Detailed Project Report (DPR) :Model template

for NHB Scheme No.1

for ……..(Crop)

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			Tick mark
Scheme components	1. Open field condition of NHB specified crops	Within overall cost ceiling	
		+Farm Mechanisation	
		+Good Agri.Practices (GAP)	
		+Plastic Mulching	
	2. Protected Cover of NHB specified crops	Within overall cost ceiling	
		+Farm Mechanisation	
		+Good Agri.Practices (GAP)	
		+Plastic Mulching	
	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		

Submitted by

…….Applicant with full correspondence Address

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

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	3. Cleaning / Washing	
	4. Sorting and Grading	
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	6. Ripening	
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	3. Pre-cooling unit	
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	5. Mobile Pre-cooling unit	
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	7. Primary Processing	
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Checklist of documents to be submitted at Market Viability and Financial Viability stage and during JIT.

Project at a Glance

1.	Applicant (s) / Legal entity Name		
2.	Constitution / Applicant nature / beneficiary		
3.	NHB Scheme for which DPR is made		
4.	Project Activity		
5.	Nature of project- Green field/ pre-existing- expansion / component specific		
6.	Products, By-products and services		
7.	Land		
	1. Land ownership: Owned or on registered lease for minimum of 10 effective years from the date of IPA. In other words ideally one should have 11 Years of registered lease including a processing period of 1 Year from the time of application for Technical feasibility.		
	2. Project Area and Survey /khasra/ Gat/Dag No.		
	3. Project Site Address with Postal Code and Police Station Name		
8.	Technical feasibiltiy		
	1. Agro-climatic suitability		
	2. Research institution whose technology and package of practices are proposed to be followed		
	3. Crop husbandry / PHM is based on evidence based R&D		
9.	Existence of similar project activity in the said District		
10.	Whether the project is located in the crop cluster/ hub/ belt		Yes/No
11.	Project economic period/ economic life		
12.	Total Project Cost of the proposal		
13.	• Open field condition or Protected Cover		
	• Integrated Post Harvest Management		
	• Total		
14.	Project completion period (in months)		
	Expected Implementation timeline	Commencement	
		Completion	
15.	Total Eligible Project cost as assessed by the Applicant as per NHB guidelines		
16.	Bank/ Financial Institution identified for Term loan		
17.	Proposed Means of Finance	Promoters contribution (in Lakh Rs.) & %	
		Bank Term loan (in Lakh Rs.) & %	
		Un secured loan (in Lakh Rs.) & %	
		Total	
18.	Gestation period		
19.	Projected Key Financial Parameters	Current Ratio other than export units	
20.		CR-Export units	
		IRR /BCR	
		DSCR*	
		Average DSCR	
		Debt to Equity Ratio i.e DER	
		TOL/TNW	
		Promoters Contribution	
		Break Even Point	

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

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

A. About Applicant / Promoter

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/ CIN & date of registration		
2. Act under which Registered		
3. Registering authority		
4. Name of Promoter / CEO/CMD/MD/		
5. If it is FPO/ FPC/ Producers Co-op society / Growers Co-operative Marketing federation- Please specify		
6. If it is Reg. Society/ Company/ Corporation / Partnership firm / Proprietary firm- Please specify		
7. Name of Promoter (s)/ Board of Directors/ Partners etc.		
8. Status of the promoter / applicant in the legal entity-please specify		
9. Whether the promoter / applicant is authorised by the Legal entity- Yes/No		
10. In case of Company/partnership firms / legal person 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- give details of registration		
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	(As per applicability)	
a. PAN No		
b. Aadhaar No.	Yes/No	
c. Udyog Adhaar No.		
d. GST		
e. Passport No if any		
1.5.Correspondence Address	Postal Address with PIN code	
	Telephone	
	Mobile	
	Email id	
	Fax if any:	
1.6.Project / Site Address		
1.7.Social Category (In case of legal entity the CEO and Board of Directors social category is to be mentioned)	General / SC/ST	
	OBC	
	Minority (Muslim/Christians/Sikhs/Buddhists/Parsis/Jains)	
	In case of SC/ST applicants a Certified copy of Caste Certificate issued by Competent Authority is to be enclosed. In case of others a self-declaration is to be enclosed.	
1.8.Location: TSP / NE Region / Hilly States	In case of TSP a self-attested copy of notification is to be enclosed.	
1.9.Gender	Male / Female/Transgender	

B. Applicant/ Promoters' Entrepreneurship:

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

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

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

h. Horticulture and project proposal specific Trainings if any undergone

Training	Duration and Period	Institute with address	Purpose for undergoing training

i. Current profession with details of Turn over, Accomplishments if any.

j. Previous profession during the last 5 Years with details of Turn over, Accomplishments if any

k. Experience- General and Horticulture

   a. General (Other than Horticulture) specify the activity, establishment/ Office, location etc.

   b. Horticulture-General: State specific activity- crop production, PHM etc. including project site, area, number of years, accomplishments etc.

   c. Horticulture-Experience in proposed activity: provide the name of establishment/office, location, number of years, specialisation etc.

l. Any information that establishes the applicants' entrepreneurship (Should be able to enclose evidence during Market & Financial Viability stage and during JIT):

1.11. Registrations with any Government Agency if any

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

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

In case of a Partnership firm/ Company / Legal person

a. Whether the proposed activity is covered under the objectives as per Memorandum of Association (MoA) / Rules explicitly: If so please provide the Article and Rule in verbatim.

b. Professional history of Legal entities Farmers Producer Organisations (FPOs), Self Help Groups, Partnership/ Proprietary Firms, NGOs, Companies (as a Board of Director), Corporations, Cooperatives, Co-operative Marketing federations/ Government Institutions.

c. Management structure if it is a company/ firm etc depicting the position of the applicant.

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

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

2.1.In this / proposed project and location:

1. Whether the proposed project proposal has been submitted for consideration under any State Government or Central Government Scheme for financial grant? If yes give details.

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

Constitution – Individually or in any form	Ministry/ Organisation	Scheme Name	Project code & 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) : Either in his / her own name individually or in the name of his / her family members or through any legal entity or in any form or constitution, in which he / she is the beneficiary either in the current proposed project location or any other location.

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

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

2.2.2.From Central Government- Ministries / Organisations:

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

2.2.3.From State Governments:

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

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

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

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

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

2.5.Provide the following details:

a. Have you ever been refused / denied subsidy claim from NHB, NHM, APEDA, NCDC, MoFPI? If Yes please provide details of (i) Project code, (ii) Name of Applicant, (iii) Address (iv) Project activity etc. and the reason for such refusal / denial:

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

Attention:

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

4. About the Project, Rationale, Management and Description

3.1.About the Project

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

No.	Name of the scheme and component	Unit	Tick mark relevant component
5	Development of Commercial Horticulture through Production and Post-Harvest Management of Horticulture Crops		
	1. Open field condition		
	2. 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)		

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

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

7. Products, product Mix, by products and Services of the Project
8. Objectives of the Project
9. Expected Outcomes of the Project
10. Socio-economic benefit to the region /District / State

3.2.Rationale / Justification for the project

3.2.1. Rationale

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

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

3.3.Project Site/ Land details:

3.3.1.Proposed Project Area:

	Activity	Area proposed
1	Cultivation –	
	Open Cultivation (Ha) / 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.

A	Name of Owner of land proposed for the project as per Land Revenue Records				
	Whether title of the land is clear in the name of applicant and is free from any litigation				
	How Title is derived	Ancestral			
		Purchased (with details of date)			
	Encumbrances if any				
B	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		
	Whether land is in possession of the Applicant				
C	In case of Partnership				
	1. Whether land is owned by Partnership firm or jointly by its partners		Yes/No		
	2. NOC: If land is owned by one of the partner, an undertaking by land owner is required stating that he/she will not withdraw, sale or transfer his/her land during currency period of the project				
	Whether land is in possession of the Applicant				
D	In case of Lease				
	1. In case the land is that of leased, Registration details of the said leased land in the office of Sub-Registrar				
	2. No.of Years of lease				
	3. Whether lease is entered in RoR		Yes/No		
	Whether land is in possession of the Applicant				
E	Whether land is mortgaged? If yes provide details of mortgagor and mortgagee				

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

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

Google map with coordinates:

3.5.Current usage of land of proposed Project Area

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

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

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

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

Connectivity :

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

Supply side suitability: Raw material Catchment area

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

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

Map of Catchment Area:

Demand side suitability

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

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

Map of consumption Centres

Other Merits/ Advantages:

3.11.Compliance of project site for food safety

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

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

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

No.	Name of the scheme and component	Justification
1	Development of Commercial Horticulture through Production and Post-Harvest Management of Horticulture Crops	
	1. Open field for specified crops	
	2. 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
	  ○ Fan & Pad/
	  ○ 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 providing technical know-how and turn key for cultivation- and contact person Name and contact numbers	
3.	Operations:	
	1. Land preparation	Own / custom hiring
	2. Procuring planting material/ seeds	Own / outsourcing
	3. Orchard planning, layout	Own / outsourcing
	4. Water and nutrient management	Own / outsourcing
	5. Pruning & Training	Own / outsourcing
	6. Pollinators & 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/Flower 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. Profile of Agency executing erection of Protected Structure/ Post Harvest Infrastructure (based on project / applicability etc.

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

3.15. Quality of Services of Agency executing erection of Protected Structure/ Post Harvest Infrastructure (based on project / applicability etc.

1.	Hardware: Guarantee offered	Guarantee Period & conditions if any
	1.	
	2.	
	3.	
2.	Hardware: Warranty offered	Warranty period & conditions if any
	1.	
	2.	
	3.	
3.	Services: Supervision and After sales service	Free service Period
4.	Others	
5.		
6.		
7.		
8.		

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

Project Implementation period in case of approval: Months.

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

Activity	Units	Months					
		JF	MA	MJ	JA	SO	ND
1. Land development							
2. Erection of Protected structure in case of Protected cultivation							
3. Land preparation							
4. Procuring planting material/ seeds							
5. Orchard planning and layout							
6. Water and nutrient management							
7. Pruning & Training							
8. Pollinators & Pollinisers							
9. Plant growth regulators							
10. Integrated Pest & Disease management							
11. Physiological disorders							
12. Farm Mechanisation-procurement							
13. Farm Mechanisation operations							
14. Harvesting/ Fruit care management							
15. Post-Harvest Management							
a) Pre-cooling							
b) 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.

3.17.Number of days of Operation / Crop etc:

3.18.Backward and Forward linkages

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

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

2. Forward linkages- for Domestic and Export Market

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

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

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

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

3.19.1.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)										

3.19.2.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)										

3.20.Employment Generation per annum

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

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

Utility	Requirement	Remarks
Power	Likely Daily power requirement	
	Likely Annual Power requirement	
	Proposed Source of Power	
	Access to Power is assured or not	
	Alternative Source of Power in case of breakdowns	
	Whether renewable alternate energy to power is under consideration	
Water	Source – Ground Water /Surface Water	
	Existing or New source	
	Whether NOC has been taken from CGWB / State Government Ground water regulation authority-	Yes/No
	Water measurement systems is planned	
	Daily Water requirement	
	Whether water harvesting is planned	Yes/No
	Water productivity parameters proposed if any	
	Quantity of effluents likely	
	Water treatment plant if any proposed	Yes/No
Fuel	Access to fuel to power- Generators- Yes/No	
	Nearest fuel depot	
Water	Source – Ground Water /Surface Water	
	Existing or New source	
Plant & Machinery		
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		

3.22.SWOT Analysis

1	Strengths	
2	Weaknesses	
3	Opportunities	
4	Threats	

Attention of the applicant:

1. Applicant shall not change project land, proposed crop / activity / component, area and bank / financial institution in the proposal during the project implementation period. Thus any change in crop or project site shall make the component or project, as the case may be, ineligible for getting subsidy.

(Signature of the Applicant)
with date and time.

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

1. Scheme.1: Scheme guidelines

SCHEME-1

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

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

Description of components and Pattern of Assistance

1.1 Commercial Horticulture Development in open field conditions on project mode

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

Pattern of assistance

Credit linked back-ended subsidy @ 40% of the total project cost limited to Rs 30.00 lakh per project in general areas and @ 50% of project cost limited to Rs. 37.50 lakh in NE Region, Hilly and Scheduled areas.

1.2 Commercial Horticulture Development in protected cover on project mode

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

Pattern of assistance

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

1.3 Integrated Post Harvest Management projects

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

Pattern of assistance

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

1.4 General conditions

I. Credit component as means of finance of the project should be term loan from banking or non banking financial institutions. For credit linked projects under NHB, eligible subsidy amount to be capped at par with term loan sanctioned by the lending Banks/FI

II. Normative cost of various components shall be prescribed by NHB.

III. Benefit of exclusive components of cold storage scheme shall also be available to the promoters over and above the assistance that will be provided under Commercial Horticulture Scheme to set up integrated projects for production and PHM components.

IV. Projects relating to setting up of new units shall be technically and financially appraised to ensure and enable entrepreneur to incorporate latest available technology.

V. Assistance can also be availed for a combination of PHM infrastructure components by a beneficiary, within the prescribed norms of individual items.

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

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

APPENDIX- 1

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

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

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

APPENDIX- I-A

Cost norms for open field cultivation under NHB Scheme

Cost in Rs. per acre

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

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

Note:

1. Wherever cost norms are not given, cost norms available under MIDH scheme for similar activity shall be followed. In case norms are not available under MIDH schemes also, cost appraised by bank as per bank norms or approved by Competent Committee of NHB shall apply.

2. In project mode, applicant may opt for add on components as per norms given Appendix-1C but unless otherwise specified, cost ceiling, as prescribed for each crop/activity shall be applied where cost of add on components exceeds prescribed ceiling.

APPENDIX- I-B

Cost norms for protected cultivation under NHB Scheme

Cost Rs Lakh per acre

SN	Crop	Cost of poly house with drip & fogger system *	Cost of cultivation	Cost ceiling per acre with add on components in project mode
1	Anthurium & Orchid	33.76	28.00	70.00
2	Rose, Lilium Chrysanthemum	33.76	17.04	60.00
3	Carnation & gerbera	33.76	24.40	66.00
4	Hi-value vegetable under poly house	33.76	5.60	47.00
5	Hi-value vegetable under shade net	28.40	5.60	40.00

- Cost of Tubular structure in plain area. In hilly area cost of poly house will be 15% more.

Note:

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

Appendix –1-C

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

S.No.	Item	Description	Admissible Cost
	Cutoff date for implementation		
I	Cost of Land * #	Admissible only if purchased newly but not before one year from date of sanction of loan.	Actual or up to 10 % of Eligible Project Cost (EPC) (Excluding cost of Land and Development) whichever is less subject to maximum of Rs. 50,000/- per acre.
I (i)	Land Development * #	Includes cost of Land leveling, digging of pits, fencing , gates etc.	Actual or up to 15% of Eligible Project Cost (EPC) (Excluding cost of Land and Land Development) whichever is less subject to maximum of Rs. 50,000/- per acre.
II	Cultivation expenses * #	Includes cost of Planting material , cost of input (labour , fertilizer and manures, pesticides etc)	As per MIDH (NHM) cost norms as given at Appendix- 1
III	Drip system with internal pipeline	Component includes mainline, valve, backflow preventer pressure regulator, filter, tubing adapters and fittings, drip tubing, emitters and an end cap	• Actual or Rs. 20,000/- per acre for plant density up to 200 plants • Actual or Rs. 25,000/- per acre for plant density > 200 plants / acre • Sprinkler @ Rs 15,000/ per acre
III (i)	Irrigation infrastructure excluding micro irrigation * #	Irrigation infrastructure like tube-well/bore well/open well, pipeline, water harvesting structure, water tank etc, admissible only if newly created with loan component	• Actual or up to Rs. 50,000/- per acre for open field cultivation. • Rs. 4.00 lakh per project in case of protected cultivation. Component–wise cost norms will be as under 1. Tube-well – up to Rs 2.50 lakh per unit 2. Water harvesting structure- @ Rs.100/- CuM.with use of minimum 300 microns plastic films or RCC lining. 3. Cost of non lined ponds/tanks will be 30% less. 4. Pipe line-Rs 150/- per running meter only from source (min. 4" diameter) of irrigation to production unit

S.No.	Item	Description	Admissible Cost
IV	Horticulture Mechanization * # # #	• Power/hydraulic operated machine/tools including small farms tractor with rotavator / equipments etc. • Machineries Identified by NHB under farm mechanization component may be considered for subsidy in standalone mode	• Tractor (up to 20 BHP) @ Rs.3.00 lakh/unit • Power Tiller below 8 BHP @ Rs.1.00 lakh/unit • Power tiller 8 BHP & Above @ Rs.1.50 lakh/unit • Tractor/Power Tiller (below 20 BHP) driven equipments - Land development, tillage and seed bed preparation equipments -@ Rs.0.30 lakh per unit - Sowing, planting reaping and digging equipments - @ Rs.0.30 Lakh per unit • Plastic mulch laying machine – Rs.0.70 Lakh per unit • Self-propelled Horticulture machinery - @ Rs.2.50 lakh per unit • Other tools and equipments as per norms as per norms of Sub Mission on Agriculture mechanization (SMAM)
V	Civil Infrastructure * #	Includes Functional Pack House/ On farm collection unit and labour quarter	1. Functional Pack house @ Rs. 4.00 Lakh/unit with size of 9 x 6 Meter (Pro rate basis for lower size) 2. Labour Quarter/ Store room @ Rs. 20,000/- per acre Maximum up to 3.00 lakh. Cost norm as per pack house
VI	Vermi Compost unit * #	Permanent structure and HDPE vermibed	Rs.60,000/- per unit for permanent structure and Rs.10,000/- for HDPE vermibed (96 cft (12'x4'x2' and IS 15907:2010 to be administered on prorate basis).
VII	Certification for Good Agriculture Practice (GAP), including infrastructure * ##		Rs.4000/- per acre.
VIII	Support system for Grapes (trellis, telephone, bawar and other system etc. *	Permanent structure made up of MS angles and stainless steel wire.	Rs. 1,50,000/- per acre

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

Components categorization:

* Commercial Horticulture, within overall cost ceiling

Protected Cultivation, within overall cost ceiling

Over and above overall cost ceiling

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

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

5.Project details

5.1	**Agro-climatic suitability**	

5.1.1.Origin, History, and Distribution

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

2. Distribution of crop across the country

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
1.	Climate			
2.	Altitude			
3.	Climatric / Non Climatric			
4.	Thermosensitive ness of crop			
5.	Photosensitive			
6.	Temperature range			
7.	1. Mean monthly / Average temperature			
	2. Av.Max.temperature			
	3. Av.night temperature			
	4. During Crop duration			
	5. Flowering			
	6. Fruiting			
	7. Maturity			
	8. Fruit quality			
	9. Season			
8.	Rainfall / Water			
9.	1. Land preparation			
	2. Flowering			
	3. Fruiting			
	4. Maturity			
	5. Season			
10	Humidity			
	1. Flowering			
	2. Fruiting			
	3. Maturity			
	4. Season			
11	Winds during crop season			
12	1. Wind velocity			
13	Shade loving?			

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

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

Risk management/ Deviation Management if any:

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

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

(Not applicable to standalone PHM projects)

Soil / Soil less medium	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
Type				
Texture				
pH				
Organic carbon				
Electrical conductivity				
Chlorine				
Sodium				
Potassium				
Nitrogen				
Phosphorus				

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

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

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

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

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		
EC		
Total salt concentration / TDS		
Sodium Absorption Ratio (SAR)		
Bi-Carbonate		
Boron concentration		
Heavy metals		
Pesticide residue		

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

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

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

5.2.Project- Market viability of the Project

(To be facilitated and certified by Horticulture Expert)

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

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

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

5.2.3.Statistics: India and State.

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

1.National picture

Year	Area in ha	Production MT	Productivity T/ha	Global Productivity data T/Ha		
				Highest	Average	

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

2.State wise picture- Top 10 producing states

State	Area in ha	Production MT	Productivity T/ha	

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

3.Project State Picture (Mandatory)

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

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

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

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

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

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

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

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

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

Crop	Area		Production		
	Ha	%	MT	%	
Total		100		100	

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

7.Availability of Storage facilities in the project area / District / 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

Source: Multiple sources: https://nccd.gov.in/# and District Horticulture Office.

Gap Analysis in Project Area:

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

6.2.4. Clusters/ Zones

5.2.4.1.Crop clusters in the State (Mandatory)

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

Source: State / District Horticulture Office/ APEDA / MoFPI

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

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

Source: APEDA / District Horticulture Office

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

Demand -Supply gap for the commodity

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

Source: Multiple sources.

http://agricoop.nic.in/
APMC/ Agriculture Marketing Board/ District Horticulture Officer

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

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

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

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

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

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

Source:

http://agricoop.nic.in/statistics/publication-reports
http://agriexchange.apeda.gov.in/;

5.2.7.International trade market and potential:

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

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

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

Fruits/ vegetable/ flower	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/ Flower Market

A.At local Market

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

Source: Concerned APMC / Marketing Board website or http://agmarknet.gov.in/
If no reliable source is available, the above data may be collected from District Marketing / Horticulture Officer

B.At nearest / Major Terminal Market

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

Source: Concerned APMC / Marketing Board website or http://agmarknet.gov.in/
If no reliable source is available, the above data may be collected from District Marketing / Horticulture Officer

C.Projected prices of project produce (if Possible)

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

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

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

	Year:											Qty: 000Tons
	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
(To be prepared and certified by Project Finance Expert on each page)

5.3.1: Due Deligence Status

	Date of 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)	Yes/No	
	b) In case of company whether financial data verfied with ROC .	Yes/No	

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

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

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

Protected Cultivation	Protected Structure with Micro Irrigation
	• Green house
	  ○ Fan & Pad/
	  ○ 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)
4. Open field condition	With add on components		
	Without add on components		
5. Protected Cover of NHB specified crops	With add on components		
	Without add on components		
6. Integrated PHM			
3.1.Integrated Pack House			
3.2.Pack house			
3.3.Pre-cooling unit			
3.4. Cold Room (Staging)			
3.5. Mobile Pre-cooling unit			
3.6.Ripening Chamber			
3.7 Primary Processing			
3.8.Refer Van			
3.9 Retail outlet			
Grand Total			

5.3.3 Means of Finance (Rs.in Lakhs)

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

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

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

5.3.4.Hypothecation Security if any:

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

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

5.3.6.Investiment in Horticulture Sector

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

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

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

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

5.3.8 Project Financing:

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

5.3.9 Sensitivity analysis of the project.

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

5.3.10 Key Financial Parameters for the proposal:

Sl. No.	Ratio	Benchmark	As calculated by Project Finance Expert				
			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					

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

1. Immovable Assets

(Rs. In lakh)

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

2. Movable Assets

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

3. Bank/FI balances and cash

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

4. Shares & debentures

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

5. Investment in business & other associates concern

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

Total assets…….....

1. Liabilities

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

Total liabilities…….....

Net of assets & liabilities……....

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

5.3.12.Risk Analysis & Management

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

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

5.3.13.Farm record keeping/ Maintenance proposed

5.4: Land development and Crop husbandry

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

5.4.2. Selection of Quality Planting Material

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

1. Recommended and popular cultivars/ varieties/ Hybrids State wise	Name of variety / Hybrids/ cultivar (with potential yield)
a.	
b.	
c.	
d.	
e.	
2. Classification of cultivars based on crop maturity	
a. Early	
b. Mid	
c. Late	
3. Classification of cultivars / Varieties/ Hybrids based on purpose	
a.	
b.	
c.	
d.	

Cultivar/Hybrid/Variety / Planting material Selected:

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

Method of Propagation / technology

Method recommended by ICAR / CAU/SAU/SHU	
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.

Source: NHB

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. Parentage if known	
3. Description/ Characteristics of Variety/ Cultivar / Hybrid	
4. Criterion / Rationale for Selection	
5. Nursery / Shop from where seeds/ planting material is procured/ purchased	Name of Nursery/ Shop: Address Proprietor Name Contact Number: Email: Website:
6. Warranty period for crop establishment	
7. Warranty provided for pests and diseases if any	
8. Whether variety/ hybrid/ cultivar registered under Section 39 (2) of The Protection of Plant Variety and Farmers Right Act, 2001 (PPVFR Act)	
9. 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
10. Applicability of Seed Act and any State Act on nursery/ planting material	
11. Authority which provides compensation to the farmers in case the said variety / cultivar / hybrid does not perform as per the claim made by the breeders under Seed Act / State Nursery Act if any	
12. What is the dispute settlement mechanism of Company / Supplier of seed / planting material- If the said crop variety / cultivar/Hybrid is not registered under PPVFR or does not come under Seed Act or Any State Nursery Act. Please provide the name, designation and address including Tel, Mobile and email id of company official responsible for settlement.	
13. Original manufacturer / Source of planting material	Full address with contact Nos.
14. Name of Tests with date and lab- conducted to assure pest and disease free ness of seeds/ propagation by the nursery/ company	Optional
15. Whether the planting material is imported. If Yes, whether plant quarantine and disease free certification was done	

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

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

Or Sowing in case of seeds

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	
	(Mention source of publication with date/Year)
	Provide reliable good web links or mention any publication for additional reading or for more information.
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

5.4.3.2.Land preparation including bed preparation / pot plants

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	
	(Mention source of publication with date/Year)
	Provide reliable good web links or mention any publication for additional reading or for more information.
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			
Spacing			
Seed/ seedling rate/ Density per Acre			
Seed / Planting Material treatment			
Depth of sowing			
Seedling/ Transplanting age			

@: 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. Critical stages for Irrigation and Water required under Drip Irrigation

Critical Stages	Recommendation	Proposed practice	Remarks

b. Method of Irrigation:

Methods	Recommendation	Proposed practice	Remarks

c. Water source, demand and availability

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

d. Water harvesting measures

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

Soil Health Analysis:

Dated		Institute	
Soil Health Parameters	Values	Recommended range	Remarks

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	
	(Mention source of publication with date/Year)
	Provide reliable good web links or mention any publication for additional reading or for more information.
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	
	(Mention source of publication with date/Year)
	Provide reliable good web links or mention any publication for additional reading or for more information.
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	
	(Mention source of publication with date/Year)
	Provide reliable good web links or mention any publication for additional reading or for more information.
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.

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

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

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	
	(Mention source of publication with date/Year)
	Provide reliable good web links or mention any publication for additional reading or for more information.
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	
	(Mention source of publication with date/Year)
	Provide reliable good web links or mention any publication for additional reading or for more information.
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/ Others	1. Fungal diseases and Management
	2. Bacterial diseases and Management
	3. Viral diseases and Management
	4. Phytoplasma diseases and Management
	5. Pests and Management
	6. Nematodes and management
	7. Pesticide residue management (including waiting period)
	(Mention source of publication with date/Year)
	Provide reliable good web links or mention any publication for additional reading or for more information.
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

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

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

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	
	(Mention source of publication with date/Year)
	Provide reliable good web links or mention any publication for additional reading or for more information.
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

5.4.3.12.Special problems if any

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

5.4.5.Farm Structures and Farm Mechanisation

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

Objective of Protected cover / structure:

Protected Cultivation Specifications:

Nature of Protected Cultivation	Model	NHB Standards/ Specifications	Proposed Model specifications	Deviation if any
1. Green House	a) Fan & Pad System			
	b) Naturally ventilated System			
	i. Tubular Structure			
	ii. Wooden Structure			
	iii. Bamboo Structure			
2. Shade Net House	a) Tubular Structure			
	b) Wooden Structure			
	c) Bamboo Structure			
3. Plastic Tunnel				
4. Walk in Tunnel				
5. Anti-Bird / Anti-Hail net				

Technical Standards in vogue : Some of the standards being followed for construction of Green Houses are as under :

Indian Standard:- The Bureau of Indian Standards (BIS) has formulated following standards with respect to Poly-House/Green Houses:-

1. IS 14462:1997 - Recommendation for layout, design and construction of green house.
2. IS 14485:1998 – Recommendations for heating, ventilating and cooling of green-house.
3. IS 15827: 2009 – Plastics films for Green house

Points to be considered while constructing green house

- East and south sun is excellent for the green house, which can remain open on both these sides, but it should be shaded on the north and the west to protect from winds.
- Construction: A plan should be prepared before constructing the green house together with plan of beds and paths on the ground.
- Selection of plastic film structure and roof slope
- Use of proper controlled climatic condition
- Area and Green house structure
- Plant protection measures

Types of green houses:

- Tunnel type (cold climate green house)
- Quonset (semicircular/subtropical green house)
- Gabble type (slopping roof)
- Tropical region green house
- Ridges and furrows green house
- Ground to ground green house

Design consideration of Poly-house:

Site selection:-

- While selecting the site for construction of a Poly-house, following points should be considered for the optimum growth and development of plant:
- The site should be free from shadow.
- The site should be at a higher level than the surrounding land with adequate drainage facility.
- Availability of good quality irrigation water and electricity.
- pH of irrigation water should be in the range of 5.5 to 7.0 and EC between 0.1 to 0.3 mS/cm.
- pH of soil should be in the range of 5.5 to 6.5 and EC between 0.5 to 0.7 mS/cm.

Orientation:-

Correct orientation can provide good environmental conditions inside the poly-house.

Size:-

The size of poly-house needs to be selected based on availability of the land.

Cost:-

The cost may vary depending upon the types of poly-house and many other reasons.

Height:-

Height is one of the most important aspects of poly-house design. The height of structure directly impacts natural ventilation, stability of the internal environment and crop management. The ideal height of Naturally Ventilated small green house (up to 250 sqm) should be in the range of 3.5 m to 4.5 m and 5.5 m to 6.5 m in case of large size poly-houses.

Maintenance of favorable environment in naturally ventilated green house

NATURALLY VENTILATED POLYHOUSE (NVPH)

SR. NO	PARTICULARS	SPECIFICATION OF NHB	PROPOSED SPECIFICATION	REMARK
1.	Type of structure	NVPH		
2.	Area in sq.mtrs.			
3.	Gutter Height	4.0 to 4.5 mtrs		
4.	Ridge Height/Centre height	6.0 to 6.5 mtrs		
5.	Foundation pipe	60 mm OD 1200 to 1300 mm length 3 mm thick weight 4.20 kgs/mtrs.		
6.	Column	76 mm OD, 2mm thick, weight 3.75 kg/mtrs.		
7.	Top Purlin	48 mm OD/2.0 mm thick, weight 2.30 kg/mtrs.		
8.	Gutter Purlin	42 mm OD 2mm thick, weight 2.10k g/mtrs.		
9.	Top Arch	42 mm OD 2mm thick, weight 2.10kg/mtrs.		
10.	Bottom cord of the Truss	60 mm OD/2.0 mm thick, weight 2.85kg/mtrs.		
11.	Internal Bracing pipe & Cross Bracing	33 mm OD 2mm thick, weight 1.60kg/mtrs.		
12.	Balcony pipe	60 mm OD 2mm thick, 2.85kg/mtrs.		
13.	Curtain runner	42 mm OD 2mm thick, weight 2.10kg/mtrs.		
14.	Curtain shaft	27 mm OD 2mm thick, weight 1.30 kg/mtrs.		
15.	Hockey support	33 mm OD 2mm thick, weight 1.60 kg/mtrs.		
16.	Flap control pipe	21 mm OD 2mm thick, weight 1.08 kg/mtrs.		
17.	Poly film	UV stabilized 200 micron		
18.	Fasteners	M6 to M10 Nut bolts 50-150 mm long		
19.	Shade net	UV stabilized 50% shade net of any colour with manual or auto operation		
20.	Bottom Apron	0.6 to 1.5 meter height		
21.	Nut bolts	Size 3/8"		
22.	Civil work/Foundation	45 cm dia. and 75cm to 90 cm depth		
23.	Extra items if any a) Down take pipe b) Trellis system c)			

NATURALLY VENTILATED POLYHOUSE (NVPH)

SR. NO	PARTICULARS	SPECIFICATION OF NHB	PROPOSED SPECIFICATION	REMARK
1.	Type of structure	NVPH		
2.	Area in sq.mtrs.			
3.	Gutter Height	4.0 to 4.5 mtrs		
4.	Ridge Height/Centre height	6.0 to 6.5 mtrs		
5.	Foundation pipe	60 mm OD 1200 to 1300 mm length 3 mm thick weight 4.20 kgs/mtrs.		
6.	Column	76 mm OD, 2mm thick, weight 3.75 kg/mtrs.		
7.	Top Purlin	48 mm OD/2.0 mm thick, weight 2.30 kg/mtrs.		
8.	Gutter Purlin	42 mm OD 2mm thick, weight 2.10k g/mtrs.		
9.	Top Arch	42 mm OD 2mm thick, weight 2.10kg/mtrs.		
10.	Bottom cord of the Truss	60 mm OD/2.0 mm thick, weight 2.85kg/mtrs.		
11.	Internal Bracing pipe & Cross Bracing	33 mm OD 2mm thick, weight 1.60kg/mtrs.		
12.	Balcony pipe	60 mm OD 2mm thick, 2.85kg/mtrs.		
13.	Curtain runner	42 mm OD 2mm thick, weight 2.10kg/mtrs.		
14.	Curtain shaft	27 mm OD 2mm thick, weight 1.30 kg/mtrs.		
15.	Hockey support	33 mm OD 2mm thick, weight 1.60 kg/mtrs.		
16.	Flap control pipe	21 mm OD 2mm thick, weight 1.08 kg/mtrs.		
17.	Poly film	UV stabilized 200 micron		
18.	Fasteners	M6 to M10 Nut bolts 50-150 mm long		
19.	Shade net	UV stabilized 50% shade net of any colour with manual or auto operation		
20.	Bottom Apron	0.6 to 1.5 meter height		
21.	Nut bolts	Size 3/8"		
22.	Civil work/Foundation	45 cm dia. and 75cm to 90 cm depth		
23.	Extra items if any a) Down take pipe b) Trellis system c)			

Section-3: Technical Standards of Naturally Ventilated Polyhouse/Greenhouse

Sr.No	Item	General Specifications
1	Type	• Minimum top ventilation should be 10% of total Polyhouse/Greenhouse area and side ventilation depends on requirement of the climatic conditions. • Preferably Saw tooth design or Even Span, Ridge & Furrow depending upon suitability for naturally ventilated polyhouse/greenhouse
2	Size	Area = As per the requirement. Length = Multiples of 8 Meter + 4 Meter. Ex. 8x2+4 or 8x3+4. (Length is side along the gable or side along the truss lines) Width = Multiples of 4 Meter. Ex. 4x2 or 4x3. (Width is side along the gutter or side along the Purlin lines)
3	Grid	8M x 4M. 2 Meter corridors/balcony along all four sides. If the area is ≤250 Sq m then it is better to go for single span green house
4	Shape	To reduce the impact of wind and consequent damage to greenhouse structure; Green house will be aero dynamic along all four sides with curvature shaped balcony pipes of 48 mm OD/2 mm thick G I pipes
5	Structure	Hot Dip Galvanized Tubular Structure. Galvanization of the structural members of BIS standards should not be less than 300 GSM (grams per square meter).
6	Stability of Structure	Structure should withstand to minimum wind velocity of 80.6 miles per/hr or 130 Km/hr or 36 Meter per second. Note:- In case of high wind velocity zones, structure should withstand wind velocity upto 94 miles per/hr or 150 Km/hr or 42 Meter per second.
7	Sizes of the structural members	Refer sequence as =

Members Name	Outside Diameter (mm)	Thickness (mm)	Wt. per meter length (kg)
Columns	76	2	3.75
Top Purlins	48	2	2.30
Gutter Purlins	42	2	2.10
Top Arches of the truss	42	2	2.10
Bottom Chord of the truss	60	2	2.85
Internal Bracings of the truss	33	2	1.60
Coridors/Balconies	60	2	2.85
Curtain Runner	42	2	2.10
Flap control pipe	21	2	1.08
Curtain Shaft	27	2	1.30
Cross Bracing	33	2	1.60
Not:- Welded pipes should not be used for structure erection except bottom pipe of 8 m length.			

8	Fixtures to join structural Members	Different type of fixtures are used to join structural members of poly-house like brackets, cleats, clamps, nut & bolts, washers, self tapping & drilling screw etc. The entire iron fixture should be galvanized and strong enough.
	a) Brackets and cleats	Made from the section like angle, channel, I beams and should be cold galvanized with minimum coat of 120 GSM
	b) Clamps	Different type of clamps like 76/60/48/42/33 mm OD full, 76/60/48/42/33 mm OD half are used which should be made from min. 42 mm wide and 2.1 mm thick GP Coil having minimum 120 GSM Galvanization. Curtain clamp should be made from high carbon steel strips of min.30mmwide and 0.8mm thick. Such clamp should have proper spring action so that after fixing at the place they should not change the location.
	c) Nut, bolt and Washers	From M12 to M6 Bolts, Nuts, washers should be used and they should be cold galvanized with min. 120 GSM Coat.
	d) Self tapping and drilling Screw	These screws should be used to assure extra safety. They prevent dislocation of clamps from its place. Distance between tapping screw specially for fixing profile to gutter should be 30-40 cm.
9	Gutter	Gutter should be made of Galvanized sheet of 2 mm thickness in trapezoidal shape having 500 mm wide perimeter (Preferably of single length without joint) Coil having 120 GSM Galvanization. It should be leak proof. Min. 1% slope required for the gutter. Assure uniform slope to gutter to avoid stagnant water in gutter to achieve maximum life of gutter. Gutter Orientation – North- south and may change according to wind direction.
	(a) Gutter Height	Gutter height should be 4 to 4.5 meter from foundation formation level
10	Ridge Height	Ridge height should be 6 to 6.5 meter from foundation formation level.
12	Arches Overlap	Minimum overlap of top arch over second (small) arch should be 600mm to avoid direct rain entrance into the greenhouse from the vent.
13	Foundations	Pit size should be min.450mm dia. Depth 750 to 900mm or suitably altered depending upon Ground strata / level so as to ensure safety and stability of the structure even under extreme wind conditions. Columns are fitted over ground "Inserts" and bolted to Insert pipe of 60 mm OD/3mm thick G I Pipe. Length of Insert 1200 to 1300 mm. & filling the pit with 1:2:4 concrete hand mixed with appropriate Grade cement.

		Before doing the line out for the foundation, ensure that slope of greenhouse ground along the gable should be 0% to 1% and along gutter min. 1% and max. 3%. If slope of ground exceeds this limit then ask grower to do the land development and maintain the slopes of the ground within the limits. Slope along the gable and gutter should be uniform. If developed ground has filling depth more than 200 mm then ask grower to do the flooding of water over the ground so that it should settle down. If the flooding is not done then there are chances of foundation piercing into the ground after application of structural load even foundation may dislocate.
14	Civil Works	Cement concrete 1:2:4 blocks of size 30 cm x 30 cm x 80 cm for embedding vertical pipe/poll in brick work for wall around poly house will be 23 cm thick, 0.5 meter high (0.3 m below GL and 0.2 m above GL) in cm 1:6 with 10 cm thick with PCC 1:4:8 in foundation of wall. Wall will be plastered in cm 1:4 on top and sides. 80 cm to 1m wide and 10cm thick footpaths made of cement concrete ratio of 1:2:4 should be provided
15	Curtain opening	In general temperature inside the poly-house is more than ambient. To reduce the inside poly-house temperature increase, side ventilation, minimum 20% of floor area is necessary. Minimum 1.5m clear side curtain opening is required. Side curtain should have min. 200mm overlap to the bottom apron. This overlap is necessary to avoid direct entrance of rain into the greenhouse and also to stop direct air entry in the nights.
16	Bottom Apron	To tap the CO_2 inside the greenhouse, bottom apron is necessary. It should have min.0.6m height from the ground and max 1.5 meter depending upon the crop and climatic conditions.
17	Doors	Double door entry, Doors should be made of form FRP Sheets or polycarbonate sheets. Opening and closing is either hinged or sliding. Min. width of door should be 1M and min height 2M.The door area should have 50 mm PCC Flooring over 75 mm thick sub base.
18	Top Shading and Side shading	Top shading can be done by using following material: a) Shading net: Shading net made from HDPE should be used. The selection of shade net depends upon the selection of crops grown and the light spectrum. It should not be more than 50% shade factor. It should be UV stabilized so that it should last long for min. three years. GSM should be minimum 100. Opening and closing arrangement either manual or auto should be provided to the shading net to increase its utility.

		b) Thermal screen/Aluminate: This is better option to create the shading. It reflects the light back and by the means controls the temperature also. This defuses the light also. This is made from HDPE with hot dip aluminium coating. Minimum GSM should be 100 and minimum aluminium coating should 25 micron. Opening and closing arrangement either manual or auto should be provided to the thermal screen to increase its utility. Side Shading: Shade net of 35% should be used to create side shading. This is useful to avoid direct entry of sunlight into the polyhouse/greenhouse when curtain is open. Minimum GSM should be 75. or Use of 40mesh UV stabilized insect proof net is also recommended to protect direct entry of insects into the polyhouse/greenhouse. This should have minimum 100 GSM weight. The shade factor (opening) in colour shadenet depends on the spectrum of light through which light is passing through. So right kind of shadenet is major challenge that depends on grower's choice as well to take advice from the experts. The manually operated crank mechanism should be provided for expending and retracting the shadenet.
19	Polythene	Technical Specifications of polythene should be as per Indian standard (IS 15827: 2009) To select the proper film for poly-house is very important and which have direct relation with quality of the crop as well quantity of the produce. Polythene should be properly UV stabilized and pro rated warranted for at least three years. Thickness of polythene should be minimum 200 micron (0.2mm). Polythene quantity accommodate maximum 5.4 sq. meter area in its 1 Kilogram weight. (For example, 5.5m x 100 m polythene roll should have minimum weight of 5.5x100/5.4 = 101.85 Kg or 4.5m x 100m one roll should have minimum weight of 4.5x100/5.4= 83.33 Kg.). **Options in green house film:** Compulsory Properties: *UV stabilization *Diffusion/Clear (Light Transmission) Optional Properties: *UV Blocking /Antivirus *Sulphur Resistant *Thermic

19.	Polythene	*Anti Drip *Anti Mist *Anti Dust Manufacturing Process: Three Layer/Five layer NHB also recommends (not mandatory) polythene with gas bubbles inside because in India high temperature is the problem in front of maximum growers. Our crop wise recommendation of minimum properties of polythene is: 1. Dutch Roses: 200 micron thick, UV Stabilized, UV Blocking (Not for bi color roses), anti dust, anti sulpher, with cooling effect. Light diffusion should be maximum (upto 75%) but it should not be less than 50%. 2. Gerbera, Coloured Capsicum, Anthurium and orchids: 200 micron thick, UV Stabilized, anti dust, with cooling effect. Light diffusion should be maximum (upto 75%) but it should not be less than 50%. 3. Carnation: 200 micron thick, UV Stabilized, anti dust, with cooling effect. Where altitude is high polythene should be with IR protection.
20	Aluminum Profile/ Poly fixing	C type profile made from Alloy Aluminum should have - high strength with light weight – (approx 220-250 gm/rmtrs), smooth edges, curve bottom proper for 1.25" to 3" pipes, Proper Channel for spring and suitable for double spring locking 0.9mm thick. Self Drilling Screw should be fixed on profile every 40 cm along the full length of the profile.
21	Spring Insert	A plastic coated GI wire spring of 2.2mm diameter, having good elasticity should be used for longer life that transferring less heat to the cladding materials as plastic films or shade net. If we are using GI spring it is better to use a two inch strip of new poly film to be placed over the main plastic in the profile and then lock it with GI profile. This will help in longer life of the plastic as the rusted spring will not directly come in contact with the main plastic. All spring must end inside the profile. Any spring outside profile must be either fixed inside or should be cut so that it does not damage the plastic in strong wind as it will initiate all the plastic being pulled out of profile.

22	Air circulation by 'air circulating fans':	In hot and humid climate, when ambient temperature and humidity are in higher side, it is very natural that both these factors have a tendency to increase further inside a greenhouse. Under such condition 'air-circulating fans' inside the greenhouse will do a good job to reduce the harmful effect of high humidity and temperature on plant. The increased airflow inside the plant canopy reduces the leaf temperature and disperses the high humidity around leaves, which maintain the transpiration pull of crop. This will work best when coupled with exhaust fans that will throw out the accumulated hot and humid air. In cool climate, during winter when the greenhouse is heated, you need to maintain air circulation in such a way that temperature remains uniform throughout the greenhouse. Without air mixing fans, the warm air rises to top and cool air settles around the plants on the floor. During rainy season, when humidity is high and high ambient temperature cools down due to rain, this air circulating fans may be used judicially to disperse the higher humidity around plant canopy. Small fans with a cubic-foot-per-minute (ft3/min) air-moving capacity of one quarter of the air volume of greenhouse are sufficient. Place the fans in diagonally opposite corners but out from ends and sides. The goal is to develop circular (oval) pattern of air movement. Operate fans continuously during required period of a day.

General Conditions:

1. Green house structural design should be sound enough to withstand wind speed of 130 km/hr.
2. The companies should be asked to get their structural design verified from the structural engineer because the proposed design is based on the functional requirements and field experience.
3. The firm should guarantee for free maintenance/damage to the structural material for ONE year.
4. The firm should be able to construct the entire green house within eight weeks of the issue of work order.

Section-4 : Fan & Pad Controlled Poly-houses

Fan and pad

Selection of fan

The fans should deliver the required air at 15mm static pressure. The maximum center to center spacing between the two fans should be of 7.5m. The height of the fans is to be determined based on the plant height which is proposed to be grown in the greenhouse. The fan blades and frame are to be made of non-corrosive materials like aluminum/stainless steel.

Design

The cross fluted cellulose pad is preferred. These are available mostly in 100mm thickness. One meter of pad height is given for every 20m of pad to fan distance. However, the fan to pad distance should not exceed 60m. The air flow rate should be of 75 cubic meter/minute/sq.m of pad. The water flow rate should be of 9 litres per minute/linear meter pad. The uniform distribution of water on pad is to be maintained.

Type 2:- Technical Standard of Fan and Pad cooling system Green House: With Fan Pad / Fogging System:

Sr.No.	Item	Departmental Description
01	Size ;	According to requirement (As given in page no. 13)
02	Shape	- Aero Dynamic along all four sides with curvature shaped hockey pipes of 48.0 mm OD G.I. Pipes with a view to reduce the impact of wind and consequent damage of Poly House Structure. - Gutter Orientation – North South and may change according to wind direction. - PAD should be in Wind direction and must have covered elevated balcony for shade.
3.	Structure	Hot Dip Galvanized Tubular Structure of BIS standards. Galvanization of the structural members should not be less than 300 GSM (grams per square meter).
	Withstand to Wind Velocity	Structure should withstand to minimum wind velocity of 80.6 miles per/hr or 130 Km/hr or 36 Meter per second. Note:- In case of high wind velocity zones, structure should withstand wind velocity upto 94 miles per/hr or 150 Km/hr or 42 Meter per second.
	Sizes of the structural members	

Members Name	Outside Diameter (mm)	Thickness (mm)	Wt. per meter length (kg)
Columns	76	2	3.75
Top Purlins	48(Ridge)	2	2.30
Gutter Purlins	42/43 (Centre)	2	2.10
Top Arches of the truss	42	2	2.10
Bottom Chord of the truss Horizontal (G I pipe)	60	2	2.85
Top chords and trusses member	48/43	2	2.30/2.10
Internal Bracings of the truss – Pipe structural members to be fitted in plated nuts, bolts and washers without welding	33	2	1.60
Coridors/Balconies	60	2	2.85
Curtain Runner	42	2	2.10
Flap control pipe	21	2	1
Curtain Shaft	27	2	1.30
Cross Bracing	33	2	1.60
Not:- Welded pipes should not be used for structure erection except bottom pipe of 8 m length.			

	Columns	76 OD, 2mm thick
	Purlin	48 mm OD/2.0 mm thick at ridge and 42/43 mm OD/2 mm thick for centre
	Trusses	Bottom horizontal 60 mm OD/2 mm thick G.I. Pipe, top chords and truss members 48 mm OD/ and 43 mm OD 2.0 mm thick Bracing 32 mm OD/1.8 mm thick G.I. Pipe structural members to be fitted in plated nuts, bolts and washers without welding.
	Clamps and Nut Bolts	Well Compatible GI Clamps < 120 GSM, 2 mm thickness.
4.	Grid Size	- 8 m x 4 m (Ideal size), - Size can be less depending upon space availability but not more 8m x4m grid size.
5.	Balcony and Corridor	2 meter wide, vertical/curved pipe-60 mm OD/2 mm thick G.I Pipe with 32 mm OD/1.8mm thick horizontal GI pipe as supporting pipe. Area covered by corridors should not be included while calculating the area under poly house.
6.	Foundation	Pit size should be min.450mm dia. Depth 750 to 900mm or suitably altered depending upon Ground strata / level so as to ensure safety and stability of the structure even under extreme wind conditions. Columns are fitted over ground "Inserts" and bolted to Insert pipe of 60 mm OD/2mm thick G I Pipe. Length of Insert 1200 to 1300 mm. & filling the pit with 1:2:4 concrete hand mixed with appropriate Grade cement. Before doing the line out for the foundation, ensure that slope of greenhouse ground along the gable should be 0% to 1% and along gutter min. 1% and max. 3%. If slope of ground exceeds this limit then ask grower to do the land development and maintain the slopes of the ground within the limits. Slope along the gable and gutter should be uniform. If developed ground has filling depth more than 200 mm then ask grower to do the flooding of water over the ground so that it should settle down. If the flooding is not done then there are chances of foundation piercing into the ground after application of structural load even foundation may dislocate.
7.	Gutter	should be made of Galvanized sheet of 2 mm thickness in trapezoidal shape having 500 mm wide perimeter (Preferably of single length without joint) Coil having 120 GSM Galvanization. It should be leak proof. Min. 1% slope required for the gutter. Assure uniform slope to gutter to avoid stagnant water in gutter to achieve maximum life of gutter.

		Gutter Orientation – North- south and may change according to wind direction.
	(a) Gutter Height	4 m to 4.5 m
	(b) Gutter Slope	1 to 1.5% to be provided in civil structural work
	Ridge Height/Centre Height	Minimum 5 to 6.5 meter.
8.	Fasteners	Cold Galvanized well compatible M6 to M10 bolts & nuts, 50 to 150 mm long with plain washers as per requirement and with the best quality plating to have good anti-corrosiveness.
9	Poly film	Technical Specifications of polythene should be as per Indian standard (IS 15827: 2009) To select the proper film for poly-house is very important and which have direct relation with quality of the crop as well quantity of the produce. Polythene should be properly UV stabilized at least three years. Thickness of polythene should be minimum 200 micron (0.2mm). **Options in green house film** Compulsory Properties: *UV stabilization *Diffusion/Clear (Light Transmission) Optional Properties: *UV Blocking /Antivirus *Sulphur Resistant *Thermic *Anti Drip *Anti Mist *Anti Dust Manufacturing Process: Three Layer/Five layer Our crop wise recommendation of minimum properties of polythene is: 1. Dutch Roses: 200 micron thick, UV Stabilized, UV Blocking (Not for bi color roses), anti dust, anti sulpher, with cooling effect. Light diffusion should be maximum (upto 75%) but it should not be less than 50%.

		2. Gerbera, Coloured Capsicum, Anthurium and orchids: 200 micron thick, UV Stabilized, anti dust, with cooling effect. Light diffusion should be maximum (upto 75%) but it should not be less than 50%. 3. Carnation: 200 micron thick, UV Stabilized, anti dust, with cooling effect. Where altitude is high polythene should be with IR protection.
10	Thermal Net	30 to 50%, alluminate/thermal net as per requirement - Minimum 100 GSM - Power operated crank mechanism should be provided for expanding and retracting the shade net.
11	Poly fixing	C type profile made from Alloy Aluminum should have - high strength with light weight – (approx 220-250 gm/rmtrs), smooth edges, curve bottom proper for 1.25" to 3" pipes, Proper Channel for spring and suitable for double spring locking 0.9mm thick. Self Drilling Screw should be fixed on profile every 40 cm along the full length of the profile.
12	Spring Insert	A plastic coated GI wire spring of 2.2mm diameter, having good elasticity should be used for longer life that transferring less heat to the cladding materials as plastic films or shade net. If we are using GI spring it is better to use a two inch strip of new poly film to be placed over the main plastic in the profile and then lock it with GI profile. This will help in longer life of the plastic as the rusted spring will not directly come in contact with the main plastic. All spring must end inside the profile. Any spring outside profile must be either fixed inside or should be cut so that it does not damage the plastic in strong wind as it will initiate all the plastic being pulled out of profile
13	Entrance	Double door entry, Doors should be made of form FRP Sheets or polycarbonate sheets. Opening and closing is either hinged or sliding. Min. width of door should be 1M and min height 2M.The door area should have 50 mm PCC Flooring over 75 mm thick sub base.
14	Civil work	Wall on fan side will be 35 mm thick and 80 cm high and wall on pad side will be 23 cm thick & 100 cm high from ground level in cm 1:6 with required foundation. All the walls will be plastered in cm 1:4 on top and sides. 80cm to 1m wide and 10 cm thick footpaths made of cement concrete ratio of 1:2:4 should be provided as per the requirements.
15	Electrical fittings:	Conduit and wiring as required for connecting light, fan .motor and pumping to main electrical supplies.

		Preferably use copper wire to withstand the load of the electrical appliances of Indian standards.
16	Climate Control System	
A	Fan-Pad System	- Numbers of Fan depends upon size of Fan-fad house and it should be capable of exhausting air volume in one minutes. - Exhaust Fans- 50" however it depends upon size of fan-pad house with louvers, 1.5 HP – 3 phase ISI standard electric motor. - Cellulose cooling pads of 1.8 meter height with 100mm /150 mm thickness covering the area properly, PVC water distribution system, screen/disc filter, valve and pumps etc. - Control panel with manual operation, temp. and humidity sensors. - The necessary digital controller with sensory device & accessories of standard quality as per requirement should be provided to operate the fan & pad system for controlling temperature & humidity inside the Greenhouse.
B	Fogging System	- In consist of four way anti leak fogger 28 lph flow rate (working pressure should be mentioned at which we will be able to get required particle size, fogger spacing along the lateral and lateral spacing) and particle size 80-100 micron, 16 mm lateral class-3, PVC pipe 6kg/cm2, valves, filter, pump, panel with volt meter, MCB, relay, temp and humidity sensor etc. complete application rate 3 mm/hr.

Section-5 : SHADE / NET HOUSE

SPECIFICATION FOR SHADE HOUSE

Sr. No.	ITEM	SPECIFICATION
01	STRUCTURE	
	Size	According to requirement
	Shape	As per design
	Withstand to wind velocity	- Structure may be design to withstand wind velocity up to 104 Km/ hr.
		- 120 Km/ Hour per hrs in high wind velocity zone.
	Foundation	2mm thickness GI Pipes compatible with columns, length 1.2m.
	Main Column	Size 60 OD ,Thickness 2 mm, Wt. per length 2.85 kg , length- 4 m,
	Purlins	Purlin GI pipes- size 42/43 OD/ thickness 2 mm, Wt. per length 2.00/2.10kg length- 4 m. Purlin members-33/32 mm OD/2mm thickness, Wt. per length 1.60 kg.
	Corner	Size 48 OD ,Thickness 2 mm, Wt. per length 2.30 kg, length- 0.15 m,
	Four Way Pipe Couplers	Size 48 OD ,Thickness 2 mm, Wt. per length 2.30 kg, length- 0.15 m,
	Five Way Pipe Couplers	Size 48 OD , Wt. per length 2.30 kg, Thickness 2 mm, length-0.15 m,
	Nut Bolts	Size 3/8"
	Grid Size	4x4, 8x4, 4x6 (m)
	Gable length	4.0 m,
	Centre Height	• Flat Structure – 4 m
		• Hut/dome type structure – Centre height - 4m, Side height - 2.5m.

2.	Aluminum Profile	C type Aluminum profile to fix shade net to the structure by means of self tapping screws. Weight of aluminum profile is 200-220 gm/ meter. Self Drilling Screw should be fixed on profile every 40 cm along the full length of the profile
3.	Spring Insert	A coated spring is preferable compared to cold galvanized spring as a coated spring transfer less heat to the plastic and thus enhances the life of the plastic If we are using GI spring it is better to use a two inch strip of new poly film to be placed over the main plastic in the profile and then lock it with GI profile. This will help in longer life of the plastic as the rusted spring will not directly come in contact with the main plastic. Wire material should be high carbon spring steel with spring action
4.	Shade Net	UV stabilized, ranging from 30% to maximum 75% GSM shade depending upon the crop, made up of ISI/ applicable national standard, white / green/black/suitable colour.
5.	Door	Polycarbonate/polythene sheet door with 1 m widths and 2 m height and another door of 1 m x 2 m Box section frame is embedded inside for the strength.
6.	Anti Room	Anti room of size 4 m x 3 m attached to net house
7.	Civil work/foundation	Cement concrete 1:2:4 block of size 40 cm x 40 cm x 90 cm for embedding vertical poll/pipe of shade net, subject to revision as per requirement of site.
8.	Overall slop	1 to 1.5%
	APRON	Use of APRON in shade net

Section-6 : Design

Naturally Ventilated

Shadow Hall

Pad Side Elevation

Poly Tunnel Type

Fan Side Elevation

Shade House

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

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 Maturity Index / determination Technique Devices Skills and training Time/ Period Handling Containers 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.Product / Process Flow chart- Illustrative (It should be crop and project specific) (Unidirectional)

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

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

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

5.5.4.Post-harvest operations

1. Arrival Area

Activity	Recommended	Proposed practice	Remarks

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

Activity	Recommended	Proposed practice	Remarks

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

Activity	Recommended	Proposed practice	Remarks

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

Activity	Recommended	Proposed practice	Remarks

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

Activity	Recommended	Proposed practice	Remarks

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

Activity	Recommended	Proposed practice	Remarks

7.Packaging and Labelling
(including steps/ processes, norms, protocols, manual/mechanised; model/make, capacity, turn over / hour; palletisation; wooden/plastic / any other.In case of exports are you aware of compliance requirements as provided by APEDA-
http://apeda.gov.in/apedawebsite/six_head_product/FFV.htm)

Activity	Recommended	Proposed practice	Remarks

8.Ripening / De-greening and protocols.

Activity	Recommended	Proposed practice	Remarks

9.Mode of Transport including the requirement of Refer vans

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

10.Storage Cold room and Cold Chain

Activity	Recommended	Proposed practice	Remarks

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

1. Type of project	New Project/ Expansion/Modernisation	
2. Location of the Project		
3. Man power employed 4. (On rolls and on contract)		
5. Business model -	Rental, Captive, Part of Supply chain service, mixed	
6. Components of project submitted		
	Infrastructure under the scheme	Tick mark
	1. Integrated PHM	
	2. Integrated Pack house	
	3. Pack House	
	4. Pre-cooling unit	
	5. Cold Room (Staging)	
	6. Mobile Pre-cooling unit	
	7. Ripening Chamber	
	8. Primary Processing	
	9. Refer van	
	10. Retail outlet	
7. Types of products to be handled	Frozen, chill, Mild chill Temperature zones	

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

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

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

5.5.5.1.**Integrated Pack house:**

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

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

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

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

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

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

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

14. Protocols

Activity	Recommended	Proposed practice	Remarks

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

16.Requirement and Availability of

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

Reference Data Sheet

#	Component: Integrated Pack house	Description
1	Pack house Handling capacity	Specify total incoming volume of raw produce in MT/day.
2	Products to be handled	Describe the details of the products planned for value addition.
3	Area of the pack house	Specify the total Plinth area of the construction in m^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. Proposed project location:
4. Number of days proposed to be operational:
5. Raw Material:
    a. Types/ Quality of raw material- Grades/ Specifications
    b. Raw material availability and procurement: Details of own production if any and local production annually with 5 years data with future projections. Markets and farm areas of procurement and reliability. (Obtain past data from Local District Horticulture Officer. In the absence of scientific data, the authority can give estimated/projected data with stated assumptions)
    c. Catchment area:

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

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

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

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

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

14. Protocols

Activity	Recommended	Proposed practice	Remarks

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

16.Requirement and Availability of

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

17.Data sheet if any.

5.5.5.3.**Pre-cooling unit**

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

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

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

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

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

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

13.Requirement and Availability of

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

Reference Data Sheet

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

5.5.5.4.Cold room

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

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

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

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

Reference Data Sheet

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

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

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

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

13.Requirement and Availability of

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

5.5.5.5.Mobile Pre-cooling unit

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

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

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

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

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

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

14.Requirement and Availability of

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

5.5.5.6.**Ripening Chamber**

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

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

    d. Quality control/ assurance /testing
6. 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.
7. Products, Bi products and services
    a. Various products – Quality, specifications etc.
    b. Annual output for the last 3 years in the project block, district and state.
    c. Projections for 7 years.
    d. Packing and labelling
8. Market :
    h) Quality grades/ specifications/ kinds of products
    i) Demand and Supply data for the products and services.
    j) Existing / Proposed Market linkage
    k) MOUs/ Contract documents / undertakings/ LoA
    l) Target consumption centres/ key domestic markets
    m) Export targets/ Plans if any
    n) In case of export, details of volume to be exported / export destination / statutory norms of export destination should be provided in the DPR.
9. Business model for the unit.
10. Source of Technology
11. Ripening unit: Type and Lay out (show the drawing)
12. 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. List of Manufacturers / Suppliers of Plant and Machinery (enclose quotations during Market viability and Financial viability stage)

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

16. Protocols

Activity	Recommended	Proposed practice	Remarks

17. Compliance to relevant BIS code and standards- Electrical, Mechanical,
18. Requirement and Availability of
    i. Managerial manpower
    j. Technical manpower
    k. Skilled manpower
    l. Un skilled manpower

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	

19.

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

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

    d. Quality control/ assurance /testing
6. 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.
7. Products, Bi products and services
    a. Various products – Quality, specifications etc.
    b. Annual output for the last 3 years in the project block, district and state.
    c. Projections for 7 years.
    d. Packing and labelling
7. Market :
    h) Quality grades/ specifications/ kinds of products
    i) Demand and Supply data for the products and services.
    j) Existing / Proposed Market linkage
    k) MOUs/ Contract documents / undertakings/ LoA
    l) Target consumption centres/ key domestic markets
    m) Export targets/ Plans if any
    n) In case of export, details of volume to be exported / export destination / statutory norms of export destination should be provided in the DPR.
8. Business model for the unit.
9. Source of Technology

10. 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

11. 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

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

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

21. Requirement and Availability of
    m. Managerial manpower
    n. Technical manpower
    o. Skilled manpower
    p. 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. Proposed project location:
5. Number of days proposed to be operational:
6. Produce / Raw Material:
    a. Types/ Quality of raw material- Grades/ Specifications
    b. Raw material availability and procurement: Details of own production if any and local production annually with 5 years data with future projections. Markets and farm areas of procurement and reliability. (Obtain past data from Local District Horticulture Officer. In the absence of scientific data, the authority can give estimated/projected data with stated assumptions)
    c. Catchment area:

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

    d. Quality control/ assurance /testing
7. Enterprise:
    a. Existing number of units, available capacity and utilisation in the project block, district and the State.
    b. Products and services and projections.
    c. Statutory requirements / licensing details if any.
7. Market :
    o) Quality grades/ specifications/ kinds of products
    p) Demand and Supply data for the products and services.
    q) Existing / Proposed Market linkage
    r) MOUs/ Contract documents / undertakings/ LoA
    s) Target consumption centres/ key domestic markets
    t) Export targets/ Plans if any
    u) In case of export, details of volume to be exported / export destination / statutory norms of export destination should be provided in the DPR.
8. Business model for the unit.
9. Source of Technology
10. Civil infrastructure, Plant and Machinery. Design, layout and Photographic evidence certified by chartered engineer is required to be submitted in case the project is considered for processing.

Facility / utility	Recommended	Proposed.	Remarks

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

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

12.Skilled Manpower availability:

13. Data sheet:

Reference Data Sheet

#	Component: Reefer Container	Description
1	Container dimensions	20 standard: 8' x 8.5' x 20', 27 to 28 cum
2	Insulation details	Thermal Conductivity value / mm
3	Tare weight	kgs
4	Gross weight	kgs

#	Component: Reefer Container	Description
5	Temperature recording	type
6	GPS System	Must be fitted
7	Refrigeration capacity	kW
8	Refrigerant used	Technical name of refrigerant
9	Fresh air exchange	Describe system fitted
10	Diesel/electric auto-switching	Describe dual power unit
11	Air flow cum/hr (CFM)	Evaporator air flow in CFM
12	Temperature control precision +/- °C	Precision in controls in °C
13	Name of Manufacturer	
14	Year of manufacture	
15	Any design enhancement	Describe design changes 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.

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

aa) Export targets/ Plans if any

bb) In case of export, details of volume to be exported / export destination / statutory norms of export destination should be provided in the DPR.

8. Business model for the unit.
9. Source of Technology
10. Civil infrastructure, Plant and Machinery. Design, layout and Photographic evidence certified by chartered engineer is required to be submitted in case the project is considered for processing.

Facility / utility	Recommended	Proposed.	Remarks

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

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

12.Requirement and Availability of

q. Managerial manpower
r. Technical manpower
s. Skilled manpower
t. Un skilled manpower

13. Data sheet:

Representative Photographs from www

Reference Data Sheet

#	Component: Retail Shelf	Description
1	Name of Manufacturer	Provide the name of manufacturer and model.
2	Type	Specify the kind of Retail Shelf i.e. Multi-decks, Small Multi-decks, Roll In's.
3	Produce to be handled	Name types of produce to be handled
4	Capacity	Storable volume of fresh products the shelf can store in m^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

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

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

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

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

5.6.4.Alternative Marketing strategies;

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

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

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

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

6.3.Extension/ Agri-Business Incubators / Advisory services

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

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

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

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) (Where ever applicable / necessary)	√	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 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	√		
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/ Hort.Dept.	
	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	

	3. Means of Finance	√	CA	
	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 during JIT inspction	
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 Horticulturist/ 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 in the DPR 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 Post-harvest Technology / Management Expert

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

In case IPA is issued for the project, during and after the completion of the project, I am willing to guide the Applicant in post-harvest technology and practices for food safety and to minimise post-harvest losses and to maintain quality. I will render my services.

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

My details are as follows:

Name of Expert	
Current profession:	
Educational qualification and University passed out	
Membership number	
Firm Registration Number	
Permanent address:	
Contact Number:	Tel
	Mobile
	Email

Place	Signature
Date	Designation and Seal

11.3.Declaration by Project Finance Expert (Chartered accountant)

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

S.No	Name of the project	
1	Project Location with address	
2	Date (s) of detailed discussion / interaction with Applicant on the project	
3	Date of site visit by the Chartered Accountant	
4	Date (s) of due diligence and document including land ownership/ registered lease, financial position and market viability verification	
5	Other remarks	

6.Project Cost: As per the format provided in the chapter: Financial Viability

7.Means of Finance: As per the format provided in the chapter: Financial Viability

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	
Membership number	
Firm Registration Number	
Permanent address:	
Contact Number:	Tel
	Mobile
	Email
Place	Signature
Date	Designation and Seal

Note: Certification should be based on verification of books of accounts, bills, invoices, work orders, bank statements etc. of applicant and that of current profession/ business.

Counter signature (with name) of Promoter / Authorised Signatory of Company with seal with date.

Chartered Engineer /Civil Engineer Certificate Format in case of any Civil Work

(In his / her letter head)

(Applicable in case of Projects / Post harvest components involving Civil Works)

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

S.No	Name of the project	
1	Location with address	
2	Date of site visit by the Chartered Engineer	

Civil Work if any

S.No	Name of component	Proposed Area (Sq.m)	Proposed cost (Lakh Rs.)	Rate / Unit (Rs/Sq.m)
	Total			

Name of Chartered Civil Engineer	
Current profession:	
Educational qualification and University passed out	
Membership number	
Firm Registration Number	
Permanent address:	
Contact Number:	Tel
	Mobile
	Email

Place	Signature
Date	Designation and Seal

Counter signature (with name) of Promoter / Authorised Signatory of Company with seal with date.

Chartered Engineer /Mechanical Engineer Certificate Format
Only in case of any Project with components involving –
Protected Cover, Plant & Machinery

(In his / her letter head)

(Applicable in case of Projects involving Protected Structure/ Micro-Irrigation/ Post harvest components involving Plant and Machinery)

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

S.No	Name of the project	
1	Location with address	
2	Date of site visit by the Chartered Engineer	
3.	Date of documents including land ownership / registered lease etc. verification and due diligence strictly as per NHB scheme guidelines.	

Plant and Machinery if any

S.No	Name of component	Proposed Quantity or units	Proposed Cost (Rs Lakhs)		Supplier / Manufacturer (Supported by Quotation)
			Basic cost	Taxes, Freight Installation, insurance etc.	

Name of Chartered Civil Engineer	
Current profession:	
Educational qualification and University passed out	
Membership number	
Firm Registration Number	
Permanent address:	
Contact Number:	Tel
	Mobile
	Email

Place	Signature
Date	Designation and Seal

Counter signature (with name) of Promoter / Authorised Signatory of Company with seal with date.

.Self-Declaration by applicant

1. I have read, understood and abide by the latest NHB Schemes operational guidelines including conditions, norms and pattern of assistance.
2. The information provided in the Detail Project Report is true to my knowledge.
3. In case the details provided by me viz., (i) my personal details, land, previous benefits availed by me from either Central and State Government if proved false at any stage NHB is entitled to recover any subsidy if any released by it from me.
4. I have personally ascertained technical details of the projector or I have availed the services of a competent Horticulturist for technical details and viability. Accordingly declaration is provided herewith.
5. I have personally ascertained Financial and Market viability of the project or I have availed the services of a competent Project Finance expert for the requisite project finance details and project viability. Accordingly declaration is provided herewith.
6. In case the project is approved for pre-IPA, I shall undergo a 2 Weeks (min.10 working days) training programme in case of Open field condition and protective cover (with or without PHM component) and a minimum of 1 Week programme in case of standalone PHM component at my own expenses in one of the ICAR/CAU/SAU/SHU/ Research Station/ Centres of Excellence/ related Central or State Government institution/ others as found appropriate / approved by NHB.
7. I shall adopt scientific package of practices / technology and maintain proper farm accounts.
8. The project is technically feasible and economically viable and is bankable.
9. In case the project application is considered for application processing, I am bound to submit all required / requisite mandatory documents to establish veracity of my DPR and eligibility to claim subsidy under NHB Schemes in the form prescribed with in 6 months of any such intimation from NHB for according In principle approval (IPA). Else I acknowledge that my application stands vacated and rejected by default of my omission.
10. I understand that incomplete, delayed and /or NPA projects and default cases shall not be eligible for subsidy.
11. In case IPA is issued and subsidy is released subsequently, the project location, plant & machinery will be **geotagged** permanently and shall not sell the any of items / plant & machinery/ components procured under the project. In case of any violation I am obliged to return the subsidy received with in 30 days of notice from NHB.
12. I solemnly affirm/ undertake that the proposed project components in the application are a completely new activity and not a pre-existing activity or any component thereof.
13. In case of Plant & Machinery- only new are proposed. Reconditioned / refurbished equipment/ Plant & Machinery shall not be procured under the project.
14. In case of concealment of any facts in this regard, the NHB would have right to reject/ cancel my application / project out right at any stage.
15. 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 with date and Location:

‘’Proposed stages in NHB SCHEME IMPLEMENTATION for new IPA Applications of Schemes No.1 &2 during 2018-19

(finalised based on the feedback from the stakeholders)

Stage	Player	Step	Mode	Timeline	Remarks / Enclosures
1	Applicant	Submission of Prescribed Application - specific to the scheme along with DPR on the suggestive lines of model template (will be hosted in NHB website) and cost of Application	Online	Open throughout year, as per Scheme design	No document is required to be enclosed at this stage.
2	NHB	Examines the Application and DPR and gets scrutiny of Technical feasibility duly considering the design of scheme offer.	-	Target 1 Month	
3 Technical feasibility		In case anapplication/ project is rejected NHB will provide reasons for the decision. Further the applicant is provided with an opportunity to make his case by way of presentation of his project on an appointed day in the presence of competent authority. (Optional) The objective is to help the applicant to know the weaknesses of the current project and enable him/ her to review / revise his/ her project to suit NHB Scheme requirements. The applicant is open to submit application afresh enclosing revised DPR and Cost of Application.	online		
4	Applicant + Bank	NHB informs the approval of Technical feasibility based on the DPR submitted, to the	online	Max. 1 month (Allowed	Prescribed Self – attested documents

		applicant with a request to submit all the prescribed / requisite documents along with • Bank Appraisal of Market viability and Financial viability of the proposal and DPR which NHB found technically feasible (should be after NHB Technical feasibility) ; • and Sanction (after Appraisal) within 6 months of NHB's technical feasibility approval. Any lapse in time line, change of applicant (s), crop / component, location, technical aspects etc. as per the DPR scrutinised for the technical feasibility approval stands vacated / rejected. However he is eligible for fresh submission.		max.6 months strictly)	including those specified in DPR checklist are to be submitted by the applicant. In case of Bank appraisal and sanction- Bank is to certify each page with signature, Name, Designation date, seal and upload online.
5	Applicant Training	Undergoes 2 Weeks training programme (10 Working days) on the project activity at his/ herown expenses in an institute recommended / approved by NHB. In case of expansion projects the period could be 1 Week (5 days). Any 10 days training underwent by the applicant with in the last 6 months (of the date of application) can also be considered by NHB subject to its relevance to the project.	-	2 or 1 Week	Training is mandatory before issuing IPA.

6	NHB	NHB examines the application, DPR, documentary evidence and Bank Appraisal of Market viability and financial viability, keeping in view the availability of the budget, priority (SabkaSaathSabka Vikas) and design of implementation of the offer / Year.	-	2 months Target 1 Month	
7 Market & Financial Viability-IPA-		NHB takes decision on In-Principle Approval (IPA) and informs decision to the applicant with reasons/ grounds. IPA is issued only upon production of prescribed training completion certificate.	online		
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 from the date of release of first instalment of Term loan	
9	Applicant +NHB+ Expert Institution	Participation of entrepreneurs in Knowledge sharing Workshops / Seminars etc.and interaction with MD NHB, Crop/ Expert institutions etc. Participation of applicants to the meeting will be at their own costand is optional and voluntary.			
10	Bank	Applicant submits subsidy claim within 3 months of completion of the project.Else the IPA stands vacated and rejected	Online + Hard copy	3 months	Self and Bank attested/ certified Prescribed documents

11	NHB + Bank/ FI+ State Govt+ Expert	NHB undertakes Joint Inspection of the field/ activity availing the services of NHB hired Photo cum Videographer in the presence of applicant. Also verify the all documentary evidences including Land RoR/Lease agreement, Legal search report, CA Certificate, Bank Sanctionetc. with concerned authority- Bank and Revenue / Industries etc.	Physical ins-pection	Target: Max. within 30 days of request by online.	
12		NHB Official hosts photographs and Video online preferably on the same day but not later than 48 hrs. The entrepreneur is free to hire his own photo/video grapher for his purpose.	online	48 hrs from the conduct of Inspection	
13	NHB	NHB JIT submits JIT report	Online with Hard copy	15 days	
14	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.	online	2 months	
15	NHB	In case NHB approves release of subsidy, releases funds within 15 working days of minutes of competent authority to SRF account subject to availability of funds.	Online	Target: 15 days	
16	Bank/ FI	1. Deposit the subsidy into SRF account		On receipt of subsidy	

		against the Term loan account of Borrower. 2. Shall not charge interest on Term Loan equivalent to subsidy from the date of receipt of subsidy. 3. Confirms the receipt of subsidy online. 4. Informs the receipt of subsidy to the applicant. 5. Shall inform if the Term loan account turns into NPA. 6. Closely monitor the project health minimum for 3 years or till the payment of term loan whichever is later. 7. Takes into consideration the NHB advisories.			
17	Applicant	1. Confirms the receipt of subsidy online. 2. Implement project strictly as per scheme guidelines. 3. Maintain records and accounts. 4. Adopts technology / scientific package of practices and innovate marketing / business strategies. 5. Takes into consideration the NHB advisories. 6. Regularly reports the performance of project health 7. Share best practices if any to NHB.		On receipt of subsidy	

Salient features:

1. Scheme is open on all days during 2018-19 as per scheme design.

2. There will be a helpline email : helpdesk.nhb@gov.in to address queries from anybody.
3. There will be a provision to create an account for each applicant. Any change in status of application will be informed by an SMS and in account. All the correspondence from both sides – Applicant, NHB and also of the Bank will be shown in the account.
4. For the best preparation: The applicant is advised to submit the application, DPR and cost of application, well in advance (6 months) from the proposed date of project start.
5. Applicants whose projects are rejected at Technical feasibility stage are welcome to resubmit the proposal for fresh examination with improved and corrected proposal.
6. The participating banks will adhere to the standard norms of appraising the project regarding Market viability and Financial viability before the release of term loan to ensure that the project is new, meets the guidelines of NHB, and the applicant has clear land title or lease hold right over the land.
7. The name of applicant (including entity) should be same in IPA Application, IPA, Bank Sanction and Land ownership / lease deed. Any deviation invites rejection.
8. Target / proposed timelines subject to Budget availability as per scheme design are:

Before IPA Approval	Technical feasibility	1 Month
	Upon submission of Bank Appraisal: Market and Financial feasibility	2 Months
Post - project	Competent committee meeting for a decision on subsidy claim after JIT report	2 Months
	Fund release in case competent authority approves subsidy claim	1 months

Model MOU between NHB and Applicant upon IPA issuance: MoFPI MoU

Appendix-VI

UNDERTAKING
[Refer Para 12.1 (m)]

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

1. That I am promoter/ director/ partner/ proprietor of M/s..... (name of applicant) having its Registration no. .....and Registered Office at ..... (office address of applicant).

2. I hereby make application and I am duly authorized in my own right/by management vide its resolution no. .....dated.....to apply and sign all required documents including this undertaking on behalf of company/partnership firm/cooperative society etc. named as .....; and am fully aware of the facts relating to the setting up of project at Survey/ Plot No....., Village.....,Tehsil.....,District.....,State....., PIN code .....(location of the main facility) for.....(activities to be undertaken by project) and application is being made to the Ministry of Food Processing Industries (MoFPI) under the Central Sector Scheme for Creation of Backward and Forward Linkages.

3. That the term and conditions of the above scheme of the MoFPI under which an application is made by the applicant have been properly read and understood by me and I affirm that the project/ proposal comply with all the terms and conditions of the approval letter and provisions enshrined in the scheme guidelines.

4. That the proposed activities to be undertaken by the project/proposal are covered under the above scheme of MoFPI and no part of the scheme/infrastructure of the project is designed or assigned to be used for any activity other than the activities specified in the application at present or in the near future.

5. It is certified that ..... (name of applicant) has not obtained or applied for grants for the same project, component, purpose or activity from any other Ministry or Department of the Government of India or State Government or their agencies.

6. It is certified that applicant's sister concern (s)/ related company / group company/firms as well as the applicant itself has not availed any financial assistance for a food processing project in the past from MFPI [if availed, the details shall be furnished separately].

7. I also solemnly affirm/undertake that the proposed project components in the application are a completely new activity and not a pre-existing activity or any component thereof.

8. In case of concealment of any facts in this regard, the MoFPI would have right to reject/ cancel my application/project out right at any stage.

9. I will meet any shortfall in means of finance due to less admissibility of grant or any future reduction in grant-in-aid or any escalation caused in the cost of the project.

10. I shall not dispose-off or encumber or utilize the assets created wholly or substantially out of government grant for purpose other than those for which they have been sanctioned, without obtaining the prior approval of the sanctioning authority of grant-in- aid.

11. In case of non-implementation/ delayed implementation of the project the Ministry will have absolute right in cancelling the approval granted and also recall the grant released, if any, along with interest as per the scheme guidelines.

12. In case of failure to operate the project for at least three years after commencement of commercial operation, I shall return the entire grant-in-aid with interest @ 10% per annum.

13. User charges/hiring rates of the facilities created under the project will be disseminated to the public including uploading of the same on the website of the project/ organization. A copy of the same will also be made available to the Ministry.

14. I undertake that all the information furnished in the application and the DPR with respect to the eligibility conditions, etc. are true and correct to the best of my knowledge and belief and nothing material has been concealed therefrom.

15. I also undertake that in the event of any information or facts furnished by me are found to be incorrect or material information concealed, during the course of implementation of the project or subsequent to implementation, the Ministry of Food Processing Industries may take action as per the provisions of scheme guidelines and/or as per the law of the land, as deemed fit and appropriate in the circumstances.

Date: _____ Signature of the Lead Promoter

Place: _____