aggregation & Assembling: Marketing infrastructure	√		
	2. Market Institutions and agents	√		
	3. Demand and Supply trends and forecast both in local and National markets.			
	4. Traceability system	√		
	5. Proposed value chain / method of Marketing by the Applicant	√		
<b>5.7</b>	<b>Value addition / Processing</b>	√		
<b>6</b>	<b>Technology providers</b>	√		
	1. ICAR /CAU/ SAU/SHU / Research Stations and Experts names	√		
	2. Agri/Horti-Business incubators	√		
<b>7</b>	<b>Food Safety -With /Without GAP certification</b>			
	1. GAP Certification if any	√		
	2. Food safety measures	√	Clean farm, Trained workers; Protective clothing, Safety equipment; First Aid; Safety and	
	a. Pre-planting	√		
	b. Crop husbandry	√		
	c. Harvestings	√		
	d. Post-harvest	√		

			Hygiene policy; Waste Management Plan	
8	Innovation if any			
9	<b>Risk Management</b>	√	Proposed insurance details if any	
10	<b>Checklist</b>	√		
11	<b>Declaration from Crop Expert and Project Finance Expert</b>	√		
	<b>Self-declaration by the Applicant</b>	√		

Note: \*: Documents are to be submitted only when NHB accords Pre- IPA approval.

@ In case of export units.

**11.1.Declaration by Crop Expert ( if the Project / Crop specific information, data and chapters of DPR are prepared by the expert and not by the applicant)**

I have read and understood the latest NHB Schemes operational guidelines and made the applicant understand the same.

The technical information provided in the Detail Project Report are as recommended by ICAR/ State Agriculture / Horticulture University/ .....Research Institute as published in their publication...../ genuine website.....

The project is technically feasible and economically viable and is bankable.

Certified that the information/contents as above furnished by me/us in the application are true to the best of my/our knowledge & belief and nothing material has been concealed.

My details are as follows:

Name of Crop Expert		(Could be any working or retired faculty / scientist in ICAR/ CAU/SAU/SHU/State Horticulture Dept. or ICAR Agri/Horti-business incubators)
Current/ previous profession:		
Educational qualification and University passed out		
Registration number if any		
Permanent address:		
Contact Number:	Tel	
	Mobile	
	Email	

Place	Signature
Date	Designation and Seal

### **11.2.Declaration by Project Finance Expert (Chartered accountant)**

( if the Market viability and Financial Viability chapters are prepared by the Project Finance Expert and not done by the applicant on his/her own)

I have read and understood the latest NHB Schemes operational guidelines and made the applicant understand the same.

The project is technically feasible and economically viable and is bankable.

The Financial and Market viability as provided in the Detail Project Report is true to the best of my knowledge.

Certified that the information/contents as above furnished by me/us in the application are true to the best of my/our knowledge & belief and nothing material has been concealed.

Name of Chartered Accountant	
Current profession:	
Educational qualification and University passed out	
Registration number if any	
Permanent address:	
Contact Number:	Tel
	Mobile
	Email

Place	Signature
Date	Designation and Seal

## **12. Self-Declaration by applicant**

1. I have read, understood and abide by the latest NHB Schemes operational guidelines including conditions, norms and pattern of assistance.
2. The information provided in the Detail Project Report is true to my knowledge.
3. In case the details provided by me viz., (i) my personal details, land, previous benefits availed by me from either Central and State Government if proved false at any stage NHB is entitled to recover any subsidy if any released by it from me.
4. I have personally ascertained technical details of the projector or I have availed the services of a competent Horticulturist for technical details and viability. Accordingly declaration is provided herewith.
5. I have personally ascertained Financial and Market viability of the project or I have availed the services of a competent Project Finance expert for the requisite project finance details and project viability. Accordingly declaration is provided herewith.
6. In case the project is approved for pre-IPA, I shall undergo a 2 Weeks (min. 10 working days) training programme in case of Open field condition and protective cover (with or without PHM component) and a minimum of 1 Week programme in case of standalone PHM component at my own expenses in one of the ICAR/CAU/SAU/SHU/ Research Station/ Centres of Excellence/ related Central or State Government institution/ others as found appropriate / approved by NHB.
7. I shall adopt scientific package of practices / technology and maintain proper farm accounts.
8. The project is technically feasible and economically viable and is bankable.
9. In case the project application is considered for application processing, I am bound to submit all required / requisite mandatory documents to establish veracity of my DPR and eligibility to claim subsidy under NHB Schemes in the form prescribed with in 6 months of any such intimation from NHB for according In principle approval (IPA). Else I acknowledge that my application stands vacated and rejected by default of my omission.
10. I understand that incomplete, delayed and /or NPA projects and default cases shall not be eligible for subsidy.
11. I solemnly affirm/ undertake that the proposed project components in the application are a completely new activity and not a pre-existing activity or any component thereof.
12. In case of Plant & Machinery- only new are proposed. Reconditioned / refurbished equipment/ Plant & Machinery shall not be procured under the project.
13. In case of concealment of any facts in this regard, the NHB would have right to reject/ cancel my application / project out right at any stage.
14. In case the project is approved for subsidy claim I shall undertake a MOU with NHB to comply with all the terms and conditions of the scheme guidelines as effective on the date of subsidy claim approval and any other condition/ advisory in the interest of projects success and sustainability.

Applicant (Name and signature) and Seal if any

Date Location:

Should be taken at the time of preparation of DPR (before DPR submission). but should be enclosed during Market viability and Financial viability stage both in soft copy and hard copy.

**CA Certificate Format  
(Letter Head of the CA)**

[Refer Para

**CA certificate (With membership No. and firm registration No. of CA) in the following format:-**

**i. Project Cost:**

Sl. No.	Name of the Component/Item	Amount (Rs. in lakh)
1.	Land/development charges	
2.	Civil works — Technical civil works — Other civil works	
3.	Plant & Machinery	
4.	Misc. Fixed Assets	
5.	Others	
	<b>TOTAL</b>	

**ii. Means of Finance:**

Sl. No.	Item	Amount (Rs. in lakh)
1	Promoter's Equity	
2	Term Loan	
3	Grant from MFPI	
4	Unsecured loan*	
5	Others	

\*Details of unsecured loans along with PAN No. of lenders, if any, duly certified by CA.

**Signature and Seal of C.A (Statutory Auditor in case of company)**

**Date:** \_\_\_\_\_

Counter signature of promoter/ authorized signatory of company with Seal

**CA Certificate Format  
(Letter Head of the CA)**

CA certificate (With membership No. and firm registration No. of CA) in the following format:-

**iii. Project Cost: (Rs. in lakh)**

Sl. No.	Name of the Component/Item	Cost approved by the Ministry	Actual expenditure incurred as on -----
1.	Land/development charges		
2.	Civil works — Technical civil works — Other civil works		
3.	Plant & Machinery		
4.	Misc. Fixed Assets		
5.	Others		
	<b>TOTAL</b>		

**iv. Means of Finance: (Rs. in lakh)**

Sl. No.	Item	Means of finance approved by the Ministry	Actual expenditure incurred as on -----
1	Promoter's Equity		
2	Term Loan		
3	Grant from MFPI		
4	Unsecured loan*		
5	Others		

\*Details of unsecured loans along with PAN No. of lenders, if any, duly certified by CA.

**Signature and Seal of C.A (Statutory Auditor in case of company)**

**Date:** \_\_\_\_\_

(The certification by CA should be based on the verification of books of accounts, bills, invoices, work orders, bank statements, etc. related to the project.)

Counter signature of promoter/ authorized signatory of company with Seal

Should be taken at the time of preparation of DPR (before DPR submission). but should be enclosed during Market viability and Financial viability stage both in soft copy and hard copy.

**CE Certificate (Civil) Format for Technical Civil Work:  
(Letter Head of the CE)  
[Refer Para**

**CE certificate (With membership/registration No. of CE) in the following format:**

**Name of Project:**

**Location with address:**

**Date of site Visit by Chartered Engineer:**

**Project Progress: (If project has multiple locations, the location wise details should be submitted in below format for each location)**

Sl. No.	Name of Component	Proposed Area (sq.m)	Proposed Cost (Lakh Rs)	Rate/ Unit(Rs/Sqm)
	<b>Total</b>			

**Signature and Seal of C.E.**

Counter signature of promoter/ authorized signatory of company with Seal



**Annexure-IV**

**CE Certificate (Civil) Format for Technical Civil Work:  
(Letter Head of the CE)**

**CE certificate (With membership/registration No. of CE) in the following format:**

**Name of Project:**

**Location with address:**

**Date of site Visit by Chartered Engineer:**

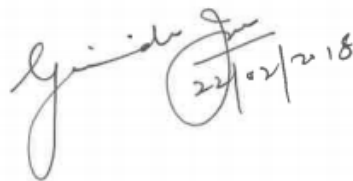
**Project Progress: (If project has multiple locations, the location wise details should be submitted in below format for each location)**

Sl. No.	Name of Component	Proposed/ appraised Area (sqm)	Proposed/ appraised Cost (Lakh Rs)	Actual Area(sqm)	Actual Cost(Lakh Rs)	Rate/ Unit(Rs/Sqm)	Remarks about the status of implementation	Comments on quality, construction standards, market rates
	<b>Total</b>							

**It is certified that the material/ components used in the Technical Civil Work are new.**

**Signature and Seal of C.E.**

**Counter signature of promoter/ authorized signatory of company with Seal**



**CE Certificate (Mechanical) Format for Plant & Machinery:  
(Letter Head of the CE)  
[Refer Para**

**CE Certificate (With membership/registration No. of CE) in the following format:-**

**Name of project:**

**Location with address:**

**Date of Visit by Chartered Engineer:**

**Project Progress (If project has multiple locations, the location wise details should be submitted in below format for each location)**

Sl. No.	Name of Component	Proposed Quantity	Proposed Cost (Lakh Rs)		Supplier/ Manufacturer (Supported by quotations)
			Basic Cost	Taxes, Freight, installation, insurance	
	Component -1				
	Component -2				
	Component -3				
	<b>TOTAL</b>				

**Signature and Seal of C.E.**

Counter signature of promoter/ authorized signatory of company with Seal

**Annexure-V**

**CE Certificate (Mechanical) Format for Plant & Machinery:  
(Letter Head of the CE)**

**CE Certificate (With membership/registration No. of CE) in the following format:-**

**Name of project:**

**Location with address:**

**Date of Visit by Chartered Engineer:**


**Project Progress (If project has multiple locations, the location wise details should be submitted in below format for each location)**

Sl. No.	Name of Component	Proposed/ appraised Quantity	Proposed/ appraised Cost (Lakh Rs)	Actual Quantity	Actual Cost (Lakh Rs)		Supplier/ Manufacturer	Status of implementation	Comments on quality, specifications, etc.
					Basic Cost	Taxes, Freight, installation, insurance			
	Component -1							Such as: •Ordered •Received at site •Installation in progress •Installed •Commissioned	
	Component -2								
	Component -3								
	<b>TOTAL</b>								

**It is certified that all the plant and machinery for which grant has been approved are new.**

**Signature and Seal of C.E.**

Counter signature of promoter/ authorized signatory of company with Seal

 12/18

**UNDERTAKING**  
**[Refer Para 12.1 (m)]**

I ..... (Name of the Lead Promoter/Director/ Partner/ Proprietor etc.) Son of Mr..... (Father's name) resident of ..... (Residential address) do hereby solemnly affirm and declare/undertake as under:

1. That I am promoter/ director/ partner/ proprietor of M/s..... (name of applicant) having its Registration no. ....and Registered Office at ..... (office address of applicant).
2. I hereby make application and I am duly authorized in my own right/by management vide its resolution no. ....dated.....to apply and sign all required documents including this undertaking on behalf of company/partnership firm/cooperative society etc. named as .....; and am fully aware of the facts relating to the setting up of project at Survey/ Plot No....., Village....., Tehsil....., District....., State....., PIN code .....(location of the main facility) for.....(activities to be undertaken by project) and application is being made to the Ministry of Food Processing Industries (MoFPI) under the Central Sector Scheme for Creation of Backward and Forward Linkages.
3. That the term and conditions of the above scheme of the MoFPI under which an application is made by the applicant have been properly read and understood by me and I affirm that the project/ proposal comply with all the terms and conditions of the approval letter and provisions enshrined in the scheme guidelines.
4. That the proposed activities to be undertaken by the project/proposal are covered under the above scheme of MoFPI and no part of the scheme/infrastructure of the project is designed or assigned to be used for any activity other than the activities specified in the application at present or in the near future.
5. It is certified that ..... (name of applicant) has not obtained or applied for grants for the same project, component, purpose or activity from any other Ministry or Department of the Government of India or State Government or their agencies.
6. It is certified that applicant's sister concern (s)/ related company / group company/firms as well as the applicant itself has not availed any financial assistance for a food processing project in the past from MFPI [if availed, the details shall be furnished separately].
7. I also solemnly affirm/undertake that the proposed project components in the application are a completely new activity and not a pre-existing activity or any component thereof.
8. In case of concealment of any facts in this regard, the MoFPI would have right to reject/ cancel my application/project out right at any stage.

**UNDERTAKING**  
**[Refer Para 12.1 (m)]**

I ..... (Name of the Lead Promoter/Director/ Partner/ Proprietor etc.) Son of Mr..... (Father's name) resident of ..... (Residential address) do hereby solemnly affirm and declare/undertake as under:

1. That I am promoter/ director/ partner/ proprietor of M/s..... (name of applicant) having its Registration no. ....and Registered Office at ..... (office address of applicant).
2. I hereby make application and I am duly authorized in my own right/by management vide its resolution no. ....dated.....to apply and sign all required documents including this undertaking on behalf of company/partnership firm/cooperative society etc. named as .....; and am fully aware of the facts relating to the setting up of project at Survey/ Plot No....., Village.....,Tehsil.....,District.....,State....., PIN code .....(location of the main facility) for.....(activities to be undertaken by project) and application is being made to the Ministry of Food Processing Industries (MoFPI) under the Central Sector Scheme for Creation of Backward and Forward Linkages.
3. That the term and conditions of the above scheme of the MoFPI under which an application is made by the applicant have been properly read and understood by me and I affirm that the project/ proposal comply with all the terms and conditions of the approval letter and provisions enshrined in the scheme guidelines.
4. That the proposed activities to be undertaken by the project/proposal are covered under the above scheme of MoFPI and no part of the scheme/infrastructure of the project is designed or assigned to be used for any activity other than the activities specified in the application at present or in the near future.
5. It is certified that ..... (name of applicant) has not obtained or applied for grants for the same project, component, purpose or activity from any other Ministry or Department of the Government of India or State Government or their agencies.
6. It is certified that applicant's sister concern (s)/ related company / group company/firms as well as the applicant itself has not availed any financial assistance for a food processing project in the past from MFPI [if availed, the details shall be furnished separately].
7. I also solemnly affirm/undertake that the proposed project components in the application are a completely new activity and not a pre-existing activity or any component thereof.
8. In case of concealment of any facts in this regard, the MoFPI would have right to reject/ cancel my application/project out right at any stage.

9. I will meet any shortfall in means of finance due to less admissibility of grant or any future reduction in grant-in-aid or any escalation caused in the cost of the project.
10. I shall not dispose-off or encumber or utilize the assets created wholly or substantially out of government grant for purpose other than those for which they have been sanctioned, without obtaining the prior approval of the sanctioning authority of grant-in- aid.
11. In case of non-implementation/ delayed implementation of the project the Ministry will have absolute right in cancelling the approval granted and also recall the grant released, if any, along with interest as per the scheme guidelines.
12. In case of failure to operate the project for at least three years after commencement of commercial operation, I shall return the entire grant-in-aid with interest @ 10% per annum.
13. User charges/hiring rates of the facilities created under the project will be disseminated to the public including uploading of the same on the website of the project/ organization. A copy of the same will also be made available to the Ministry.
14. I undertake that all the information furnished in the application and the DPR with respect to the eligibility conditions, etc. are true and correct to the best of my knowledge and belief and nothing material has been concealed therefrom.
15. I also undertake that in the event of any information or facts furnished by me are found to be incorrect or material information concealed, during the course of implementation of the project or subsequent to implementation, the Ministry of Food Processing Industries may take action as per the provisions of scheme guidelines and/or as per the law of the land, as deemed fit and appropriate in the circumstances.

**Date:** \_\_\_\_\_ **Signature of the Lead Promoter**

**Place:** \_\_\_\_\_

9. I will meet any shortfall in means of finance due to less admissibility of grant or any future reduction in grant-in-aid or any escalation caused in the cost of the project.
10. I shall not dispose-off or encumber or utilize the assets created wholly or substantially out of government grant for purpose other than those for which they have been sanctioned, without obtaining the prior approval of the sanctioning authority of grant-in- aid.
11. In case of non-implementation/ delayed implementation of the project the Ministry will have absolute right in cancelling the approval granted and also recall the grant released, if any, along with interest as per the scheme guidelines.
12. In case of failure to operate the project for at least three years after commencement of commercial operation, I shall return the entire grant-in-aid with interest @ 10% per annum.
13. User charges/hiring rates of the facilities created under the project will be disseminated to the public including uploading of the same on the website of the project/ organization. A copy of the same will also be made available to the Ministry.
14. I undertake that all the information furnished in the application and the DPR with respect to the eligibility conditions, etc. are true and correct to the best of my knowledge and belief and nothing material has been concealed therefrom.
15. I also undertake that in the event of any information or facts furnished by me are found to be incorrect or material information concealed, during the course of implementation of the project or subsequent to implementation, the Ministry of Food Processing Industries may take action as per the provisions of scheme guidelines and/or as per the law of the land, as deemed fit and appropriate in the circumstances.

**Date:** \_\_\_\_\_ **Signature of the Lead Promoter**

**Place:** \_\_\_\_\_