

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

Scheme.1	Development of Commercial Horticulture through Production and Post-Harvest Management of Horticulture Crop: Grape 1. Open field condition 2. Integrated Post Harvest Management
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Crop			Tick mark
Scheme components	1. Open field condition of NHB specified crops	Within overall cost ceiling	
		+Farm Mechanisation	
		+Good Agri. Practices (GAP)	
		+Plastic Mulching	
	2. Integrated PHM		
	2.1.Integrated Pack House		
	2.2.Pack house		
	2.3.Pre-cooling unit		
	2.4. Cold Room (Staging)		
	2.5. Mobile Pre-cooling unit		
	2.6. Refer Van		
	2.7 Retail outlet		

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

Index

	Project at a Glance	6
1	About the Applicant /Promoter and his/her entrepreneurship	7-10
2	Details of benefits availed by the Applicant / Promoter	11-13
3	About Project -Name, Rationale, Management and Description	14-30
	1. Name of Project, Activity, Objectives and expected Outcomes	
	2. Rationale / Justification for the project	
	3. Site/ Land details- RoR/ Ownership / Registration of lease/ Map etc.	
	4. Location of the Project- Identification	
	5. Current usage of land of proposed Project Area	
	6. Current infrastructure and assets possessed by the Applicant:	
	7. Lay out plan of the project	
	8. Conversion of Land Use (CLU)	
	9. Whether project site is part of production belt / cluster / hub	
	10. Rationale for the location of the project	
	11. Compliance of project site for food safety	
	12. Components / Activities of the Project with justification	
	13. Operations planning	
	14. Month wise operational chart / Implementation schedule	
	15. Backward and Forward linkages.	
	16. Manpower (Skilled & Unskilled labour etc.) availability	
	17. Employment generation	
	18. Infrastructure (Power, Fuel, Water, Plant and Machinery, connectivity, Effluents treatment etc.)- Required, Already available, Gaps and the management.	
	19. SWOT Analysis	
	20. Monitoring and evaluation	
4	NHB Scheme under which the project is proposed with rationale / justification.	31
5	Project details	32
5.1	Agro-climatic suitability / feasibility	33-37
	1. Origin, introduction and distribution of crop in the said location, India and in the world (briefly)	√
	2. Agro-climatic / Horticultural zones and suitability of the crop (s)	√
	3. Soil type and latest health-suitability for the crop	√
	4. Water (irrigation) source, availability, Quality and suitability	√
5.2	Market viability	38-58
	1. Commercial and Nutritive importance / significance, composition and Uses	√
	2. Target Market (s)	√
	3. Statistics: India and State: Area, Production and Productivity in the District, State and India for the last 5 years	√
	4. Clusters of the project crop in the state.	√
	5. Demand and Supply gap	√
	6. Global producers- Country, Area, Production, Productivity and global market share in the last available 5 years.	√
	7. International trade and potential (for export oriented projects)	√
	8. Seasonality of crop / produce and its comparison with other	√

	available crop/ produce	
	9. Price variation of commodity in the State and nearby markets	
	10. Balance sheet of commodity in the State	
	11. Transportation	
	12. Value Addition scope	
	13. Central and State Government policy	
	14. Value chain in the commodity	
	15. Proposed Business strategy for Market viability	
5.3	Financial viability	59-67
	1. Due diligence status	
	2. Project Cost	
	3. Means of Finance	
	4. Investment in Horticulture	
	5. Key financial Indicators	
	6. Project Financing	
	1. Rate of Interest	
	2. Percentage of Term loan against total project cost	
	3. Internal Rate of Return (IRR)	
	4. Cost of Production and Profitability	
	5. Yield and Sales Chart	
	6. Proposed Balance Sheet	
	7. Proposed Cash flow Statement for repayment period.	
	8. Proposed Profit & Loss Account	
	9. Proposed Repayment of Term loan and Schedule	
	10. Break Even Analysis	
	11. NPV (Net Present Value)	
	12. Economic Rate of Return	
	13. Depreciation	
	7. Risk Analysis and management	
	8. Statement of Assets and liabilities	
	9. Farm record keeping/ Maintenance proposed	
5.4	Land development	
	5.4.1.Land development	68
	5.4.2.Selection of Quality Planting Material	68-71
	1. Recommended and popular Cultivars- varieties/hybrids, their specific characteristics, requirements and yields.	
	2. Cultivar/Hybrid/Variety selected and Criterion adopted for selection	
	3. Propagation methods.	
	4. Accredited / Good Nurseries in the area	
	5. Planting material-source, quality and suitability	
	5.4.3.Orchard / Site planning, Lay out and management	72-82
	1. Planning, establishment and layout systems	
	2. Land preparation	
	3. Planting Season / time and density	
	4. Water and Nutrient management	
	5. Intercultural operations including Weed management	
	6. Plant canopy architecture management/ training and pruning	
	7. Use of Plant growth regulators	

	8. Flowering & fruiting	
	9. Integrated Pest and Disease Management and Food Safety measures	
	10. Physiological disorders- causes, preventive and management measures.	
	11. Special problems if any	
	5.4.4.Farm Mechanisation	83
	1. Protective cover /structure (if applicable)	
	2. Farm Mechanisation	
	5.4.5.Harvesting and Fruit / flower care management	84-85
5.5	Post-Harvest Management	86-106
	1. Post-Harvest infrastructure scenario in horticulture sector in the State and specially for the proposed crop / component	
	2. Product/ Process Flow chart	
	3. Lay out / Floor Plan of post-harvest operations	
	4. Post-harvest operations	
	1. Sorting and Grading	
	2. Packing and labelling	
	3. Pre-cooling	
	4. Storage- cold storage	
	5. Transport	
	5. Post-harvest infrastructure – Integrated Post-harvest Management	
	1. Integrated Pack house	
	2. Pack House	
	3. Pre-cooling unit	
	4. Cold Room (Staging)	
	5. Refer van	
	6. Labour / Store room	
5.6	Marketing	107
	1. Connectivity	
	2. Aggregation & Assembling: Marketing infrastructure	
	3. Market Institutions and agents	
	4. Demand and Supply trends and forecast both in local and National markets.	
	5. Traceability record	
	6. Proposed value chain / method of Marketing by the Applicant	
5.7	Value addition / Processing	108
6	Technology providers	109-111
	1. ICAR /CAU/ SAU/SHU / KVK/Research Stations and Experts names	
	2. Experts-whose services are availed	
	3. Agri/Horti-Business incubators	
7	Food Safety -With /Without GAP certification	112-124
	1. Global GAP Certification	
	2. Food safety measures	
	1. Soil and water analysis for heavy metals	
	2. Crop husbandry	
	3. Harvesting	

8	Innovation (if any)	
9	Profitability of the project (Horti-business): Critical observations of Applicant	
10	Checklist	
11	Declaration from Crop Expert and Project Finance Expert	
12	Self-declaration by the Applicant	

	Annexure: Proposed stages in NHB Scheme Implementation	125-127
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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.	Project Area and Survey /khasra/ Gat/Dag No.		
8.	Project Site Address with Postal Code and Police Station Name		
9.	Agro-climatic suitability		
10.	Research institution whose technology and package of practices are proposed to be followed		
11.	Existence of similar project activity in the said District		
12.	Whether the project is located in the crop cluster/ hub/ belt		Yes/No
13.	Project economic period/ economic life		
14.	Total Project Cost		
15.	• Open field condition • Integrated Post Harvest Management • Total		
16.	Project completion period (in months)		
	Expected Implementation timeline	Commencement	
		Completion	
17.	Total Eligible Project cost as assessed by the Applicant as per NHB guidelines		
18.	Bank/ Financial Institution identified for Term loan		
19.	Proposed Means of Finance	Promoters contribution (in Lakh Rs.) & %	
		Bank Term loan (in Lakh Rs.) & %	
		Un secured loan (in Lakh Rs.) & %	
		Total	
20.	Likely Employment generation (man days)		
21.	Security		
22.	Gestation period		
23.	Projected	Current Ratio other than export units	
24.	Key Financial Parameters	CR-Export units	
		IRR /BCR	
		DSCR*	
		Average DSCR	
		Debt to Equity Ratio i.e DER	
		TOL/TNW	
		Promoters Contribution	
		Break Even Point	
		Security Coverage Ratio	
		Repayment period	
25.	Productivity expected (in MT/Qtl/Kg/numbers)		
26.	Likely Gap in productivity compared to National /Global average		
27.	Potential Market (s)for the commodity and distance from the project site		

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

A. About Applicant / Promoter

1.1.In case of Individuals or Group of farmers (if applicable)		
Individual		
1. Name of Farmer / Entrepreneur/Individual/ Proprietor		
2. Parents or spouse name of Individual		
Group of Farmer growers / SHG- Promoters		
1. Name of Group		
2. Names of all members of group with their father, mother/husband/ wife name		
1.2.In case of Legal entity (if applicable)		
Name / Title		
1. Incorporation / Registration number & date of registration		
2. Act under which Registered		
3. Registering authority		
4. Name of Promoter / CEO/CMD/MD/		
5. If it is FPO/ FPC/ Producers Co-op society / Growers Co-operative Marketing federation- Please specify		
6. If it is Reg. Society/ Company/ Corporation / Partnership firm / Proprietary firm- Please specify		
7. Name of Promoter		
8. Status of the promoter / applicant in the legal entity-please specify		
9. Whether the promoter / applicant is authorised by the Legal entity- Yes/No		
10. In case of Company/partnership firms / legal person a. Certified copy of Company/Partnership incorporation/ registration certificate issued by Competent Authority, as applicable b. Certified copy of MoA/Bye Laws c. Certified copy of Board of Directors Resolution duly passed and authorizing signatory of application to apply for IPA d. Certified copy of latest Audit Report, if applicable i. (are to be made available in case the project and the application is considered for processing.- State Yes/No		
11. NGO- Specify		
1.3.Government Institutions / Organisations-- Please specify (if applicable)		
(i) Marketing Board / Agricultural Produce Marketing Committee APMC		
(ii) Municipal Corporation		
(iii) PSU/ Agro-Industries Corporation		
(iv) ICAR/CAU/SAU/KVK/ Government R&D Institution		

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

B. Applicant/ Promoters' Entrepreneurship:

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

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

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

- g. Current profession.
- h. Previous profession during the last 5 Years.
- i. Experience- General and Horticulture
 - a. General (Other than Horticulture)
 - b. Horticulture

1.11.Commitment by the applicant: In case the project is approved for pre-IPA, the promoter / CEO/CMD should undergo a 2 Weeks (min.10 working days) project specific training programme in case of Open field condition and protective cover (with or without PHM component) and a minimum of 1 Week programme in case of standalone PHM component in one of the ICAR/CAU/SAU/SHU/ Research Station/ Centres of Excellence/ related Central or State Government institution/ others as found appropriate / approved by NHB.

In case of a Partnership firm/ Company / Legal person

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

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

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

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

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

2.1. In this / proposed project and location:

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

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

2.2. In earlier / any other Project (s)

2.2.1.NHB : either in his / her own name individually or in the name of his / her family members or through any legal entity in which he / she is the beneficiary either in the current proposed project location or any other location. Whether any assistance in the form of soft loan and subsidy has been availed earlier from the National Horticulture Board? If yes, give details thereof

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

2.2.2.Central Government- Ministries / Organisations: either in his / her own name individually or in the name of his / her family members or through any legal entity in which he / she is the beneficiary either in the current proposed project location or any other location.

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

2.2.3.State Governments: either in his / her own name individually or in the name of his / her family members or through any legal entity in which he / she is the beneficiary either in the current proposed project location or any other location.

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

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

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

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

2.5. Provide the following details:

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

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

Attention:

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

4. About the Project, Rationale, Management and Description

2.1.About the Project

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

No.	Name of the scheme and component	Unit	Tick mark relevant component
5	Development of Commercial Horticulture through Production and Post-Harvest Management of Horticulture Crops		
	1. Open field condition		
	2. Integrated PHM		
	2.1. Integrated Pack house		
	2.2. Pack House		
	2.3.Pre-cooling unit		
	2.4. Cold Room (Staging)		
	2.5 Refer Van		
	2.6 Labor/store room		
	3. Add on components		
	3.1 Raisin making unit: Drying structures including dipping facility, washing, cleaning, grading and packing		
	3.2 Juice making unit comprising crusher, juicer, pasteurizer and bottling, bins for juice storage etc.		

6. Details of Crop in case of Open field condition

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

7. Products, by-products and Services of the Project

8. Objectives of the Project

9. Expected Outcomes of the Project including Products / and Services 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. How quality of inputs/ raw materials is assured.

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

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

3.3. Project Site/ Land details:

3.3.1. Proposed Project Area:

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

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

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

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

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

3.5. Current usage of land of proposed Project Area

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

3.6. Current infrastructure and assets possessed by the Applicant:

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

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

3.8. Conversion of Land Use (CLU) if applicable

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

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

3.11. Compliance of project site for food safety

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

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

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

No.	Name of the scheme and component	Justification
1	Development of Commercial Horticulture through Production and Post-Harvest Management of Horticulture Crops	
	1. Open field	
	2. Integrated PHM	
	2.1.Integrated Pack house	
	2.2.Pack House	
	2.3.Pre-cooling unit	
	2.4. Cold Room (Staging)	
	2.5. Mobile Pre-cooling unit	
	2.6 Primary Processing	
	2.7 Refer Van	
	2.8.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	Pack house				
		Store & Pump house (Area in sq.ft with size)				
		Labour room (Area in Sq.ft with size)				
		Others				
	Farm Mechanisation (AC)	Tractor above 20 HP				
		Power Tiller	HP			
		Equipment's-driven by Tractor/ Power Tiller				
		Mulch laying machine				
		Self-propelled hort. Machinery (sprayers/dusters)				

		Other tools and equipment's as per Sub Mission on Agriculture Mechanisation (SMAM)				
		Others				
	Land Development	Soil levelling / Digging/Fencing/construction of gate, 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 (trellises)					
	Vermi Compost Unit					
	• 1. Permanent Structure					
	• 2, HDPE Vermibed (12ft X 4ft X2 ft)					
	Plastic Mulching					
	Others					
	Grand Total					
Integrated PHM	1.Pack House					
	2.Integrated Pack house					
	3.Pre-cooling unit					
	4.Cold Room (Staging)					
	5.Mobile Pre-cooling unit					
	6.Ripening Chamber					
	7 Primary Processing					
	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. Procurement of planting material	Own / outsourcing
	3. Vineyard planning, layout	Own / outsourcing
	4. Water and nutrient management	Own / outsourcing
	5. Pruning & Training	Own / outsourcing

	6. Plant growth regulators	Own / outsourcing
	7. Integrated Pest & Disease management	Own / outsourcing
	8. Physiological disorders	Own / outsourcing
	9. Farm Mechanisation	Own / outsourcing
	10. Harvesting	Own / outsourcing
	11. Post-Harvest Management	Own / outsourcing
	a. Pre-cooling	Own / outsourcing
	b. Sorting and Grading	Own / outsourcing
	c. Packing and labelling	Own / outsourcing
	d. Transport	Own / outsourcing
	e. Storage- Cold Room	Own / outsourcing
	f. Refer van	Own / outsourcing
	g. Cold chain	Own / outsourcing
	12. Marketing	Own / outsourcing
	13. Processing	Own / outsourcing

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

Project Implementation period in case of approval: Months.

Proposed/ Tentative dates of	Bench mark / Activity	Approximate date
Project Commencement		
First Commercial Crop / plantation / operations if any		
Project Completion		

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

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

3.15.Backward and Forward linkages

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

Operations	Agency / Agents / providers	Remarks
Planting Material		
Manure		
Fertilizers		
Bio fertilizers		
Bio pesticides		
Pesticides / Insecticide		
others		

2. Forward linkages- for Domestic and Export Market

Operations	Agency / Agents / Service providers	Remarks
Storage Unit		
Local Market		
Terminal market		
Farmers Market		

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

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

3.16.1. Managerial and Technical

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

3.16.2. Skilled and Unskilled Labour

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

3.17. Employment Generation per annum

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

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

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

3.19. SWOT Analysis

1	Strengths	
2	Weaknesses	
3	Opportunities	
4	Threats	

3.20. Monitoring and evaluation of Project:

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

Attention of the applicant:

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

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

4	NHB Scheme under which the project is proposed with rationale / justification.	
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1. Scheme.1: Copy paste scheme guidelines

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

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

5. Project details

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

5.1.1. Origin, History, and Distribution

Origin of the crop and its introduction into India:

Grape cultivation is one of the most remunerative farming enterprises in India. Cultivated grapes are believed to have been introduced into the north India by the Persian invaders in 1300 AD, from where they were introduced into the south (Daulatabad in Aurangabad district of Maharashtra) during the historic event of changing the capital from Delhi to Daulatabad by King Mohammed-bin-Tughlak. Ibn Batuta, a Moorish traveller who visited Daulatabad in 1430 AD, reported to have seen flourishing vineyards in south India. Grape was also introduced in the south into Salem and Madurai districts of Tamil Nadu by the Christian missionaries around 1832 AD, and into Hyderabad province by HEH, the Nizam of Hyderabad in the early part of the 20th century. From Delhi, Daulatabad, Madurai, Salem and Hyderabad, grape cultivation spread to different parts of the country.

1. Distribution of crop across the country

State	2014-15		2015-16		2016-17	
	Area (‘000 Ha)	Production (‘000 Tonnes)	Area (‘000 Ha)	Production (‘000 Tonnes)	Area (‘000 Ha)	Production (‘000 Tonnes)
Maharashtra	93.26	2292.53	90.09	2048.11	103.98	2137.74
Karnataka	21.76	420.81	23.35	429.78	24.23	445.89
Tamil Nadu	2.31	32.63	2.44	34.10	2.31	30.59
Mizoram	2.45	22.55	2.47	22.55	2.45	18.00
Others	3.18	54.26	3.30	55.50	2.98	51.04
Total	122.96	2822.78	121.65	2590.04	135.95	2683.26

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

Parameter	Recommended	Project location parameters	Remarks / deviations
Climate	Temperate, Sub-tropical, Tropical		
Altitude	Up to 2500 m		
Climacteric / Non Climacteric	Non- climacteric		
Thermosensitive ness of crop	Yes		
Photosensitive	Yes		
Temperature range			
1. Mean monthly / Average temperature	20 to 28°C		However, grape growing is possible with the increase in mean temperature upto 45°C
2. Av. Max. temperature	35°C		The temperature in major grape growing area like Solapur (Maharashtra) and Bijapur (Karnataka) is exceeding 45°C.
3. Av. night temperature	12 to 15°C		The minimum temperature sometimes goes down up to 6°C for a short duration in the grape growing areas of Nashik.
4. During Crop duration	20 to 35°C		The minimum temperature sometime goes down to 6°C while maximum temperature upto 35°C. The change in temperature does not affect the grape yield..
5. Flowering	20 to 30°C		Very low temperature may lead to berry drop.
6. Fruiting	20 to 35°C		High temperature may lead to early ripening.
7. Maturity	20 to 35°C		In the hot region like Solapur the maximum temperature reaches to 43°C during maturity.

			Still the quality of produce is not affected. The produce may be fit for local consumption.
8. Fruit quality	22 to 35°C		The increase in the temperature advances the fruit maturity.
9. Fruiting Season	October to March		In certain areas like Satana (Nashik) where early fruit pruning (July-August) is followed, the fruit matures in December while in Kasegaon (Solapur) where late pruning (December – January) is followed, the fruit matures during May.
Rainfall / Water	Irrigated crop requires dedicated irrigation source except during rainfall.		Total water requirement in a year varies from 400-600mm depending upon the quantity and duration of rainfall. Approx. 50% of the same is required during foundation and fruit pruning seasons of tropical conditions.
1. Land preparation (Shoot Growth stage)	74-111 mm		Fruit pruning season
2. Flowering	10-15 mm		Fruit pruning season
3. Fruiting (Berry Development stage)	80-120 mm		Fruit pruning season
4. Maturity (Ripening to harvest stage)	36-54 mm		Fruit pruning season
5. Season	200-300mm required during Fruit pruning season		Fruit pruning season
Humidity			
1. Flowering	60-80%		
2. Fruiting	60-70%		
3. Maturity	40-50%		

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

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

Risk management/ Deviation Management if any:

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

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

(Not applicable to standalone PHM projects)

	As recommended by ICAR /CAU/SAU/KVK/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
pH	6.51-7.5		Amendments required depending upon soil problem	
Organic carbon	2 %		In general, it ranges from 0.2- 0.7% in common grape growing areas. Difficult to achieve under semi-arid hot conditions. Regular application of organic matter is recommended.	
Electrical conductivity (1:2.5)	< 1 dS/m		Possibility of yield loss exceeding 25% if not suitably managed. Rootstock is must.	
Chlorine	< 100 ppm		If more then, Rootstock like Dogridge, 110R is must	
Sodium	< 1000 ppm		If more then, suitable amendment required. 110R rootstock is more suitable.	
Potassium	451-600 ppm		If exceeding 600 ppm rationalise the potassium doses	

			depending upon soil type	
Nitrogen	181-220 ppm		Normally difficult to achieve, if more then, rationalise the dose based upon crop vigour	
Phosphorus	51-75 ppm		If exceeding 75 ppm, rationalise the phosphorus doses depending upon soil type	

@ Note: Organisation / Institution (ICAR/CAU/SAU/SHU/KVK, others) 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	6-8	
EC	< 1 dS/m	
Total salt concentration,	<640 ppm	
Sodium Absorption Ratio (SAR)	< 8.0	
Bi-Carbonate	< 1.25 meq/L	
Boron concentration	< 1ppm	
Heavy metals	Absent	
Pesticide residue	Absent	

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

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

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

5.2. Project- Market viability of the Project

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

Grape is well known for its nutritional and medicinal values. Use of grapes in Ayurveda medicines is well documented. Raisins, which are dried grapes, do not contain as many nutrients as fresh grapes, but they do contain four times the amount of sugar. This is because the dehydrating process condenses the sugars and calories and removes some of the nutrients. Therefore, studies on the benefits of grapes cannot be applied to raisins, according to World's Healthiest Foods.

Here are the nutrition facts for grapes according to the U.S. Food and Drug Administration, which regulates food labeling through the National Labeling and Education Act:

Nutrition Facts	Amt per Serving	%DV *	Amt per Serving	%DV*
Grapes, red or green				
Serving size: 1 cup (151 g)	Total Fat 0.0 g	0%	Total Carbohydrate 27.0 g	9%
Calories 104 Calories from Fat 2	Cholesterol 0.0 mg	0%	Dietary Fiber 1.0 g	5%
	Sodium 3.0 mg	0%	Sugars 23.0 g	
	Protein 1.0 g			
*Percent Daily Values (%DV) are based on a 2,000 calorie diet.	Vitamin A	2%	Calcium	2%
	Vitamin C	27%	Iron	3%

5.2.2. Targeted market (s): Domestic or International. In case of International market, the applicants 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 are provided in marketing chapter.

The quality of grape bunch for local market:

AGMARK standards are available for table grapes. Details of these standards are available on website of Directorate of Marketing and Inspection (DMI).

<http://dmi.gov.in/GradesStandard.aspx>

The grape bunches harvested for export should fulfil the following.

- a) The grapes harvested for local market should be of uniform colour
- b) Average bunch size to be 450-500g
- c) The harvested grape bunches should be free from blemishes, scars, etc.
- d) The grape bunches containing 20°Brix and above total soluble solids and 0.50 to 0.55% acidity.
- e) The harvested grape bunches should be free from pesticide residue.

5.2.3. Statistics: India and State.

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

Sl. No.	State / UT	2014-15		2015-16		2016-17	
		Area ('000 ha)	Production ('000 MT)	Area ('000 ha)	Production ('000 MT)	Area ('000 ha)	Production ('000 MT)
1.	Maharashtra	93.26	2292.53	90.09	2048.11	103.98	2137.74
2.	Karnataka	21.76	420.81	23.35	429.78	24.23	445.89
3.	Tamil Nadu	2.31	32.63	2.44	34.10	2.31	30.59
4.	Mizoram	2.45	22.55	2.47	22.55	2.45	18.00
5.	Kerala	0.15	1.88	1.00	15.50	1.00	15.50
6.	Andhra Pradesh	0.62	11.19	0.73	14.64	0.75	15.00
7.	Telangana	1.27	26.81	0.59	13.54	0.32	9.24
8.	Punjab	0.32	9.21	0.30	8.49	0.31	8.74
9.	Madhya Pradesh	0.16	3.00	0.16	2.20	0.09	1.28
10.	Nagaland	0.19	1.14	0.26	0.50	0.26	0.61
11.	Jammu & Kashmir	0.34	0.73	0.13	0.32	0.13	0.32
12.	Haryana	0.04	0.16	0.04	0.16	0.04	0.20
13.	Himachal Pradesh	0.09	0.14	0.09	0.13	0.09	0.13
14.	Rajasthan	0.00	0.01	0.01	0.02	0.01	0.03
15.	Arunachal Pradesh			0.00	0.00	0.00	0.00
	Total	122.96	2822.78	121.65	2590.04	135.95	2683.26

Source: NHB

2. Project State Picture (Mandatory)

Year	Area in ha	Production MT	States' contribution to Nation (per cent share in total production of grapes)	Productivity T/ha	Gap in Productivity (T/Ha)		
					State Av.	National Av	Global Highest
2015-16	90.09	2048.11	Maharashtra (79.08%)	22.73		1.44	India has highest productivity.
	23.35	429.78	Karnataka (16.59%)	18.41		-2.88	
	2.44	34.10	Tamil Nadu (1.32%)	13.97		-7.32	
	2.47	22.55	Mizoram (0.87%)	9.13		-12.16	
	121.65	2590.04	India	21.29			

Source: Horticulture Statistics Division, Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India

3. 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

Source:

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

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

--	--	--	--	--	--

Source:

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

Crop	Area		Production		
	Ha	%	MT	%	
Grape (2017-18)	1,38,000	0.8278 per cent of total fruits and vegetables	29,80,000	1.078 per cent of total fruits and vegetables	
Total		100		100	

Source: NHB, Horticulture Crops Estimates for the Year 2017-18(First Advance Estimates)

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

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

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

6.2.4. Clusters/ Zones

5.2.4.1.Crop clusters in the State (Mandatory): The information will available with state department (Horticulture)

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

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

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

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

Demand -Supply gap for the commodity

Unit	Demand	No.of growers		Supply / production	Gap	Remarks
		Nos.	Area			
Project area						
District where project is located						
State						
Country			1.38 lakh ha	Grape production: 2.98 million T Wine production: 1.18 MHL		
Globally				The global production volume of fresh grapes in 2017 is an estimated 22.53 million tons. Wine: 267 MHL		

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.

Based on the data available for the last five years, this may be updated.

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				

5.2.7. International trade market and potential:
Major exporting countries (Qty: MT and Value USD)

Exporting Country	2014		2015		2016	
	Qty	Value	Qty	Value	Qty	Value
Chile	9,17,402.75	2,309.28	9,32,618.13	2,241.38	8,90,227.02	2,232.51
USA	5,71,642.80	1,411.24	4,80,658.54	1,211.46	4,78,490.78	1,154.69
Peru	3,40,718.98	918.43	3,87,529.16	996.32	3,54,448.70	889.98
South Africa	3,44,459.32	936.76	3,89,345.47	854.07	3,47,245.51	793.10
Italy	4,72,914.25	813.67	4,94,631.60	754.88	4,99,000.17	778.28
Turkey	4,79,088.60	787.95	4,26,879.32	662.46	3,89,239.82	611.13
Mexico	1,66,660.91	421.54	1,74,603.18	399.67	1,67,805.93	471.72
Australia	86,582.47	217.50	1,04,020.01	246.61	1,53,493.12	393.07
Spain	1,51,649.61	366.11	1,59,469.06	353.12	1,70,758.34	371.36
India	1,65,601.66	301.83	1,62,444.41	225.86	2,09,616.81	340.19

<http://agriexchange.apeda.gov.in/inttrade/PrdGrpReport.aspx?gcode=0205>

Export import data of Raisins

Year	Raisin	
	Export (MT)	Import (MT)
2012-13	30,041.75	10,312.17
2013-14	31,602.24	10,760.95
2014-15	12,325.65	17,964.27
2015-16	26,824.51	15,123.34
2016-17	30,859.10	13,459.49

Source: Agriexchange

(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)

In order to boost the export of grapes from Maharashtra, the cooperative partnership firm “Mahagrapes” was established in 1991 with the help of the Maharashtra State Agricultural Marketing Board in Pune. Till date a total of many grape grower cooperative societies are member societies of Mahagrapes from Sangli, Solapur, Latur, Pune and Nasik areas. MRDBS is well established body supporting grape growers and technically helping them by linkages with ICAR-NRC for Grapes. Beside the grape growers’ societies, FPOs and FPCs are playing important role in export of grapes to EU and other countries. Sahyadri Farms at Nashik created a network of grape grower members and supporting them technically. Same time helping them to export grapes. Presently Sahyadri Farms is biggest exporter of grapes from India.

Major importing countries of Indian Grapes during 2017-18

Sr No.	Country	Qty (MT)	Value (Rs. In Lacs)
1	Netherland	58,565.17	64,816.82
2	Russia	29,126.51	29,225.32
3	U K	18,985.61	22,410.47
4	Germany	17,397.96	18,562.53
5	U Arab Emts	15,774.39	13,630.43
6	Saudi Arab	13,598.94	11,443.27
7	Thailand	5,182.98	6,730.08
8	Sri Lanka Dsr	3,448.62	3,562.61
9	Finland	2,131.87	2,854.18
10	Hong Kong	1,969.71	2,833.74

Source: Agriexchange

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

Seasonality matrix of the grapes*

Months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Grape availability												



Lean Season



Peak Season

Seasonality matrix of Raisins*

Months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Grape availability												



Lean Season



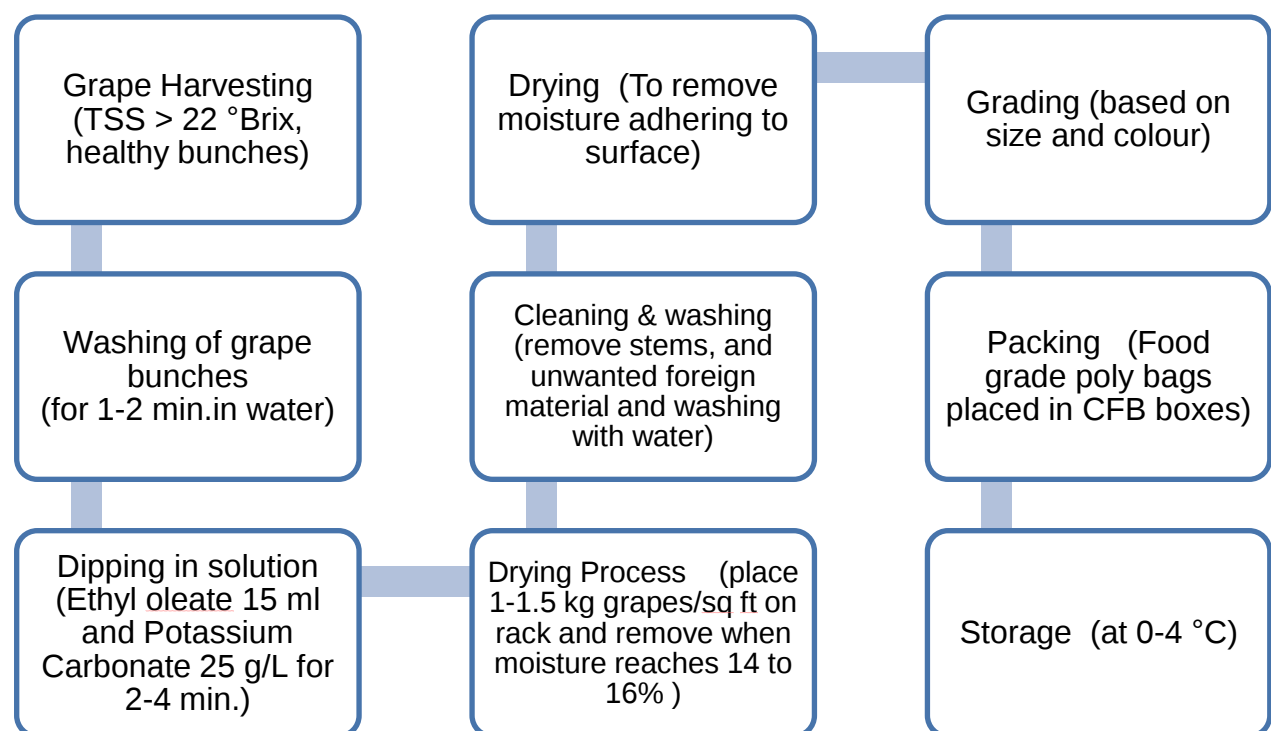
Peak Season

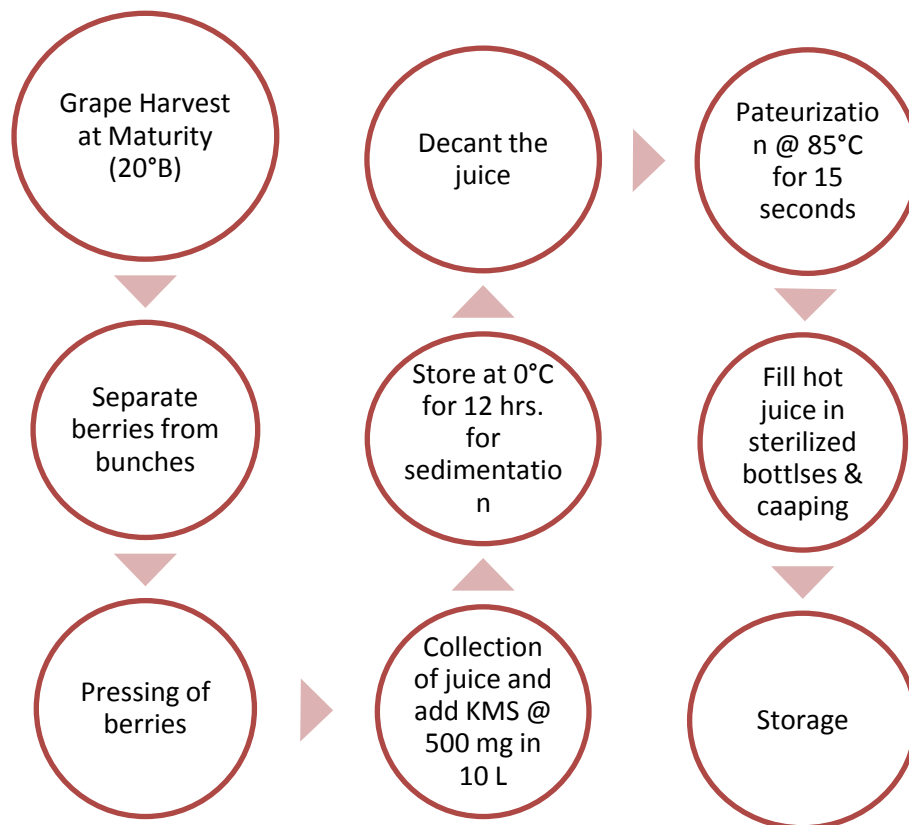
*(Seasonal data not available)

Demand and Supply issues specific to project area: The Grapes are grown mainly in Maharashtra and Karnataka states. Grapes are available in the area mainly during January to March. However, less quantity of grapes is produced in November-December and April months also. The grapes produced in these months earn much more but having more risk. Grapes are demanded whole the year and huge quantity of grapes are being imported and sell at very high price of upto Rs. 400/kg.

Raisins are produced in Maharashtra and Karnataka. Maharashtra's Tasgaon of Sangli district is known wholesale market of raisins. Whole domestic trade is controlled from this place. After grading raisins are packed and stored in cold storages till demand or strategic supply to distant markets. Cost of raisins in distant markets is very high. Beside available local produce, about 11000 T of raisins are being imported from different countries. Making more raisins will not affect demand as consumption in the country is approximately 180 g/capita/year. Raisins are mainly consumed as snacks and little quantity is used in food industry. However, food industry alone has capability of use whole produce.

Raisin making flowchart





Juice

preparation

flow

chart

Grape export from India

Country	2015-16		2016-17		2017-18	
	Quantity (MT)	US\$ (million)	Quantity (MT)	US\$ (million)	Quantity MT	US\$ (million)
Netherland	50,702.44	87.39	55,152.44	92.35	58,565.18	100.42
Russia	13,804.66	20.47	27,072.59	41.13	29,126.51	45.36
United Kingdom	18,014.68	31.21	13,883.20	23.83	18,985.61	34.71
Germany	5,165.19	8.19	11,174.24	18.46	17,397.96	28.73
UAE	13,075.43	17.63	16,712.16	21.40	15,774.39	21.16
Saudi Arabia	8,140.47	10.49	12,388.89	17.14	13,598.94	17.75
Thailand	3,193.77	6.03	4,655.60	9.07	5,182.98	10.49
Sri Lanka	3,139.82	4.83	3,379.13	5.30	3,448.62	5.53
Finland	1,574.50	2.99	2,079.89	3.83	2,131.87	4.42
Hong Kong	1,056.44	2.11	2,095.36	4.58	1,969.71	4.41
Oman	640.16	0.69	1,101.55	1.35	3,062.53	4.16
Belgium	131.60	0.17	4,746.59	7.50	2,413.45	4.03
Nepal	5,600.50	2.22	7,414.92	3.41	8,849.35	3.51
Ukraine	3,358.39	3.37	4,262.35	4.69	3,055.22	3.28
Taiwan	1,079.69	2.08	2,389.64	4.97	1,560.62	3.19
Denmark	599.94	1.08	610.36	1.01	1,660.66	3.14
Others	31752.3	34.9	61998	50.82	27656.9	38.49
Total	1,61,029.04	235.85	2,31,116.85	310.66	2,14,440.57	332.78

Wine production in different countries

Volume in thousands of hectoliters; e.g., global production is around 247 million hl)

Country	2013	2014	2015	2016	2017
Italy	54,000	44,200	50,000	50,900	39,300
France	42,100	46,500	47,000	45,200	36,700
Spain	45,300	39,500	37,700	39,300	33,500
United States	24,400	23,100	21,700	23,600	23,300
Australia	12,300	11,900	11,900	13,100	13,900
Argentina	15,000	15,200	13,400	9,400	11,800
China	11,800	11,600	11,500	11,400	11,400
South Africa	11,000	11,500	11,200	10,500	10,800
Chile	12,800	9,900	12,900	10,100	9,500
Germany	8,400	9,200	8,900	9,000	8,100
Portugal	6,200	6,200	7,000	6,000	6,600
Russia	5,300	4,900	5,600	5,600	5,600
Romania	5,100	3,700	3,600	3,300	5,300
Brazil	2,700	2,600	2,700	1,300	3,400
Hungary	2,600	2,400	2,800	2,800	2,900
<i>Rest of World</i>	<i>31,000</i>	<i>27,100</i>	<i>26,800</i>	<i>27,300</i>	<i>24,600</i>
World	290,100	269,500	274,700	268,800	246,700

Note: 2017 data are estimated and are likely to change in future reports.

Source: OIV, October 2017

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

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

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

Projected prices of project produce

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

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

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

Source:

Note:

5.2.11. Whether transportation infrastructure is available.

1. Mode of transportation / arrangement: Own/Hired
2. Whether cold chain facility available locally: Yes/No
3. If yes details of service providers and contact person name.

5.2.12. Value Addition scope/ potential:

About 71 percent of total grape production is consumed as fresh in India, while 27% is converted into raisins and about 2% in forms of wine and raisins. Raisin making is very well adopted in Sangli and Solapur districts of Maharashtra and adjoining districts (Bijapur and Bagalkot) of Karnataka. There are lot of opportunities to adopt raisin and juice making in grape growing areas. However, wine making is organized industry and registering about 15% of annual growth. Juice industry has high potential and can be encashed by adoption of good juice varieties. Waste developed by wine and juice industry has very high value and not used. Utilization of generated wastes, will certainly help the grape growing community and related industry.

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

MSME is promoting cluster approach for raisin industry.

Wine Policy of Maharashtra and Karnataka states is supporting the industry.

5.2.14. Value chain in the commodity

Agri-food systems are undergoing rapid transformations and the emergence of integrated food supply chains is one of the most visible market phenomena in India. Increasing concentration on processing, trading, marketing and retailing is being observed in all the segments of supply chains. The traditional way of food production is being replaced by practices more akin to manufacturing processes, with greater co-ordination across farmers, processors, retailers and other stakeholders in the value chain. Further, with increase in income, the pattern of food consumption is changing. Demand for high-value commodities like fruits, vegetables, livestock products, fisheries and edible oils is growing and farmers are trying to diversify their production systems accordingly. On the other hand, consumers are becoming more demanding in terms of quality and safety of food commodities. In addition, demographic and income trends are inducing more enlightened consumers to demand convenience foods such as frozen, pre-cut, pre-cooked and ready-to-eat items, together with assurances of product quality and safety.

Horticulture has emerged as the priority area for agricultural development in India. During the past one and half decades, the sector has been consistently receiving increasing attention and it is being promoted as a means of agro-diversification strategy for the second Green Revolution in Indian agriculture. It is providing the much needed impetus to the growth of agricultural sector through increase in trade, income and employment. The horticultural sector comprising fruits, vegetables, flowers, plantation crops, spices, and medicinal & aromatic plants contributes over 30 per cent to the country's agricultural GDP. India is the world's second largest producer of horticultural produce. However, only an insignificant proportion of horticultural produce (2-3%) is processed, and the postharvest losses across horticultural commodities are alarming.

In any value chain, one member is the buyer of the previous individual and the supplier for the later member. All members of the value chain share the same purpose: produce final products that satisfy final customers' needs and requirements. They are tied up to work altogether in order to attain such purpose, while maintaining their independence. They work in cooperation for a long time, discuss and solve problems together. While passing through the chain, the product gains some value. The chain of activities as a whole gives the product more added value than the sum of independent activities. The value chain exists if and only if all members in the chain cooperate to deliver maximum value at the least possible total cost

to the end customer. That is what value chain is about. It is important not to mix the value generated with the costs incurred by the activities. When the era of “value addition” through the large scale industrial processing of grapes began diversified into various products like wine, raisins, juice, etc. among this all in India there is huge potential of preparations.

GlobalGAP system provides for four options on certification: individual certification, group certification, benchmarked scheme certification for individual producers and GlobalGAP benchmarked scheme certification for producer groups. Generally, developing country producers use either the first or the second channel for certification. However, under group certification, producers must be members of a Primary Marketing Organization (PMO). A PMO is supposed to take legal responsibility for the whole operation of a scheme whereby each individual producer is subject to signing a legally binding contract agreeing to meet all the required specifications of the GlobalGAP protocol. In India, some exporting companies exporting grapes organize small growers (including large ones by Indian standards) under GlobalGAP group certification acting as PMOs for quality exports, which are certified by a third party. The farmers pay the certification charges and the contract agreement specifies rules for participation and reasons for disqualification from the scheme. Maximum residue limits (MRL) certification is not part of GlobalGAP, but is demanded by individual buyers, who each have their own MRL standard. Normally, contracts are for 18 months, and moving out of the contract leads to no refund of membership fees.

The export market is not so attractive now, as domestic prices have firmed up over the years from Rs. 15 in 2005, when the export price was Rs. 45, to as much as Rs. 40 in 2010/11, when the export price was Rs. 60 per kg. In 2003, the grape price was Rs. 18 per kg in the local market, which increased to Rs. 30 per kg in 2012. On the other hand, export prices realized by exporters remained more or less the same (Rs. 52 per kg) from 2003 to 2010. The export price has no link with the domestic price. This shows that, for farmers, attending to domestic markets is easier, as there are no standards of any significance and, therefore, no costs of compliance. This could change in the future if global retailers expand within India and require standards such as GlobalGAP. Sometimes the grapes produced for raisin making are also supplied for domestic market it is due to better realization of returns as fresh grapes instead of raisin making.



Fig. 1. Channel of grape supply in local market

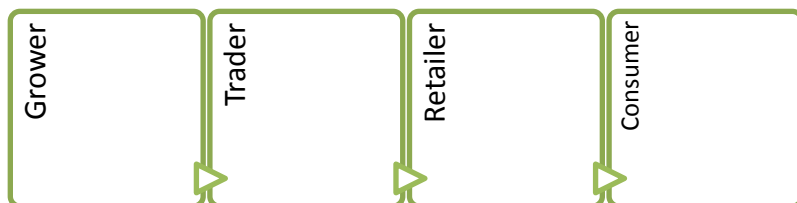


Fig. 2. Local/ distant marketing channel of grapes

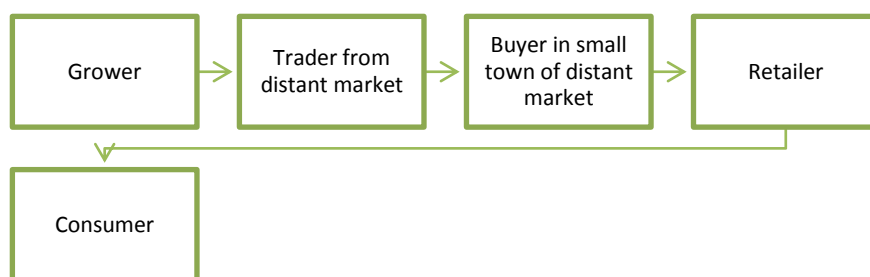
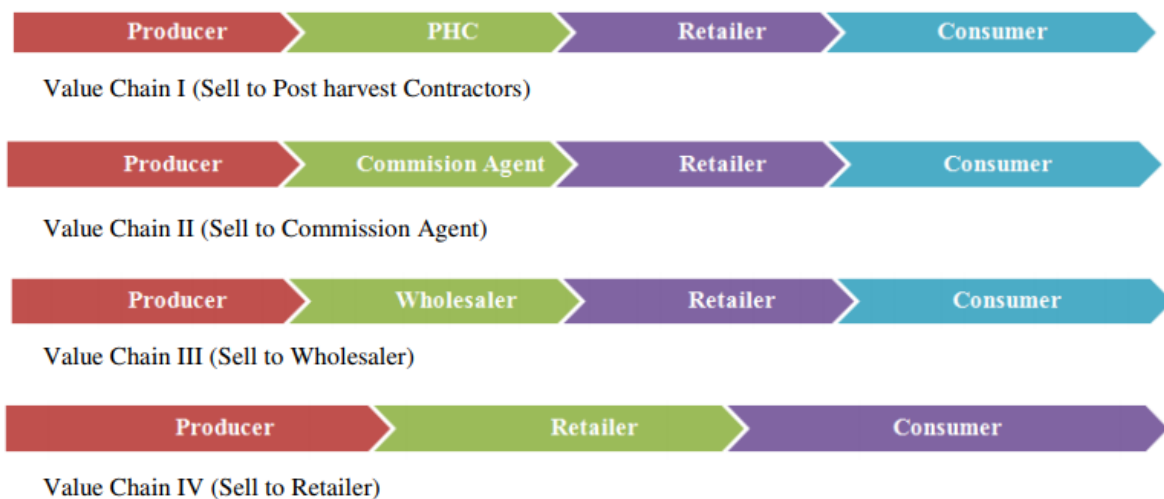
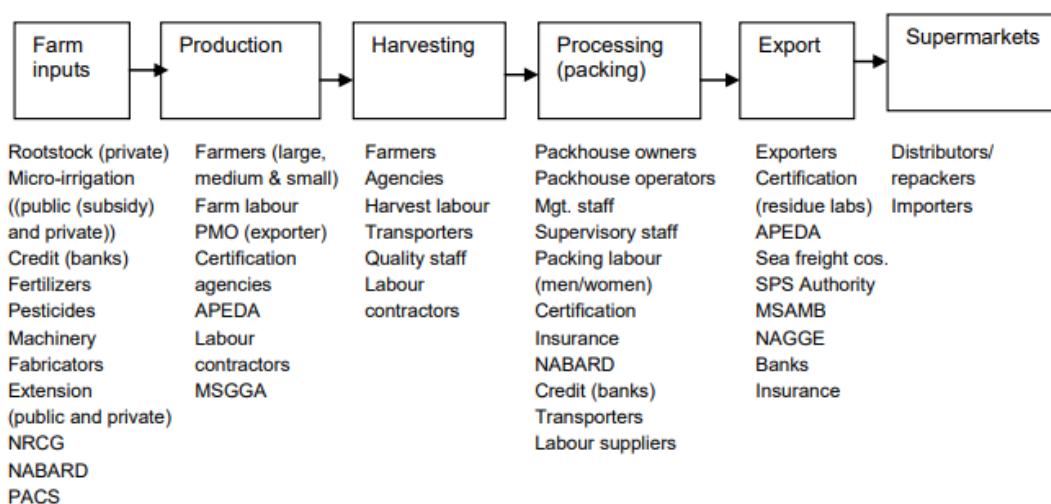


Fig.3.

Market channel of distant market of grapes



Mapping the Value Chain of grapes for Local Markets

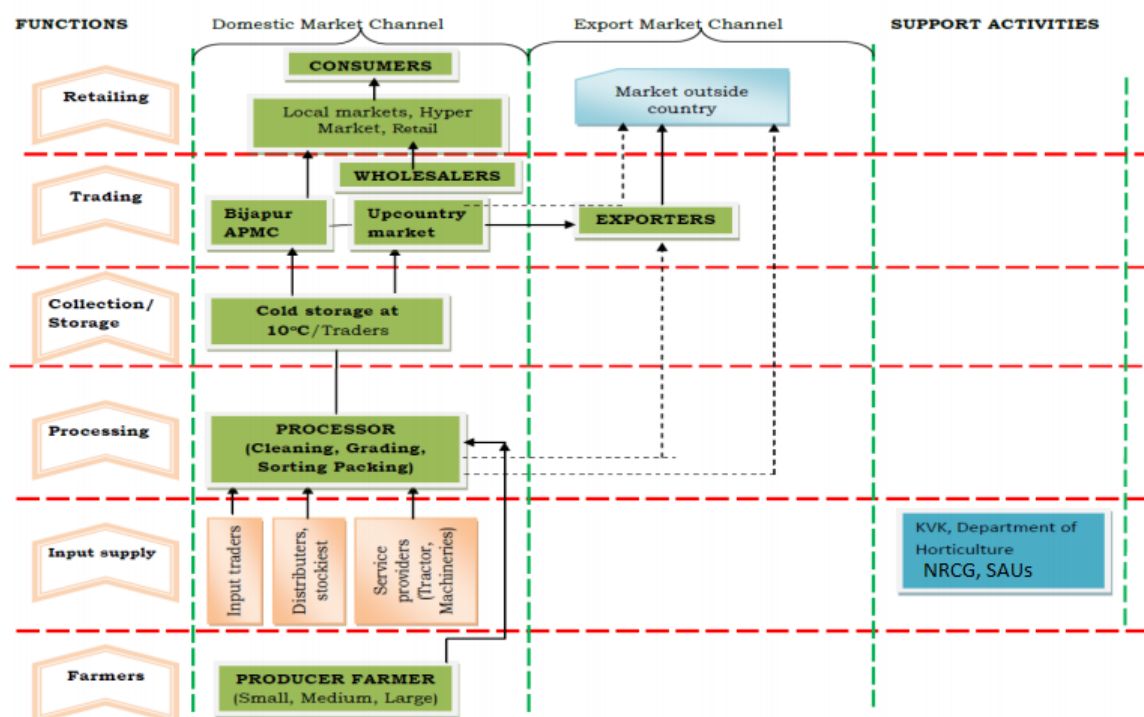


Note: MSAMB = Maharashtra State Agricultural Marketing Board; NRCG = National Research Centre for Grapes; NABARD = National Bank for Agriculture and Rural Development; SPS = Sanitary and Phytosanitary; NAGGE = National Association of Grape Growers and Exporters; PACS = Primary Agricultural Cooperative Societies.

Export grape production network in India

Generic worksheet crossing functions with participant to identify the stakeholders in raisin sector

Functions	Participants/Stakeholders					
	Farmer as grape grower	Input supplier	Processor	Cold storage entrepreneur	Wholesalers	Retailer
Production						
Input supplying						
Processing						
Cleaning/Sorting						
Grading						
Packing						
Transporting						
Assembling						
Storing						
Wholesaling						
Retailing						
Export						



Value Chain map of raisins in India

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

5.3.Financial Viability of the Project:

5.3.1: Due Diligence Status

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

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

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

		down (Area in Sq.ft with size)					
		Others					
	Farm Mechanisation (AC)	Tractor more than 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/ dusters/sprayers (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 (trellises)						
	Vermi Compost Unit						
	Plastic Mulching						
	Others						
	Grand Total						
	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					
	Integrated PHM						
1.Pack House							
2.Integrated Pack house							
3.Pre-cooling unit							

	4.Cold Room (Staging)				
	5.Mobile Pre-cooling unit				
	6.Ripening Chamber				
	7 Primary Processing				
	8.Retail outlet (environmentally controlled)				
	Others				

Summary of Project Cost

		Project Cost	Max. possible NHB support (self-appraisal)
1 Open field condition	With add on components		
	Without add on components		
2 Integrated PHM			
2.1.Integrated Pack House			
2.2.Pack house			
2.3.Pre-cooling unit			
2.4. Cold Room (Staging)			
2.5. Mobile Pre-cooling unit			
2.6 Primary Processing			
2.7.Refer Van			
2.8 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. Investment in Horticulture Sector

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

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

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

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

5.3.6 Project Financing:

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

5.3.13 Sensitivity analysis of the project.

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

5.3.14 Key Financial Parameters for the proposal:

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

5.3.15 Statement of Assets & liability as on.....

1. Immovable Assets

(Rs. In lakh)

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

2. Movable Assets

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

3. Bank/FI balances and cash

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

4. Shares & debentures

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

5. Investment in business & other associates concern

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

Total assets.....

1. Liabilities

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

Total liabilities.....

Net of assets & liabilities.....

Date:

Signature of the Promoter/Guarantors/Directors /partner

Risk Analysis & Management

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

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

Farm record keeping/ Maintenance proposed

5.4: Land development and Crop husbandry

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

5.4.2. Selection of Quality Planting Material

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

1. Recommended and popular cultivars/ varieties/ Hybrids State wise	Name of variety / Hybrids/ cultivar (with potential yield)
a. White seedless	Maharashtra: Thompson Seedless and its clones (Tas-A-Ganesh, Clone 2A, Sonaka, Manik Chaman, Super Sonaka, etc.), Manjari Naveen, Early Perlette
	Karnataka: Thompson Seedless and its clones (Tas-A-Ganesh, Clone 2A, Sonaka, Manik Chaman, Super Sonaka, etc.), Manjari Naveen, Early Perlette
	Andhra Pradesh: Thompson Seedless and its clones (Tas-A-Ganesh, Clone 2A, Sonaka, Manik Chaman, Super Sonaka, etc.), Manjari Naveen, Early Perlette
	Telangana: Thompson Seedless and its clones (Tas-A-Ganesh, Clone 2A, Sonaka, Manik Chaman, Super Sonaka, etc.), Manjari Naveen, Early Perlette
b. White Seeded	Maharashtra : Sauvignon Blanc, Chardonnay, Riesling, Chenin Blanc
	Karnataka: Anab-e-Shahi, Dilkhush, Sauvignon Blanc, Chardonnay, Chenin Blanc
	Tamil Nadu: Anab-e-Shahi
	Andhra Pradesh: Anab-e-Shahi, Dilkhush
c. Color Seedless	Telangana: Anab-e-Shahi, Dilkhush
	Maharashtra: Sharad Seedless and clones (Nanasaheb Purple, Sarita Seedless, Krishna Seedless), Fantasy Seedless, Crimson Seedless, Flame Seedless, etc
	Karnataka: Sharad Seedless and clones (Nanasaheb Purple, Sarita Seedless, Krishna Seedless), Fantasy Seedless, Crimson Seedless, Flame Seedless, etc

d. Color seeded	Maharashtra: Red Globe, Cabernet Sauvignon, Merlot, Syrah, Pinot Noir
	Karnataka: Red Globe, Cabernet Sauvignon, Merlot, Syrah, Pinot Noir, Bangalore Blue
	Mizoram: Bangalore Blue
2. Classification of cultivars based on crop maturity	
a. Early	Manjari Naveen
b. Mid	Thompson Seedless and its clones (Tas-A-Ganesh, Clone 2A, Sonaka, Manik Chaman, Super Sonaka, etc.)
c. Late	Nil
3. Classification of cultivars / Varieties/ Hybrids based on purpose	
a. Table grapes (export & local)	Thompson Seedless, Tas-A-Ganesh, Clone 2A, Manjari Naveen, Sonaka, Manik Chaman, Super Sonaka
b. Raisin	Thompson Seedless, Tas-A-Ganesh, Clone 2A, Manjari Naveen, Sonaka, Manik Chaman, Super Sonaka, Manjari Kishmish
c. Juice	Manjari Medika, Bangalore Blue, H-516
d. Wine (Red)	Cabernet Sauvignon, Merlot, Syrah, Pinot Noir
e. Wine (White)	Sauvignon Blanc, Chardonnay, Riesling, Chenin Blanc

Cultivar/Hybrid/Variety / Planting material Selected:

Cultivar/Hybrid/Variety / Planting material	Parentage	Area	Medium/ High/ Ultra High density	Requirement Quantity
Thompson Seedless, Tas-A-Ganesh, Clone 2A, Manjari Naveen, Sonaka, Manik Chaman, Super Sonaka	NA	NA	Medium to high density	1.3 crores of saplings
Sharad Seedless and clones (Nanasaheb Purple), Sarita Seedless, Krishna Seedless, Fantasy Seedless, Flame Seedless, etc	NA	NA	Medium to high density	0.8 crores saplings

Method of Propagation

Method recommended by ICAR / CAU/SAU/SHU	Grafting in the field (<i>in-situ</i> grafting) Planting of ready-made grafted plants in the field
Proposed method under the project	1) Grafting in the field (<i>in-situ</i> grafting) 2) Planting of ready-made grafted plants in the field
Do's and Don't's proposed / taken in propagation	Do's: Planting of rootstock in the field to be taken up when sufficient water is available for irrigation and also the time of planting when the plants are in active physiological condition (Jan- March) Don'ts: Planting of rootstock to be avoided when the temperature is above 40°C.
Expert guiding the project	ICAR-NRC for Grapes

List of Nurseries having Virus free planting material

2. ICAR- National Research Centre for Grapes, Pune

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

1. ICAR- National Research Centre for Grapes, Pune

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

1. ICAR- National Research Centre for Grapes, Pune
2. Maharashtra Rajya Draksh Bagaitdar Sangh (MRDBS), Pune
3. Maharashtra Rajya Draksh Bagaitdar Sangh (MRDBS), Talegaon, Nashik
4. Rani Nursery, Pimpalgaon Baswant, Nashik
5. Gawali Nursery, Kasegaon, Pandharpur (Solapur Dist.)
6. Sameer Tate Nursery, Puluji, (Dist. Solapur)

Planting material-source, quality and suitability

1. Proposed cultivar / variety/Hybrid	
2. Criterion / Rationale for Selection	
3. Nursery / Shop from where seeds/ planting material is procured/ purchased	Name of Nursery/ Shop: Proprietor Name Contact Number:
4. Warranty provided if any	
5. Whether variety/ hybrid/ cultivar registered under Section 39 (2) of The Protection of Plant Variety and Farmers Right Act, 2001 (PPVFR Act)	
6. Authority which provides compensation to the farmers in case a registered variety does not perform as per the claim made by the breeders.	Registrar General, PPV & FRA is the designated officer for redressal of Public Grievances and can be addressed to: Registrar General Protection of Plant Varieties and Farmers' Right Authority S-2, A Block, NASC Complex, Opp. Todapur Village New Delhi -110012
7. Applicability of Seed Act and any State Act on nursery/ planting material	
8. Authority which provides compensation to the farmers in case a registered variety does not perform as per the claim made by the breeders under Seed Act / State Nursery Act if any	
9. Parentage if known	
10. Original manufacturer / Source of planting material	
11. Name of Tests with date and lab-conducted to assure pest and disease free ness of seeds/ propagation by the nursery	
12. Whether the planting material is imported.	Yes/No
13. If Yes, whether plant quarantine and disease free certification was done	

5.4.3.	Lay out planning for new Vineyards and management	
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5.4.3.1. Planning of vineyards establishment and layout

As recommended by ICAR Institute/ CAU/SAU/SHU/KVK Others	Establishment of New vineyard: Technical Bulletin Published by ICAR- National Research Centre for Grapes, Pune Year of Publication: Feb., 2015.
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

5.4.3.2. Planting Season / time and density

	Recommended	Proposed	Remarks in case of deviation
Planting Season / Time	Rootstock planting: Jan to March		Planting of rootstock can also be taken during June if water scarcity is experienced
Spacing	Light soil: 9 x 5 feet Heavy soil: 10 x 6 feet		The spacing varies with type of grapes (table and wine grapes) also
Planting density per acre	9 x 5 feet (968 vines) 10 x 6 feet (726 vines)		NA
Planting Material treatment	At the time of planting insecticide powder for the control of termites is done		NA
Age of rootstocks while planting	Six month old rooted plants are used.		NA
Grafted saplings	One year old		NA

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

Good Agricultural Practices for Production of Quality Table Grapes and Good Agricultural Practices for Quality Wine Production, ICAR-National Research Centre for Grapes, Pune,

Year of Publication: 2013.

5.4.3.4. Water and Nutrient Management

1. Water requirements, Source and irrigation methods &

a. Water source, demand and availability

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

b. Critical stages for Irrigation and Water required under Drip Irrigation: Irrigation water requirement differs based upon crop growth stage and pan evaporation (weather factors)

c. Method of Irrigation: For drip irrigation approx. 400 – 600 mm irrigation water is required per year depending upon rainfall quantity and duration

d. Water harvesting measures

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

Soil Health Analysis:

Dated		Institute	
-------	--	-----------	--

Soil Health Parameters	Values	Recommended range	Remarks
pH		6.51-7.50	
EC (dS/m) (1:2.5)		Less than 1	
Available OC (%)		1-2	
Calcium carbonate (%)		< 3	
Available N (ppm)		181-220	
Available P (ppm)		51-75	
Available K (ppm)		451-600	
Available Na (ppm)		< 1000	
Available Ca (ppm)		1001-1500	
Available Mg (ppm)		501-750	
Available Cu (ppm)		0.41-1.00	
Available Fe (ppm)		2.51-5.00	
Available Mn (ppm)		2.01-5.00	

Available Zn (ppm)		2.01-5.00	
Available B (ppm)		< 0.5	
Available S (ppm)		21-50	
As recommended by ICAR Institute/ CAU/SAU/SHU/KVK Others	(Mention source of publication with date/Year)		
Action taken / proposed by the applicant			
Points of Deviation if any and justification			
As recommended by ICAR Institute/ CAU/SAU/SHU/KVKOthers	(Mention source of publication with date/Year)		
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/KVK Others	(Mention source of publication with date/Year)
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/KVK Others	Mention source of publication with date/Year
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

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

As recommended by ICAR Institute/ CAU/SAU/SHU/ Others	(Mention source of publication with date/Year)
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

5.4.3.8. 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)
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

5.4.3.9. Integrated Pest and Diseases Management including Biological control and Food Safety

As recommended by ICAR-National Research Centre for Grapes, Pune	1. Fungal diseases and Management 2. Bacterial diseases and Management 3. Viral diseases and Management 4. 5. Pests and Management 6. Nematodes and management 7. Pesticide residue management (including waiting period) Good Agricultural Practices for Quality Wine Production, Annexure-5 of Residue Monitoring Plan for Export of Grapes to European Union, ICAR-National Research Centre for Grapes, Pune, 2013. (Mention source of recommendation with date/Year)
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:

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

As recommended by ICAR Institute/ CAU/SAU / SHU/KVK and others	(Mention source of publication with date/Year) Good Agricultural Practices for Production of Quality Table Grapes and Good Agricultural Practices for Quality Wine Production, ICAR-National Research Centre for Grapes, Pune, 2013.
Action taken / proposed by the applicant	
Points of Deviation if any and justification	

5.4.3.11. Special problems if any

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

5.4.5. Farm Mechanisation

Farm Mechanisation

Available Machinery and equipment's / implements

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

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

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

5.4.6. Harvesting and Post-harvest management

5.4.6.1. Harvesting season- Usually, grapes are harvested during January to March. However, few pockets of Nashik are known for harvesting of grapes during Nov.-Dec.

Seasonality matrix of the grapes

States	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Maharashtra												
Karnataka												
Tamil Nadu												
Mizoram												



Lean Season



Peak Season

Seasonality matrix of Raisins for Maharashtra and Karnataka

Months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Grape drying												



Lean Season



Peak Season

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

5.4.6.3. Harvesting technology and Fruit care management

Global best practices	(Mention source of publication with date/Year): Good Agricultural Practices for Production of Quality Table Grapes and Good Agricultural Practices for Quality Wine Production, ICAR-National Research Centre for Grapes, Pune, 2013.
Points of Deviation if any and justification	

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

Table Grapes: 20-25 t/ha

Wine grapes: 12-15 t/ha

Raisin grapes: 20-30 t/ha

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

Postharvest Handling of grapes:

Maturity Indices for Harvesting

As grape is non-climacteric fruit, should be harvested when they are fully ripen since neither the colour nor the taste improves after harvest. Harvesting period is determined by the variety, climatic conditions, TSS, acidity and sugar acid ratio, depending on whether the grape is for local or export market. Maturity standards of grapes fixed under the AGMARK states that the minimum TSS of 16 °B and sugar acid ratio of 20:1 and this has to be complied or export and domestic market. Although the sugar content of the berries is considered as the indicator of their level of ripening, the ratio of sugar/acid is the correct index of ripening, since this ratio indicates the taste of berries. Berries with same content of sugars, taste sour and less sweeter when their acid content is more.

Physical appearance is considered as the major criteria under which bunch and berry size with uniform colour is important. Characteristic uniform colour development is a reliable index of ripening in coloured varieties. In white varieties, uniform green colour is preferred in the export market. Change of green colour to straw or amber colour should not be taken to indicate the stage of ripening as exposed clusters shows more colour change even at less maturity as compared to shaded clusters. With the maturity of berries, the colour of peduncle also changes.

Harvesting

Only attractive bunches fulfilling minimum quality requirement should be harvested. Harvesting should be done by skilled workers wearing soft rubber gloves and using sharp secateurs / scissors for cutting. Careful handling of grapes during harvesting, transporting, cleaning and packing is very essential to prevent injury and abrasion. The bunch should always be held the by the stem/ peduncle. Rough handling results in loss of bloom (thin wax coating on berry surface) making the berries susceptible to decay.

Bunches should be harvested during the early morning hours before the berry temperature rises above 20°C. It is advisable to close harvest by 10 a.m. Otherwise the berry's temperature can't be bring down to 4°C by pre-cooling within the stipulated time of

six hours. Bunches harvested during high temperature leads to loss of more physiological weight and pedicel desiccation. If rainfall has occurred just prior to harvest, the fruit should not be picked for at least 3-4 days, as the free moisture present on the surface of the berries can lead to fungal infections.

Method of harvesting

A day prior to picking, the broken, along with decayed, deformed, undersized, and discoloured berries are removed by cutting their pedicels from the selected bunches, using a long nosed scissors. Care must be exercised not to injure other berries by the scissors. Clusters should never be held against the naked palm while cleaning, harvesting or trimming. They should be held by their stalk, preferably by wearing rubber gloves. This care is taken not to erase the fine waxy coating called 'bloom' from the berry surface.

Bunch collection

Harvested bunches are placed gently in clean perforated plastic crates and left in the shade of the vines for subsequent transfer to pack-house. The crates should be lined with clean bubble sheets for cushioning and kept over newspapers spread on the ground to avoid contamination with vineyard dust. The bunches are kept in such a way that their stalks should not injure berries from other bunches.

Sorting and grading requirement: The sorting and grading of grape bunch is very much required for fetching the good value of produce in domestic market. It is essential to grade the fresh table grapes according to the AGMARK standards. The grapes have three standards viz.; Extra Class, Class I and class II as per AGMARK.

Packaging for domestic and export marketing

Table grapes shall be packed in such a way that the produce is suitably protected during transportation and handling. Packaging is normally done in corrugated or solid fiber board cartons. A layer of bubble pad or protective liner is placed at the bottom of the carton to protect the grapes from bruising and a polyethylene lining is placed over this.

Bunches from these weighed lots are placed in small, thin and clean food grade polyethylene pouches. One or maximum two bunches weighing neither less than 350 g or more than 650 g are placed in each pouch. No bunch weighing less than 150 g is placed in a pouch. The grapes are then pre-cooled to a temperature of 4°C and then a sulphur dioxide generating pad enclosed in absorbent tissue paper is placed over the grapes. This is then covered with the polyethylene lining and the box is closed.

During packing care should be taken to avoid damage to the fruit due to shattering, splitting or bruising. Packing in multi-layers within a crate causes weakening of the pedicle attachment in the berries of the lower bunches due to pressure exerted by the bunches on top. Table grapes must be packed in such a way as to protect the produce properly. In the case of 'Extra' Class, the bunches must be packed in a single layer.

Storage:

Pre-cooling

The pre-cooling is practiced to reduce field heat. Prompt removal of field heat from harvested berries is the best way of retaining the freshness of grapes for a longer time. The temperature in the pack house should be maintained at 18-20°C and the grapes should be transported to pre-cooling units with 4-6 hours of harvest. The temperature of harvested grapes should be brought down to less than 4°C within six to eight hours in the pre-cooling chambers. The delay in bringing down to this temperature will reduce the keeping quality of grapes.

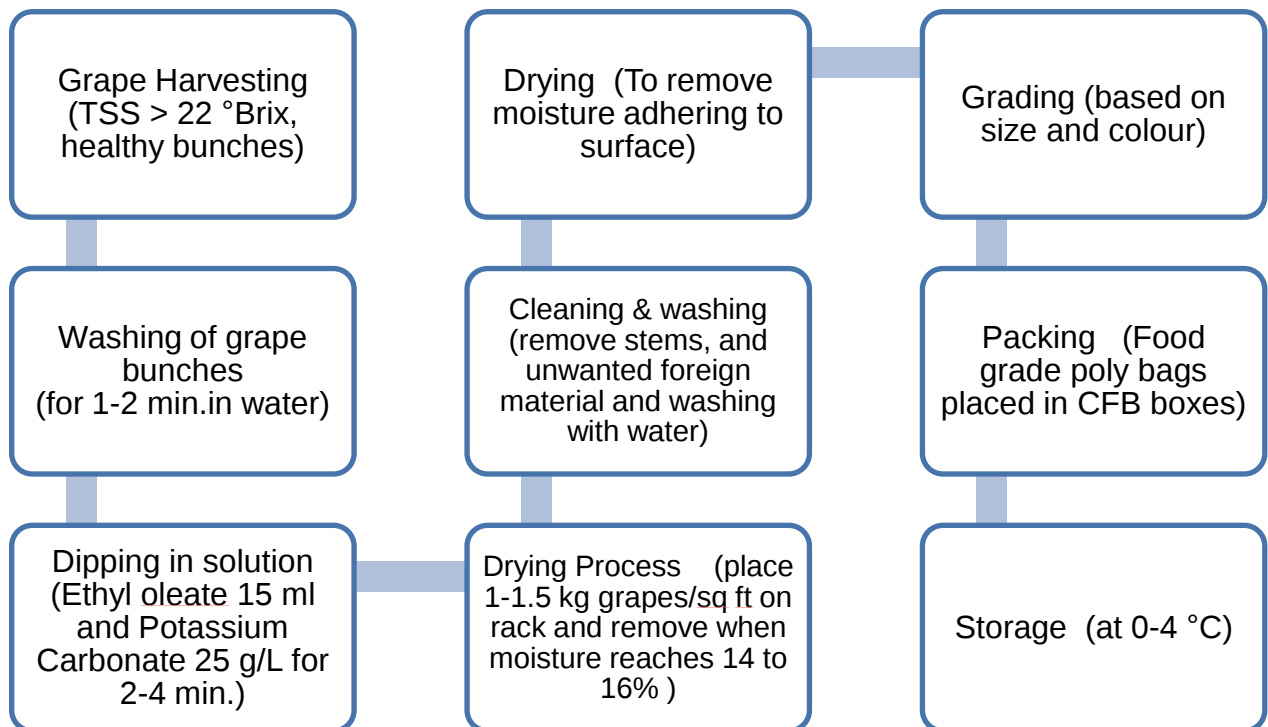
Cold storage

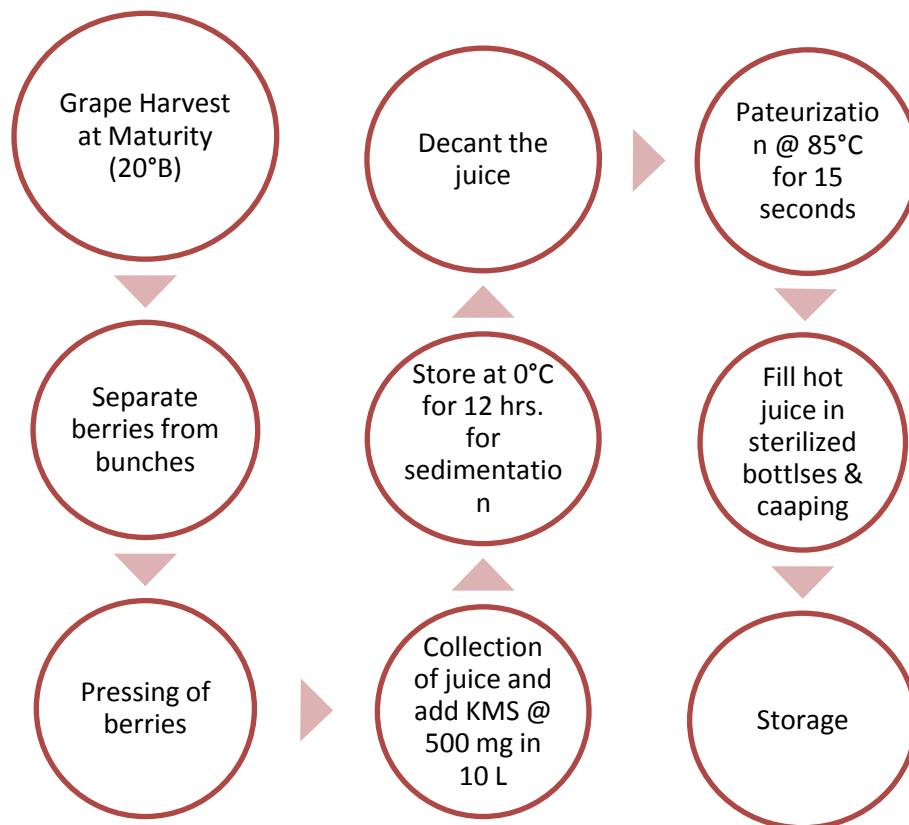
After pre-cooling, the dual releasing sulphur dioxide pads (Grape guard) are placed with their coated surfaces facing downwards on the filled plastic pouches and covered with the plastic sheet lining. The boxes are closed and shifted to cold storage rooms where the temperature and humidity are maintained at $0 \pm 0.5^{\circ}\text{C}$ and $93 \pm 2\%$ respectively. Temperature of 0°C and humidity of 95% are the best for maintaining freshness and preventing decay. Freezing injury to berries, pedicels and rachis occur at -2°C , while at slightly higher temperatures decay may occur. Care should be taken to maintain the temperature and humidity strictly during storage and transit.

Reference: Good Agricultural Practices for Production of Quality Table Grapes and Good Agricultural Practices for Quality Wine Production, ICAR-National Research Centre for Grapes, Pune, 2013.

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

Raisin making flowchart





Juice

preparation

flow

chart

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

1. Grading
2. Packing
3. Palletization
4. Pre-cooling
5. Cold Storage
6. Transport



5.5.4. Post-harvest operations for Grapes

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

Activity	Recommended	Proposed practice	Remarks
Harvesting	During morning hours before 10.0 am or temperature below 20°C.		
Pre-cooling	Within 4-6 hrs of harvest		
Storage	At 0 ±0.5 °C and 93 ±1% RH		

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

Mode of Transport including the requirement of Refer vans

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

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

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

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

5.5.5.1. Integrated Pack house:

1. Rationale for the proposal
2. Process flow chart.
3. Grape Variety:
4. Packaging Material:
 - a. Types/ Quality of raw material- Grades:
 - b. Packaging material availability and procurement: Details of own production if any and local production annually with 5 years data with future projections. Markets and farm areas of procurement and reliability.
 - c. Quality control/ assurance /testing
5. 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.
6. Products, By- 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: Quality grades of AGMARK
 - b. Demand and Supply data of grapes.
 - c. Business model for the unit.
8. Source of Technology: ICAR/SAU/SSHU/KVK/ Others
9. Pack house unit: Type and Lay out (show the drawing)
10. 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

11. Protocols

Activity	Recommended	Proposed practice	Remarks

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

13. Skilled Manpower availability:

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

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. Process flow chart.
3. Grape Variety:
4. Packaging Material:
 - a. Types/ Quality of raw material- Grades:
 - b. Packaging material availability and procurement: Details of own production if any and local production annually with 5 years data with future projections. Markets and farm areas of procurement and reliability.
 - c. Quality control/ assurance /testing
5. 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.
6. Products, By- 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: Quality grades of AGMARK
 - b. Demand and Supply data of grapes.
 - c. Business model for the unit.
8. Source of Technology: ICAR/SAU/SSHU/KVK/ Others
9. Pack house unit: Type and Lay out (show the drawing)
10. 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

11. Protocols

Activity	Recommended	Proposed practice	Remarks

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

13. Skilled Manpower availability:

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

14. Data sheet.

5.5.5.3.Pre-cooling unit

1. Rationale for the proposal
2. Process flow chart.
3. Grape Variety:
4. Packaging Material:
 - a. Types/ Quality of raw material- Grades:
 - b. Packaging material availability and procurement: Details of own production if any and local production annually with 5 years data with future projections. Markets and farm areas of procurement and reliability.
 - c. Quality control/ assurance /testing
5. 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.
6. 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: Quality grades of AGMARK
 - b. Demand and Supply data of grapes.
 - c. Business model for the unit.
8. Source of Technology: ICAR/SAU/SSHU/KVK/ Others
9. Pre-cooling unit: Type and Lay out (show the drawing)
10. 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

11. Skilled Manpower availability:

Reference Data Sheet

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

5.5.5.4. Cold room

Reference Data Sheet

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

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

DOCUMENTS FOR REFERENCE

Various codes and Standards of measures are listed for reference here

Electrical: Bureau of Indian Standards (BIS)

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

Mechanical: Bureau of Indian Standards (BIS)

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

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

Publication by International Societies and Associations in relation to Building works

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

5.5.5.8. Reefer 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 CO₂ cause demise of horticulture goods when enclosed over long periods.



Photographs sourced from NCCD members



2. Rationale for the proposal
3. Product / Process flow chart.
4. Produce / Raw Material:
 - a. Types/ Quality of raw material- Grades/ Specifications
 - b. Raw material availability and procurement: Details of own production if any and local production annually with 5 years data with future projections. Markets and farm areas of procurement and reliability.
 - c. Produce/ Raw material quality and assurance testing
5. Enterprise:
 - a. Existing number of units, available capacity and utilisation in the project block, district and the State.
 - b. Products and services and projections.
 - c. Statutory requirements / licensing details if any.
6. Market :
 - a. Quality grades/ specifications/ kinds of products
 - b. Demand and Supply data for the products and services.
 - c. Business model for the unit.
7. Source of Technology
8. Civil infrastructure, Plant and Machinery. Design, layout and Photographic evidence certified by chartered engineer is required to be submitted in case the project is considered for processing.

Facility / utility	Recommended	Proposed.	Remarks

9. Skilled Manpower availability:

Reference Data Sheet

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

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

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

9. Source of Technology

5.6	Marketing
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5.6.1.Connectivity of project site and produce

Road connectivity	
Rail connectivity	
Air connectivity	

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

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

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

5.6.4.Alternative Marketing strategies;

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

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

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

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

The Director,

ICAR-National Research Centre for Grapes,

Manjri Farm, Solapur Road, Pune-412307

Email: director.nrcg@icar.gov.in

<https://nrcgrapes.icar.gov.in/>

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

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

6.3. Agri-Business Incubators

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

7	Food Safety – With / Without Good Agricultural Practices Certification
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7.1.	GAP	Optional
	Whether the applicant proposes to undertake Good Agricultural Practices?	Yes
	If Yes. What brand / kind GAP – Provide details of brand	Global GAP
	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.	

3.
4. Food safety measures
4. Soil and water analysis for heavy metals
5. Crop husbandry: Maintaining PHI (Annexure-V of RMP document for export of grapes to EU countries: List of chemicals with CIB&RC label claim for use in grapes) https://nrcgrapes.icar.gov.in/zipfiles/Annexure%205.pdf Preharvest sampling for residue/heavy metals analysis (Annexure IX of RMP document for export of grapes to EU countries: List of Agrochemicals to be monitored) https://nrcgrapes.icar.gov.in/zipfiles/Annexure%209.pdf

7.2. FOOD SAFETY MEASURES

7.2.1. Pre-Planting Measures

Activity	Action taken /Proposed to be in the project
1. Site selection Whether the selected land is levelled.	Yes/No
a) The field is away from animal housing,	Yes/No
2. Whether soil and water testing done before selection of rootstock 2.1 If so. Please specify corrective measures in case of water related problems 3.	Yes/No
2.2 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.	Yes/No
4. Timely application of manure	
5. Selection of appropriate variety with rootstock	

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 Crop husbandry: Maintaining PHI (Annexure-V of RMP document for export of grapes to EU countries: List of chemicals with CIB&RC label claim for use in grapes)
<https://nrcgrapes.icar.gov.in/zipfiles/Annexure%205.pdf>

Preharvest sampling for residue/heavy metals analysis (Annexure IX of RMP document for export of grapes to EU countries: List of Agrochemicals to be monitored)
<https://nrcgrapes.icar.gov.in/zipfiles/Annexure%209.pdf>

Harvest

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

7.2.4. Post-Harvest Handling

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

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

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

	1. Due diligence status	√		
	2. Project Cost	√	Certified by CA	
	3. Means of Finance	√		
	4. Investment into Horticulture	√		
	5. Key financial Indicators	√		
	6. Project Financing	√		
	a. Rate of Interest	√		
	b. Returns from the Project (IRR):	√		
	c. Cost of Production and Profitability (Annexure)	√		
	d. Yield and Sales Chart (Annexure)	√		
	e. Proposed Balance Sheet: (Annexure)	√		
	f. Proposed Cash flow Statement for next 7 years (Annexure)	√		
	g. Proposed Profit & Loss Account: (Annexure)	√		
	h. Proposed Repayment of Term loan and Schedule (Annexure)	√		
	i. Break even Analysis (Annexure)	√		
	j. NPV (Net Present Value)	√		
	k. Economic Rate of Return	√		
	7. Farm record keeping/ Maintenance proposed	√	Records	
5.4	Land development and Crop Husbandry			
	5.4.1.Land development			
	5.4.2.Selection of Quality Planting Material			
	1. Recommended and popular Cultivars-varieties/hybrids, their specific characteristics, requirements and yields	√		
	2. Cultivar/Hybrid/Variety selected and Criterion adopted for selection	√		
	3. Propagation methods	√		
	4. Accredited / Good Nurseries in the area	√		
	5. Planting material-source, quality and suitability	√	Nursery / Shop Invoice with Seed quality	
	5.4.3.Orchard / Site planning, Lay out and management			
	1. Planning, establishment and layout systems	√		
	2. Land preparation	√		
	3. Planting Season / time and density and transplanting	√		

	4. Water and Nutrient management	√	Written plan	
	5. Intercultural operations including Weed management	√		
	6. Plant canopy architecture management/ training and pruning	√		
	7. Planting systems and transplanting of horticultural crops	√		
	8. Use of Pollinators & pollinisers	√		
	9. Use of Plant growth regulators	√		
	10. Flowering & fruiting	√		
	11. Integrated Pest and Disease Management and Food Safety measures	√		
	12. Physiological disorders- causes, preventive and management measures.	√		
	13. Special problems if any	√		
	5.4.5.Farm Structures and mechanisation	√		
	1. Protective cover structure	√	Technical standards	
			Undertaking of expertise / competency by Agency	
	2. Farm Mechanisation	√	Company Brochures	
	5.4.6.Harvesting and Fruit 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. Sorting and Grading	√		
	7. Packing and labelling	√	Models	
	8. Transport	√		
	9. Storage- cold storage	√		
	10. 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. Primary Processing			
	7. Refer van			
	8. Retail outlet			
	9. 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 /KVK/ Research Stations and Experts names	√		
	2. Agri/Horti-Business incubators	√		
7	Food Safety -With /Without GAP certification			
	1. GAP Certification if any	√		
	2. Food safety measures	√	Clean farm, Trained workers; Protective clothing, Safety equipment; First Aid; Safety and Hygiene policy; Waste Management Plan	
	a. Pre-planting	√		
	b. Crop husbandry	√		
	c. Harvestings	√		
	d. Post-harvest	√		
8	Innovation if any			
9	Risk Management	√	Proposed insurance details if any	
10	Checklist	√		
11	Declaration from Crop Expert and Project Finance Expert	√		
	Self-declaration by the Applicant	√		

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

@ In case of export units.

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

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

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

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

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

My details are as follows:

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

Place	Signature
Date	Designation and Seal

11.2.Declaration by Project Finance Expert (Chartered accountant)

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

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

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

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

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

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

Place	Signature
Date	Designation and Seal

12. Self-Declaration by applicant

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

Applicant (Name and signature) and Seal if any

Date

Location:

Annexure: Proposed Stages in NHB Scheme Implementation

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

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

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