Detailed Project Report (DPR) :Model template for NHB Scheme No.1

Scheme.1	**Development of Commercial Horticulture through Production and Post-Harvest Management of Horticulture Crops:** 1. Open field condition **2. Protected Cover ✓** 3. Integrated Post Harvest Management

Crop	**Muskmelon**		Tick mark
Scheme components	Protected Cover of NHB specified crops	Within overall cost ceiling	√
		+Farm Mechanisation	√
		+Good Agri.Practices (GAP)	√
		+Plastic Mulching	√

Detailed Project Report (DPR) duly to be signed by
the applicant (s) / authorised person (in case of legal entity) on each page with date

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	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	
5.3	**Financial viability**	
	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	
5.4	**Land development and Crop Husbandry**	
	5.4.1.Land development	
	5.4.2.Selection of Quality Planting Material	
	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	
	5.4.3.Orchard / Site planning, Lay out and management	
	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	
	5.4.5.Farm Structures and Mechanisation	
	1. Protective cover /structure (if applicable)	
	2. Farm Mechanisation	
	5.4.6.Harvesting and Fruit / flower care management	
5.5	**Post-Harvest Management**	
	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	
5.6	**Marketing**	
	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	
5.7	**Value addition / Processing**	
6	**Technology providers**	
	1. ICAR /CAU/ SAU/SHU / Research Stations and Experts names	
	2. Experts-whose services are availed	

	3. Agri/Horti-Business incubators	
7	**Food Safety -With /Without GAP certification**	
	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	

	Annexure: Proposed stages in NHB Scheme Implementation	

Project at a Glance

1.	Applicant (s) / Legal entity Name		
2.	Constitution / Applicant nature / beneficiary		
3.	NHB Scheme for which DPR is made		Development of Commercial Horticulture through Production and Post-Harvest Management of Horticulture Crops: under Protected Cover
4.	Project Activity		
5.	Nature of project- Green field/ pre-existing- expansion / component specific		
6.	Products, By-products and services		
7.	Project Area and Survey /khasra/ Gat/Dag No.		
8.	Project Site Address with Postal Code and Police Station Name		
9.	Agro-climatic suitability		
10.	Research institution whose technology and package of practices are proposed to be followed		
11.	Existence of similar project activity in the said District		
12.	Whether the project is located in the crop cluster/ hub/ belt		Yes/No
13.	Project economic period/ economic life		
14.	Total Project Cost		
15.	• Open field condition or Protected Cover		
	• Integrated Post Harvest Management		
	• Total		
16.	Project completion period (in months)		
	Expected Implementation timeline	Commencement	
		Completion	
17.	Total Eligible Project cost as assessed by the Applicant as per NHB guidelines		
18.	Bank/ Financial Institution identified for Term loan		
19.	Proposed Means of Finance	Promoters contribution (in Lakh Rs.) & %	
		Bank Term loan (in Lakh Rs.) & %	
		Un secured loan (in Lakh Rs.) & %	
		Total	
20.	Likely Employment generation (man days)		
21.	Security		
22.	Gestation period		
23.	Projected Key Financial Parameters	Current Ratio other than export units	
24.		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	
25.	Productivity expected (in MT/Qtl/Kg/numbers)		
26.	Likely Gap in productivity compared to National /Global average		
27.	Potential Market (s)for the commodity and distance from the project site		

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

A. About Applicant / Promoter

1.1.In case of Individuals or Group of farmers (if applicable)		
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		
1.2.In case of Legal entity (if applicable)		
Name / Title		
1. Incorporation / Registration number & 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		
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 a. Certified copy of Company/Partnership incorporation/ registration certificate issued by Competent Authority, as applicable b. Certified copy of MoA/Bye Laws c. Certified copy of Board of Directors Resolution duly passed and authorizing signatory of application to apply for IPA d. Certified copy of latest Audit Report, if applicable i. (are to be made available in case the project and the application is considered for processing.- State Yes/No		
11. NGO- Specify		
1.3.Government Institutions / Organisations-- Please specify (if applicable)		
(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.Statutary registration		
a. PAN No		
b. Aadhaar No.	Yes/No	
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' name:
c. Date of Birth
d. Place of Birth (village/town/city, District and State)
e. Permanent Address:
f. Educational qualification (Higher Secondary, Under graduation Degree and above)

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

g. Current profession.

h. Previous profession during the last 5 Years.

i. Experience- General and Horticulture

    a. General (Other than Horticulture)

    b. Horticulture

1.11.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 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 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. Objectives as per Memorandum of Association (MoA) / Rules:

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

Constitution – Individually or in any form	Ministry/ Organisation	Scheme Name	Project / Activity	Project Location	Land Survey No	Eligible Project cost (Rs.in lakhs)	Total subsidy/ grant (Rs.in lakhs)	Current status of project- Operational / underutilised / closed

2.2.In earlier / any other Project (s)

2.2.1.NHB : 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 current proposed project location or any other location. 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 / Activity	Project Location	Land Survey No	Eligible Project cost	Total subsidy /grant availed	Current status of project- Operational / underutilised / closed

2.2.2.Central Government- Ministries / Organisations: 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 current proposed project location or any other location.

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

2.2.3.State Governments: 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 current proposed project location or any other location.

Year	Scheme Name	Project / 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 Scheme under NHB and other Central Ministries and State Government.

Year	Organisation / Ministry	Activity	Project Operational status (Running or Closed)	Annual Turnover (of previous Year)	Exports if any	Profitable or loss making	Remarks / Reasons

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 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

3.1.About the Project

1. Name of the Project	Off season cultivation of muskmelon under protected cover
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. Protected cover for specified crops		√
	3. 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. Mobile Pre-cooling unit		
	f. 3.6.Ripening Chamber		
	g. 3.7 Primary Processing		
	h. 3.8 Refer Van		
	i. 3.9.Retail outlet (environmentally controlled)		
	4. Add on components		

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
Muskmelon	Hara Madhu, Durgapura Madhu, Kashi Madhu, Arka Jeet, Arka Rajhans, Pusa Sarbat, Bobby, Trisha,	It will be the size of protected cover	Area Spacing	Public or private sector varieties or hybrid

	MADHUR-322, SURYA, SURAJ etc			

7. Products, by products and Services of the Project
   Availability of muskmelon fruit year round or lean period
8. Objectives of the Project
   To grow muskmelon in lean season or off season under protected cover, when there is high market price
9. Expected Outcomes of the Project including Products / and Services of the Project
   - Agro-techniques for off season cultivation of watermelon
   - Improved income of the farmer
10. Socio-economic benefit to the region /District / State
    Socio economic condition improved as the income of the farmer increased.

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, Productivity briefly. Provide more details in Market viability chapter.

3.2.3.How quality of inputs/ raw materials is assured.

3.2.4.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	

3.3.Project Site/ Land details:

3.3.1.Proposed Project Area:

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

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

	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				
	Name of the Owner in case of joint ownership		Survey/ Gat /khasra No etc.	Area in Sq.mt / Ha	Share
	Whether land boundaries are demarcated for the applicant clearly.		Yes/No		
	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				
	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 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)	

3.5.Current usage of land of proposed Project Area

Proposed Project			**Current usage**		
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

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

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. Protected cultivation for specified crops	
	3. 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	
	3.8.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)					
	Support system for Grapes					
	Vermi Compost Unit					
	• 1. Permanent Structure					
	• 2, HDPE Vermibed (12ft X 4ft X2 ft)					
	Certification of Good Agricultural Practices (GAP) including infrastructure (AC)					
	Plastic Mulching					
	Others					
	Grand Total					
Scheme			Capacity/ Area/ Spacing/ size etc.	Units/ Number	Likely /Unit cost	NHB Norm
Protected Cultivation	Protected Structure with Micro Irrigation • Green house o Fan & Pad/ o Naturally ventilated- Tubular/wooden/Bamboo • Shade net- Tubular/ wooden/ Bamboo • Plastic tunnel/ • Walk in Tunnel/ • Anti-bird/Anti-hail net etc.)					
	Bed preparation in case of orchids and Rose subject to conditions					
	Planting Material & Cultivation cost					
	Irrigation	Tube well/ bore well/ Open well (Nos.)				
		Cost of Pipeline from source of irrigation to				

		production unit (Length, Size & Material)				
		Water harvesting pond/ Water tank				
		Others				
	Infrastructure	Store & Pump house (Area in sq.ft with size)				
		Labour room & go down (Area in Sq.ft with size)				
		Others				
	Farm Mechanisation (AC)	Tools and equipment's as per SMAM				
	Land Development- Soil levelling / Digging/Fencing etc.					
	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)					
	Plastic Mulching (AC)					
	Others					
	Grand Total					
Scheme			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.Mobile Pre-cooling unit					
	3.6.Ripening Chamber					
	3.7 Primary Processing					
	3.8.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 executing erection of Protected structure -and contact person Name and contact numbers	
3.	Name of agency providing technical know-how and turn key for cultivation- and contact person Name and contact numbers	
4.	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 & Pollinsers	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 care management	Own / outsourcing
	12. Post-Harvest Management	Own / outsourcing
	a. Pre-cooling	Own / outsourcing
	b. Curing	Own / outsourcing
	c. Cleaning / Washing	Own / outsourcing
	d. Sorting and Grading	Own / outsourcing
	e. Packing and labelling	Own / outsourcing
	f. Ripening	Own / outsourcing
	g. Transport	Own / outsourcing
	h. Storage- Low cost / Cold Room/ CA	Own / outsourcing
	i. Refer van	Own / outsourcing
	j. Retail outlet	Own / outsourcing
	k. Cold chain	Own / outsourcing
	13. Marketing	Own / outsourcing
	14. Processing	Own / outsourcing

3.14.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		
First Commercial Crop / plantation / operations if any		
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) Curing							
c) Cleaning / Washing							
d) Sorting and Grading							
e) Packing and labelling							
f) Ripening							
g) Transport							
h) Storage- Low cost / cold storage/ CA							
i) 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.

3.15.Backward and Forward linkages

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

Operations	Agency / Agents / providers	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	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)

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

3.16.1.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)										

3.16.2. Skilled and Unskilled Labour

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

3.17.Employment Generation per annum

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

3.18.Infrastructure (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	
	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 the State Highway and National Highway.	
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		

3.19.SWOT Analysis

1	Strengths	
2	Weaknesses	
3	Opportunities	
4	Threats	

3.20.Monitoring and evaluation of Project:

ICAR Institute or CAU/SAU / SHU or Consultant or any other organisation

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	**NHB Scheme under which the project is proposed with rationale / justification.**	

1. Scheme.1: Copy paste scheme guidelines

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

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

5.Project details

5.1	**Agro-climatic suitability**	

5.1.1.Origin, History, and Distribution

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

   Muskmelon is said to be originated in tropical Africa more specifically in the eastern region, south of Sahara desert, central Asia comprising some part of southern Russia, Iran, Afganistan and North West India considered as secondary center for muskmelon. Allo-enzyme variation of wild species suggested India rather than Africa as centre of origin. Muskmelon was introduced into China from India around beginning of the Christian era.

2. Distribution of crop across the country

   It is cultivated in muskmelon is cultivated in Uttar Pradesh, Punjab, Haryana, Karnataka, Tamil Nadu, Maharashtra, Andhra Pradesh, Telangana. It can be grown in Bihar, Jharkhand, MP, west Bengal etc under frost free condition or under protected cover. It has become an important cash crop of north India, especially Punjab, UttarPradesh and Rajasthan.

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

Parameter	**Recommended@**	**Project location parameters#**	**Remarks / deviations**
Climate	Melon is an essential warm season crop can be grown in tropical and subtropical area. It is frost sensitive crop and also can survive under low temperature condition, especially toward freezing temperature. It is also susceptible to low temperate. Melon required fairly high temperature of 35-40^{o}C.		
Altitude	Low to medium altitude up to 200-350M MSL under open field condition but can be grown in high altitude like Leh under protected cover.		
Climacteric / Non Climacteric	Non-climacteric		
Thermosensitive ness of crop	Sensitive to low temperature and frost. Optimum temperature for germination is 23-25°C. The seeds fail to germinate if the soil temperature is below 10°C.		
Photosensitive	Photo insensitive		
Temperature range			
1. Mean monthly / Average temperature	Minimum: 18^{o}C Maximum: 35^{o}C Optimum: 25-27 ^{o}C		
2. Av.Max.tem perature	35^{o}C		
3. Av.night temperature	28-30^{o}C		
4. During Crop duration	30-35^{o}C		
5. Flowering	25-30^{o}C		
6. Fruiting	Morning temperature of 15-20 ^{o}C		
7. Maturity	30-32^{o}C		
8. Fruit quality	Cool night temperature of 20-21 ^{o}C		
9. Season	Summer		
Rainfall / Water			
1. Land	None		

preparation			
2. Flowering	None		
3. Fruiting	None		
4. Maturity	None		
5. Season	None		
Humidity			
1. Flowering	50-60%		
2. Fruiting	60-70%		
3. Maturity	55-60%		
4. Season	Not beyond 80%		
Winds during crop season			
1. Wind velocity	Mild		
Shade loving?	Shade tolerant		

@ 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:

Conclusion: Whether project crop is recommended for the project location	**Yes/No**

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

(Not applicable to standalone PHM projects)

	As recommended by ICAR /CAU/SAU/SHU	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	Muskmelon thrives best on sandy or sandy loam soil with good fertility and drainage. The location should be free from nematode and disease. Continuous cropping should be avoided. It is best to wait for three years before plant muskmelon again on the same			

	ground to prevent *Fusarium* wilt and other soil born diseases.			
Texture	Sandy Loam			
pH	6 to 6.8			
Organic carbon	Good			
Electrical conductivity	-			
Chlorine	-			
Sodium	-			
Potassium*	60kg/ha			
Nitrogen*	50-100 kg/ha			
Phosphorus*	50kg/ha			

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

*ICAR-IIVR, Varanasi.

#: 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:

Conclusion: 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)

	As recommended by ICAR /CAU/SAU/SHU	Project location data as per latest Water Analysis test#
pH	Between 5 to 7	
EC	<0.8 dS/m	
Total salt concentration,	<1500 micro mhos/cm	
Sodium Absorption Ratio (SAR)	<3.0 ppm	
Bi-Carbonate	<40 ppm	
Boron concentration	Not more than 1.0 ppm	
Heavy metals	Al, Fe & Pb (<5), As & Cr (<0.1), Cd & Mo (<0.01), F(<1)	
Pesticide residue	Free	

@ 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

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

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

5.2.3.Statistics: India and State.

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

Year	Area in ha	Production MT	Productivity T/ha	Global Productivity data T/Ha		
2014-15	42000	863000	20.54	Highest	Average	
2015-16	45000	935000	20.77			
2016-17	47000	962000	20.46			
2017-18	52000	1135000	21.82			

Source: NHB Data base

2. State wise picture- Top 10 producing states (2016-17)

State	Area in ha	Production MT	Productivity T/ha	
Uttar Pradesh	20450	531520	25.99	
Andhra Pradesh	4940	148080	29.98	
Punjab	5230	93120	17.80	
MP	4420	63190	14.30	
Haryana	3780	36890	9.76	
Karnataka	1270	18700	14.72	
Chhattisgarh	1620	15010	9.27	
Bihar	1720	13030	7.58	
Tamil Nadu	750	12930	17.24	
Maharashtra	650	12680	19.51	

Source:

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

Source:

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

Area			Production			Productivity		
District	Area	% of	District	Production	% of State	District	Productivity	Ranking

	(ha)	State Area		(MT)	Production		(T/ha)	

Source:

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					

Source:

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

Crop	Area		Production		
	Ha	%	MT	%	
Total		100		100	

Source:

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

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

	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)

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

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

Cluster	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						

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 (Ha)	Production (Ton)	Productivity	% share in global market
China (melon)	350000	8,000,000	22.85	
Turkey (melon)	100000	3,900,000	39.00	
India (muskmelon)	47000	962000	20.46	

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)

India's position as an exporting country for product Melons (excl. watermelons), fresh

2016				
Rank	**Exporting Country**	**Qty (MT)**	**Value (000USD)**	**Share (%)**
1	Spain	4,24,630.00	3,73,721.00	20.97
2	Guatemala	4,23,596.00	2,82,213.00	15.83
3	Brazil	2,37,672.00	2,10,040.00	11.78
4	Honduras	2,27,514.00	1,79,029.00	10.04
5	Mexico	1,58,044.00	1,15,996.00	6.51
6	Costa Rica	1,27,359.00	1,03,985.00	5.83
7	Netherlands	65,247.00	67,421.00	3.78
8	U S A	1,14,212.00	64,539.00	3.62
9	Morocco	49,334.00	59,961.00	3.36

10	France	34,080.00	53,640.00	3.01
21	India	9256.00	6757.00	0.38

5.2.8.Seasonality matrix of the fruit (Desirable Data):

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

Fruits	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

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 Market

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

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

Projected prices of project produce

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

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

	Year:								Qty: 000Tons			
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Stored/ Carry in												
Fresh Production/ Arrivals												
Imports												
Availability												
In LT Storage												
Consumption												
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:

5.3.1: Due Deligence Status

	Date of Pre-Sanction / Due Deligience		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)Verfication of CERSAI (Central Registry of Securitisation Asset Reconstruction and Security Interest) b) In case of company whether financial data verfied with ROC .	Yes/No 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
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	NHB Norm
Protected Cultivation	Protected Structure with Micro Irrigation • Green house o Fan & Pad/ o Naturally ventilated- Tubular/wooden/Bamboo • Shade net- Tubular/ wooden/ Bamboo • Plastic tunnel/ • Walk in Tunnel/					

	• Anti-bird/Anti-hail net etc.)					
	Bed preparation in case of orchids and Rose subject to conditions					
	Planting Material & Cultivation					
	Irrigation	Tube well/ bore well/ Open well (Nos.)				
		Cost of Pipeline (Length, Size & Material)				
		Water harvesting / Water tank				
		Others				
	Infrastructure	Store & Pump house (Area in sq.ft with size)				
		Labour room & go down (Area in Sq.ft with size)				
		Others				
	Farm Mechanisation (AC)	Tools and equipment's as per SMAM				
	Land Development- Soil levelling / Digging/Fencing etc.					
	Land if newly purchased but not before one year from date of sanction of loan (indicate year)					
	Vermi Compost Unit					
	Certification of Good Agri Practices Good Agricultural Practices (GAP) including infrastructure (AC)					
	Plastic Mulching (AC)					
	Others					
	Grand Total					
Scheme			Capacity/ Area/ Spacing etc.	Units/ Number	Likely /Unit cost	NHB 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.Mobile Pre-cooling unit					
	3.6.Ripening Chamber					
	3.7 Primary Processing					
	3.8.Retail outlet (environmentally controlled)					

	Others				

Summary of Project Cost

		Project Cost	Max.possible NHB support (self-appraisal)
1. Open field condition	With add on components		
	Without add on components		
2. Protected Cover of NHB specified crops	With add on components		
	Without add on components		
3. 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.Investiment in Horticulture Sector

5.3.5 Key financials of the proposed / existing Project : (Rs. In Lakhs)

FINANCIAL INDICATORS	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.

5.3.6 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 (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

5.3.13 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					

5.3.14 Key Financial Parameters for the proposal:

Sl. No.	Ratio	Benchmark	As calculated by Project Finance Expert				
			1st yr	2nd yr	3rd yr	4th yr	5th 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					

5.3.15 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

Risk Analysis & Management

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

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

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. Northern States	Kashi Madhu, Lucknow Safeda, Pusa Madhuras, Pusa Rasraj, Pusa Sarbati, Hara Madhu, Durgapura Madhu, Punjab Sunheri, Bobby, Trisha, MADHUR-322, SURYA, SURAJ etc
b. Southern State	Kashi Madhu, Arka Rajhans, Arka Jeet, Bobby, Trisha, MADHUR-322, SURYA, SURAJ etc
2. Classification of cultivars based on crop maturity	
a. Early	Pusa Sarbati, Durgapura Madhu
b. Mid	Pusa Madhuras
c. Late	Hara Madhu
3. Classification of cultivars / Varieties/ Hybrids based on purpose	All the varieties of muskmelon are table purpose varieties and used as desert.
a.	-
b.	-
c.	-

Cultivar/Hybrid/Variety / Planting material Selected:

Cultivar/Hybrid/Variety / Planting material	Parentage	Area	Medium/ High/ Ultra High density	Requirement Quantity
Punjab Rasila	WMR 29 × Hara Madhu	-	Medium	3-5kg/ha
Punjub Sunheri	Hara Madhu × Edisto		Medium	3-5kg/ha

Method of Propagation / technology

Method recommended by ICAR / CAU/SAU/SHU	It is seed propagated crop. Seed can be directly sown or nursery can be raised using pro tray.
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

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	
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 planning Lay out and management / Sowing	

5.4.3.1.Planning of orchards establishment and layout systems / Types of orchards-

Or Sowing in case of seeds

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	(Mention source of publication with date/Year)
	• By locating a greenhouse away from and/ or upwind of outdoor crops, many pest problems can be reduced to manageable levels. • For maximizing productivity and crop uniformity, greenhouses are oriented toward east–west for maximum light penetration. • To surround greenhouses by a 10-m band of weed-free lawn and to eliminate trash piles may prevent or delay pest and pathogen inoculum entrance into greenhouses. A foot bath containing a disinfectant reduces this pathogens risk when placed at the doorway. • Most growing substrates can be fumigated or heat sterilized, but pasteurization to about 70 °C or solarization to about 40–55 °C is preferred. • The whole greenhouse can be closed in sunny conditions for solarization of both substrate and superstructure. High temperature and vapour pressure deficit in closed greenhouses can kill the pathogens/insects.
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

Source: P Parvatha Reddy (2015) Sustainable Crop Protection under Protected Cultivation ed. Reddy P. Springer

5.4.3.2.Land preparation including bed preparation

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	The land should be thoroughly prepared to get fine tilth for seed bed
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

5.4.3.3.Planting Season / time and density

	Recommended @	Proposed	Remarks in case of deviation
Planting Season / Time	January - May July- September in protected condition		
Spacing	2 × 0.5-0.75 m		
Seed/ seedling rate/ Density per Acre	3-7kg/ha		
Seed / Planting Material treatment	Seeds are soaked overnight and sometime treatment of with fungicide improve crop stand. Treatment of seed with ethephon improve germination at low temperature.		
Depth of sowing	1-2cm		
Seedling/ Transplanting age	30 days or seedling with two true leaves.		

@: Specify the organisation / institution recommending. (Mention source of publication with date/Year or weblink with date)

5.4.3.4.Water and Nutrient Management

1.Water requirements, Source and irrigation methods &

a. Water source, demand and availability: Preferably clean water should be used for irrigation, it should be free from salinity, fluoride, chloride etc.

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

b. Critical stages for Irrigation and Water required under Drip Irrigation: Flowering and fruiting stage is the critical for supplying water to this crop.
c. Method of Irrigation: In protected condition drip irrigation should be used.
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:

Dated		Institute	

Soil Health Parameters	Values	Recommended range	Remarks
pH		6-6.8	
Soil texture		Sandy Loam	
Organic carbon		Sufficient	

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	Potassium 60kg/ha Nitrogen 50-100 kg/ha Phosphorus 60kg/ha
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	During early stage of crop growth muskmelon needs 2-3 hoeing to control weed and stimulate crop growth.
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	The yield and fruit quality is improved with pruning in muskmelon. Pruning in combination with staking or positioning of fruit is found to be even more effective. Secondary branches should be pinched off up to seven node for better fruiting.
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.

As muskmelon is andromonoecious crop supplementary pollination is not essential. But monoecious muskmelon needed manual or insect pollination for proper fruit set.

Item	Recommended	Proposed	Remarks
No. of Hives	One beehive on north-west side per acre.		
Name of Pollinisers	• Manual Pollination • Insect pollination by bees		
No.of Pollinators	30,000-50,000 worker bees/ hive		

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

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	In muskmelon application of Ethrel @250ppm increases the fruiting and in turn the yield. The growth regulator should be applied twice @ 2leaf stage and @4 tru leaf stage.
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	Monoecious muskmelon needs pollination for proper fruit set.
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

As recommended by ICAR Institute/ CAU/SAU/SHU	**Insectpests:** **Aphid and Thrips:** They suck the sap from the leaves resulting in yellowing and drooping of leaves. Thrips results in curling of leaves, leaves become cup shaped or curved upward. If infestation is observed in field, to control spray the crop with Thiamethoxam@5gm/15Ltr of water. If infestation of sucking pest and powdery/downy mildew is observed, take spray of Thiamethoxam and 15days after spraying, spray with Dimethoate@10ml+Tridemorph@10ml/10Ltr of water. **Leaf Miner:** Maggots of leaf miner feed on leaf and make serpentine mines into leaf. It affects the photosynthesis and fruit formation. If infestation of leaf miner is observed, take spray of Abamectin@6ml/15Ltr of water. **Fruit fly:** It is a serious pest. Females lay eggs below epidermis of young fruits. Later on maggots feed on pulp afterward fruits starts rotting. Remove and destroyed infected fruits away from field. If infestation is observed, at initial stage take spray of Neem seed kernal extracts@50gm/Ltr of water. Take spray of Malathion@20ml + Jaggery@100gm in 10litre of water 3-4times at 10days interval. **Disease and their control** **Powdery Mildew:** Patchy, white powdery growth appears on upper surface of leaves and also on main stem of infected plant. It parasitizes the plant using it as a food source. In severe infestation it causes defoliation and premature fruit ripening. If infestation is observed take spray of water soluble Sulphur@20gm/10Ltr of water 2-3times with interval of 10days. **Sudden wilt:** It can affect crop at any stage. Plant get weak and give yellow appearance at initial stage, in severe infestation complete wilting is observed. Avoid waterlogging in field. Destroy infected parts away from field. Apply Trichoderma Viride@1kg/acre mixed with 50kg FYM or well decomposed cowdung. If infestation is observed, take spray of Mancozeb or Copper Oxychloride@2.5gm/liter or Carbendazim or Thiophanate-methyl@1gm/liter of water. **Anthracnose:** Anthracnose affected foliage appears scorched appearance. As a preventive measure, treat seed with Carbendazim@2gm/kg of seed. If infestation is observed in field, take spray of Mancozeb@2gm or Carbendazim@0.5gm/liter of water. **Downy Mildew:** It occurs frequently in muskmelon and less in case of watermelon. Yellowing occurs on upper side of leaves. Later yellowing get increases and center of leaves turning brown. Underside of leaves white-gray light blue fungus appears. Cloudy, rainy and humid conditions are favorable for spread of this disease. If infestation is observed in field, take spray of Metalaxyl 8%+Mancozeb 64% WP (Ridomil)@2gm/Ltr of water.

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	• Fruit Cracking is a serious problem due to fluctuation of soil moisture. So it is essential to maintained proper soil moisture.
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
None			

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)*

Objective of Protected cover / structure:

Type of Protected structure:

1. Green House Structure
    a. Fan and Pad System
    b. Naturally ventilated System
        i. Tubular Structure: Rest of India
        ii. Wooden Structure: for North-East
        iii. Bamboo Structure: -do-

NHB Technical Standards based on the type of protected structure*	Proposal / action taken by applicant	Points of deviation and justification

* Technical standards of NHB to be followed (http://nhb.gov.in/pdf/Technical_Standard.pdf).

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

Technical Standards

NHB Technical Standards based on the type of protected structure	Proposal / action taken by applicant	Points of deviation and justification

5.4.6.Harvesting and Fruit / Flower care management

5.4.6.1.Harvesting season- Across India

In India normal harvesting time is starting from February to June.

State/UT	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

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):

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	Maintained proper soil moisture and followed good agricultural practices (GAP) to assure quality of the harvest.
	Maturity Index / determination	In muskmelon there are two types of cultivars which behave distinctly. In one group the fruits when mature slip out easily from the plant with minimum pressure. In other type i.e., in netted melon green colour of the vein truckt changes to yellow and netting become off white.
	Technique	Hand picking
	Devices	-
	Skills and training	-
	Time/ Period	70-90 DAS
	Handling	Can be stored at 1.7-3.3°C with 85-90% RH for 1.5 weeks.
	Containers	Can be transported in truck with utmost care to avoid the damage of the fruits.
	Others	-
	(Mention source of publication with date/Year)	
Relevant Photographs if any		

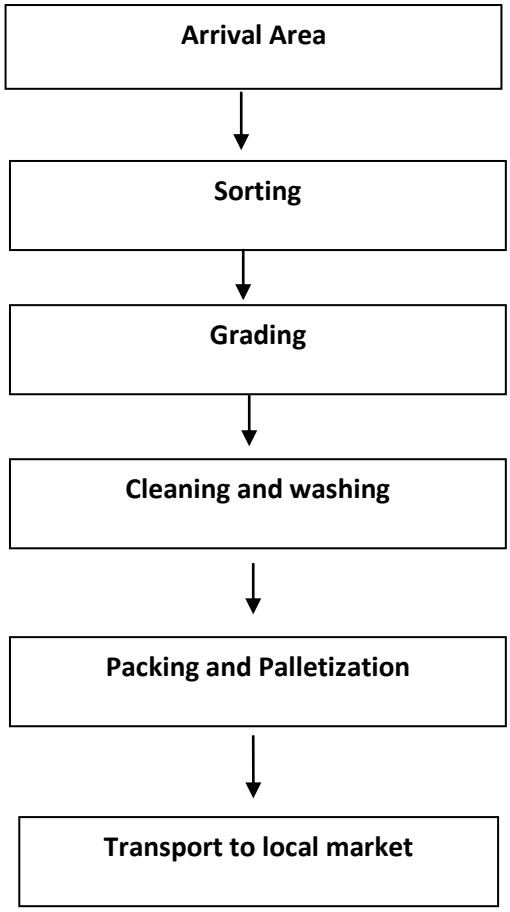
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

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

5.5.	**Post-Harvest Management**	

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

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



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

1. Sorting
2. Grading
3. Cleaning / Washing
4. Packing and Palletization
5. Transport to local market

5.5.4.Post-harvest operations

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

Activity	Recommended	Proposed practice	Remarks

Curing / De-sapping/ De-latexing/ Any other intervention and protocols.

Activity	Recommended	Proposed practice	Remarks

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

Activity	Recommended	Proposed practice	Remarks

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

Activity	Recommended	Proposed practice	Remarks

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

Activity	Recommended	Proposed practice	Remarks

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/apedawebsite/six_head_product/FFV.htm)

Activity	Recommended	Proposed practice	Remarks

Ripening / De-greening and protocols.

Activity	Recommended	Proposed practice	Remarks

Mode of Transport including the requirement of Refer vans

	Recommended	Present status	Gap / Remarks
Transport method-			
Local Market			
District Market			
Distant Market			
Exports			

Storage Cold room and Cold Chain

Activity	Recommended	Proposed practice	Remarks

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

Type of project	New Project/ Expansion/Modernisation	
Location of the Project		
Man power employed (On rolls and on contract)		
Business model -	Rental, Captive, Part of Supply chain service, mixed	
Components of project submitted		
	Infrastructure under the scheme	Tick mark
	1.3Integrated PHM	
	Integrated Pack house	
	Pack House	
	Pre-cooling unit	
	Cold Room (Staging)	
	Mobile Pre-cooling unit	
	Ripening Chamber	
	Primary Processing	
	Refer van	
	Retail outlet	
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.

5.5.5.1.**Integrated Pack house:**

1. Rationale for the proposal
2. Stages / process flow chart.
3. 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. Quality control/ assurance /testing
4. 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.
5. 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
6. Market :
    a. Quality grades/ specifications/ kinds of products
    b. Demand and Supply data for the products and services.
    c. Business model for the unit.
7. Source of Technology
8. Pack house unit: Type and Lay out (show the drawing)
9. 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

10. Protocols

Activity	Recommended	Proposed practice	Remarks

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

12. Skilled Manpower availability:

Facility / utility	Recommended	Proposed including design and capacity.	Company / Make	Remarks

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^2.
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. 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. Quality control/ assurance /testing
4. 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.
5. 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
6. Market :
    a. Quality grades/ specifications/ kinds of products
    b. Demand and Supply data for the products and services.
    c. Business model for the unit.
7. Source of Technology
8. Pack house unit: Type and Lay out (show the drawing)
9. Technical standards-Civil infrastructure and Plant and Machinery, accessories: Refer NHB guidelines on Technical Standards
10. (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

11. Protocols

Activity	Recommended	Proposed practice	Remarks

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

13. Skilled Manpower availability:

Facility / utility	Recommended	Proposed including design and capacity.	Company / Make	Remarks

14. Data sheet.

5.5.5.3.**Pre-cooling unit**

1. Rationale for the proposal
2. Stages / process flow chart.
3. 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. Quality control/ assurance /testing
4. 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.
5. 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
6. Market :
    a. Quality grades/ specifications/ kinds of products
    b. Demand and Supply data for the products and services.
    c. Business model for the unit.
7. Technology / Source/ Company/Make
8. Pre-cooling unit: Type and Lay out (show the drawing)
9. 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

10. Skilled Manpower availability:

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^3
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

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.

5.5.5.5.Mobile Pre-cooling unit

5.5.5.6.**Ripening Chamber**

1. Rationale for the proposal
2. Stages in Post -harvest and Ripening and process flow chart.
3. 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. Raw material quality and assurance testing
4. Industry:
    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.
5. 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
6. Market :
    a. Quality grades/ specifications/ kinds of products
    b. Demand and Supply data for the products and services.
    c. Business model for the unit.
7. Source of Technology
8. Ripening unit: Type and Lay out (show the drawing)
9. Technical standards-Civil and Plant and Machinery 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 Rs.in lakhs	Total cost

13. Basic Design and Data sheet

Activity	Recommended	Proposed practice	Remarks

14. Staking and typical construction

Activity	Recommended	Proposed practice	Remarks

15. Protocols

Activity	Recommended	Proposed practice	Remarks

16. Compliance to relevant BIS code and standards- Electrical, Mechanical,

17. Skilled Manpower availability:

RIPENING CHAMBERS

#	Component: Ripening Chamber	Description *(refer sample datasheets)*
A	**Capacity Details**	
1	Holding Capacity (MT)	
2	Room Volume (m^3)	
3	Room Size (L x B x H) in meters	
4	Number of ripening rooms	
5	Peak ambient temperature	
B	**Pallets**	
6	Size (L x B x H) in mm	
7	Size of crate/box (mm)	
8	Crates/boxes per pallet	
9	Pallets in each chamber	
10	No. of tiers	
11	Pallet Lifting System	
C	**Ripening Parameters**	
12	Ripening room temp (°C)	
13	Relative Humidity (%)	
14	CO_2 concentration (PPM)	
15	Ethylene concentration (PPM)	
16	Product incoming temp (°C)	
17	Pull down period (hours)	
18	Air flow (CMH)	
D	**Insulation details**	
19	Walls, ceiling and partition (material, U-value & thickness)	
20	Floor-Type (material, U-value and thickness of insulation)	
21	Exterior wall construction (material and type)	
E	**Doors**	
22	Size of door (L x W) mm	

18.

#	Component: Ripening Chamber	Description *(refer sample datasheets)*
23	Type of door used	
24	Number of doors	
25	Emergency measures (alarm, exit system)	
26	Gasket	
F	**Refrigeration load**	
27	Estimated refrigeration load per chamber	
28	Total refrigeration load (k W)	
G	**Refrigeration system**	
29	Refrigerant used	
30	Refrigeration system	
31	Refrigeration capacity (kW)	
32	COP of refrigeration system	
33	Evaporator and condenser details	
34	Air flow(CFM)	
35	Static pressure(Pa) & fan rating (kW)	
36	Manufacturer name	
J	**Ripening system**	
37	Ethylene applicator (Maker name)	
38	Number of cylinders and capacity per cylinder	
39	Portable or Centralized	
40	Type of controller and Ethylene ppm range	
41	CO_2 exhaust system	
42	Humidifier system details	
K	**Others**	
43	Lighting load (kW)	
44	Refrigeration load (kW)	
45	Total facility power consumption (kW)	

Project declares compliance with all mandatory codes and regulations are complied with

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 sheeted heavy duty electrical cables, voltage not exceeding 1100 V	IS 5959-1970 Part-I
5.	Specification of Polyurethane insulated PVC sheeted 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 earthling	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

5.5.5.7.**Primary Processing unit**

1. Rationale for the proposal
2. Stages in Primary Processing and flow chart.
3. 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. Raw material quality and assurance testing
4. Industry:
    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.
5. 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
6. Market :
    a. Quality grades/ specifications/ kinds of products
    b. Demand and Supply data for the products and services.
    c. Business model for the unit.
7. Source of Technology
8. Civil infrastructure. 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

9. Plant & Machinery: Rationale, Design, Capacity, After service, Warranty(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 machinery standards	Make	No.of units	Unit cost	Total cost

19. Availability of
    a. Managerial manpower
    b. Technical manpower
    c. Skilled manpower
    d. Un skilled manpower

5.5.5.8.**Refer Van**

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_2 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. 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
5. 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.
6. Market :
    a. Quality grades/ specifications/ kinds of products
    b. Demand and Supply data for the products and services.
    c. Business model for the unit.
7. Source of Technology
8. 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

9.Skilled Manpower availability:

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 is 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.

9. Rationale for the proposal
10. Product / Process flow chart.
11. 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
12. 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.
13. Market :
    a. Quality grades/ specifications/ kinds of products
    b. Demand and Supply data for the products and services.
    c. Business model for the unit.
14. Source of Technology
15. 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

9.Skilled Manpower availability:

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^3.
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	**Marketing**

5.6.1.Connectivity of project site and produce

Road connectivity	
Rail connectivity	
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

5.7	Value Addition/ Processing

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

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

6	Technology providers

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:	
Hi Tech Expert	Name of Expert	
(Desirable)	Current profession:	
	Educational Qualification and University passed out	
	Registration Number if any	
	Permanent Address:	
	Contact Number:	
Post-Harvest Management Expert	Name of PHM Expert	
(Desirable)	Current profession:	
	Educational Qualification and University passed out	
	Registration Number if any	
	Permanent Address:	
	Contact Number:	
Cold storage / Infra Expert / Charter Engineer	Name of Expert	
(Desirable)	Current profession:	
	Educational Qualification and University passed out	
	Registration Number if any	
	Permanent Address:	
	Contact Number:	
Market Expert	Name of Expert	
(Desirable)	Current profession:	
	Educational Qualification and University passed out	
	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:	

6.3.Agri-Business Incubators

1. List of Incubators nearest to the project.
2. If any assistance is taken from the incubators, details

7	**Food Safety – With / Without Good Agricultural Practices Certification**

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 washed and rinsed under high pressure. All crop containers should be sanitized before harvest.	
b) Bins should be properly covered, when not in used 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.	
3. Sanitize packinghouse and packing operations	

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	
4. Pre-cooling and cold storage	
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.	
5. Transportation of produce from farm to market	
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

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
	Project at a Glance	√		
1	**About the Applicant /Promoter**	√		
2	**Details of benefits availed by the Applicant / Promoter**	√		
3	**About Project -Name, rationale, Management and Description**			
	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	**NHB Scheme under which the project is proposed with rationale / justification.**			
5	**Project details**			
5.1	**Agro-climatic suitability / feasibility**			
	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	**Market viability**			
	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	√		
5.3	**Financial viability**			

	1. Due diligence status	√		
	2. Project Cost	√	Certified by CA	
	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	
5.4	**Land development and Crop Husbandry**			
	5.4.1.Land development			
	5.4.2.Selection of Quality Planting Material			
	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	√	Nursery / Shop Invoice with Seed quality	
	5.4.3.Orchard / Site planning, Lay out and management			
	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	√		
	5.4.5.Farm Structures and mechanisation	√		
	1. Protective cover structure	√	Technical standards	
			Undertaking of expertise / competency by Agency	
	2. Farm Mechanisation	√	Company Brochures	
	5.4.6.Harvesting and Fruit / flower care management			
5.5	**Post-Harvest Management**	√		
	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 applicability)	√	Protocols	
	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			
5.6	**Marketing**			
	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	√		
5.7	**Value addition / Processing**	√		
6	**Technology providers**	√		
	1. ICAR /CAU/ SAU/SHU / Research Stations and Experts names	√		
	2. Agri/Horti-Business incubators	√		
7	**Food Safety -With /Without GAP certification**			
	1. GAP Certification if any	√		
	2. Food safety measures	√	Clean farm, Trained workers; Protective clothing, Safety equipment; First Aid; Safety and Hygiene policy; Waste Management Plan	
	a. Pre-planting	√		
	b. Crop husbandry	√		
	c. Harvestings	√		
	d. Post-harvest	√		
8	Innovation if any			
9	**Risk Management**	√	Proposed insurance details if any	
10	**Checklist**	√		
11	**Declaration from Crop Expert and Project Finance Expert**	√		
	Self-declaration by the Applicant	√		

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 and understood 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 3 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. Incomplete/ NPA projects and default cases shall not be eligible for subsidy.
11. 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:

Annexure: Proposed Stages in NHB Scheme Implementation

Stage	Player	Step	Mode	Timeline	Remarks / Enclosures
1	Applicant	Submission of Prescribed Application -specific to the scheme enclosing DPR based on model template.	Online		No document is required to be enclosed but with requisite fees.
2	NHB	Examines the Application and DPR and gets it appraised for Agro-climatic suitability, Market viability, Technological feasibility and capability of applicant duly considering the budget, priority (Sabka Saath Sabka Vikas) and design of implementation of the offer / Year.		Target 1 Month	Evaluated by a panel of 3 experts. Kept confidential.
3	Applicant + Bank	If the project is sound, NHB informs Pre-In Principle Approval (Pre-IPA) to the applicant to submit all the prescribed / requisite documents along with • Bank Appraisal of Market viability and Financial viability (should be after NHB Pre-IPA) ; • and Sanction (after Appraisal) within 3 months of NHB Pre-IPA. Any lapse in time line, the Pre-IPA stands vacated / rejected. However he is eligible for fresh submission.		Max. 1 month (Allowed max.3 months strictly)	Prescribed documents including those specified in DPR checklist.
4	Applicant	Undergoes 2 Weeks training programme on the project / Crop at his own expenses in an institute recommended / approved by NHB			
5	NHB	NHB examines the application, DPR with reference to documentary		2 months Target	

		evidence and Bank Appraisal of Market viability and financial viability duly considering the budget, priority (Sabka Saath Sabka Vikas) and design of implementation of the offer / Year.		1 Month	
6		NHB takes decision on according In-Principle Approval (IPA) to the applicant. In case it is approved, it is informed to the applicant.			
7		In case of projects rejected by NHB, the entrepreneur is provided an opportunity to make his case by way of presentation of his project on an appointed day in the presence of competent authority. The forum objective is to help the entrepreneur to know the weaknesses of the project currently and enable him/ her to review / revise his/ her project as deem appropriate to suit NHB requirements. The entrepreneur is open to submit project proposal afresh.			
8	Applicant	Where ever IPA is issued-Applicant has to complete the project within the prescribed time limit. Else the IPA stands vacated / cancelled.		18 months	
9	Applicant	Applicant submits subsidy claim within 3 months of completion of the project. Else the IPA stands vacated and rejected		3 months	Prescribed documents
10	NHB + Bank/ FI+ Applicant	NHB undertakes Joint Inspection of the field/ activity		Target: Max. 30 days of request	
11	NHB	NHB JIT submits JIT report		15 days	

12	NHB	NHB examines the JIT report and takes decision on release of subsidy subject to Scheme conditions and publish decision / minutes of competent authority with reasons in NHB website.		2 months	
13	NHB	In case NHB approves release of subsidy, releases funds with in 15 working days of minutes of competent authority to SRF account.			
14	Bank/ Applicant	1. Confirms the receipt of subsidy. 2. Closely monitor the project health for over 5 years. 3. Takes into consideration the NHB advisories.			
15	Applicant	1. Confirms the receipt of subsidy. 2. Maintain farm records and accounts. 3. Adopts technology / scientific package of practices and innovate marketing / business strategies. 4. Takes into consideration the NHB advisories. 5. Regularly reports the performance of project health 6. Share best practices if any to NHB.			