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Guidelines and Cost Norms for Establishment of Common Incubation Centers to be Setup under PMFME Scheme

Foreword

The centrally sponsored Prime Minister Formalization of Micro Food Processing Enterprises (PM FME) scheme is designed to address the challenges faced by the micro enterprises and to tap the potential of unorganized food processing entrepreneurs/SHGs/Co-operatives into organized food processing enterprises. The PMFME scheme is focused to support micro entrepreneurs, FPOs, SHGs, other units and public by providing common incubation facilities, where the beneficiaries can bring the raw materials, process and pack and market their value added products. This scheme supports the machinery costs, installation charges, electrification etc., for the common incubation facilities to be set up at a Host Institute either in Government institution or private organizations. For this purpose, a guideline document for incubation facilities including required processing lines, equipment costs, required testing facilities, waste management plan, and auxiliary units, has been prepared by the committee constituted by Ministry of Food Processing Industries. The cost inputs were proposed by selected national level expert institutes for each food processing subsectors for the establishment of this common incubation facility with the focus on ODOP along with other allied lines depending upon the feasibility and the same was approved by the expert committee members. This hand book presents the indicatives of the cost for setting up of common incubation facilities based on ODOP from which the micro enterprises can select and use the suitable machineries and lines as per their requirements on commercial basis. The Chairman of the committee extends his gratitude to Dr.S.Uma, Director, National Research Center for Banana, Trichy, Dr.H.N.Mishra, Professor, Food Technology, IIT Kharagpur, Dr.Dayakar Rao, Principal Scientist, Nominated by Director, Indian Institute of Millets Research, Hyderabad, Dr.Uday S Annapure, Professor and Head, Dept. of Food Engineering, ICT Mumbai, Dr.George Ninan, Principal Scientist, Nominated by Director, Central Institute of Fisheries Technology, Kochi, Prof. Ashuthosh Upadhyay, Dean, Academics – Nominated by Vice Chancellor, NIFTEM, Dr.A.K.Singh, Principal Scientist, National Dairy Research Institute, Karnal, Shri.A.Simon, Chief Mananger, Tata Global Beverages, Bengaluru, Dr.Sreeni Naladala, Director, Innovation, Technology and Quality, General Mills, Maharashtra, Dr.Saiprasad Gandra, Principal Scientist, ITC Life Science and Technology Centre, Bengaluru, Shri. Gajendra Bhujabal, Senior Consultant, MOFPI, for their tremendous support and guidance as national level expert institutes and expert committee members.

C. Anandharamakrishnan
Chairman
Committee to assess the requirements of common incubation facilities for incubation centers to be setup under PMFME scheme

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GUIDELINES FOR ESTABLISHMENT OF INCUBATION CENTER UNDER PMFME SCHEME

I. Guidelines for Establishment of Incubation Center Under PMFME scheme (MoFPI No. FM-11/75/2020-AS dtd. 02.11.2020)

1. Background

Establishment of Incubation Center based on One District One Product (ODOP) is one of the important components of PMFME Scheme. The scheme envisages providing credit support to 2 lakh existing unorganized micro-food processing enterprises. Though this scheme the micro entrepreneurs/SHGs/ FPOs/Cooperatives and groups can utilize this Incubation Center to manufacture their products without capital investment. In addition, this Incubation Center will be utilized to provide training and skill upgradation support to the beneficiaries.

The raw materials will be converted into finished product by utilizing the primary/ secondary/Tertiary processing and auxiliary units that will be set up at this Incubation Center. This facility aids in overcoming the financial burdens on capital investment of start-ups and also supports the existing entrepreneurs to venture into product extension lines. In short, this facility renders machinery support required for conversion of produce from farm to fork.

2. Objectives

- To support establishment of Incubation Center for ODOP and other products
- To utilize the Incubation Center on commercial basis
- To provide training to beneficiaries (micro entrepreneurs/ SHGs/FPOs/Cooperatives and groups) though Incubation Centers at the training rates prescribed under PMFME Scheme based on National Skill Framework

3. Salient features of Incubation Center

The scheme under its Incubation Center would provide the following support

i. Primary processing facility like cleaning, grading and packaging of raw produce
ii. Secondary processing facilities like milling, flaking, minimal processing, thermal processing, brining and soon
iii. Tertiary processing like processing of Ready to eat, Ready to serve, Ready to cook and so on
iv. Cold storage facilities to store their fresh and processed produce

v. Re-packing of foods
vi. Supports product extension lines

4. Components of schemes

As per the main PMFME scheme, One District One Product (ODOP) approach is adopted in order to reap the benefit of scale in terms of procurement of inputs, availing common services and marketing of products. Based on the baseline study, the state governments have identified a food product for a district, keeping in view of the scheme on perishables, cereal based product or a food product widely produced in a district and their allied sectors. Shortlisted ODOPs from the state government have been pooled together and the food produce has been grouped into 11 categories as given below including minor forest produce for tribal districts.

- Food products based on Food Grains (Rice, Wheat &Pulses)
- Oil seeds based products
- Millets based products
- Fruits based products
- Vegetables & Tuber Crops relate products
- Fish and marine products
- Meat/Poultry products
- Dairy products
- Spice products
- Plantation crops based products (including coconut and sugarcane)
- Minor forest produce (targeting the tribal population)

4.1 Incubation Center

Incubation Center shall be the processing cum incubation facility based on ODOP along with 2-4 allied product lines. The Incubation Center should have a minimum thee processing lines and maximum five processing lines to be funded from PMFME Scheme. The Incubation Center will be made available for the end users on custom hiring basis for startups and smaller food processing units. But it should run on commercial basis for full utilization of installed capacity. The Incubation Center shall have the complete processing lines as per the standard norms. The space/area for any Incubation Centers should be minimum 7000 Sq.

4.2 Host Institute

The identified institutes where the Incubation Center to be established is named as Host Institute. Any government owned institutions or govt. funded autonomous Institutions such as technical colleges, universities, other professional institutes, R&D institutes or any private institutions/agencies shall be the host institute. The concerned state government/nodal agency shall identify the host institute and location for establishing the Incubation Center. The institutes which is having existing building shall be given preference for hosting Incubation Center.

4.3 Cost norms for setting up Incubation Center

Each selected host institute will be funded for the following to establish the Incubation Center

S.No.	Processing	Cost (in Lakhs)
1	3-5 processing lines (capacity: 1-2 tonnes/day) for ODOP and allied produce – should include primary, secondary and tertiary processing, raw material/finished product storage, packaging.	200.00
2	Flooring, minor renovation of existing building, electrical connections and other auxiliary units like boilers, RO plant, ETP etc.	50.00
3	Building with minimum 7000 sq. ft. (to be provided by host institute)*	-
4	Food Testing Lab – If the host institute is not having the in house testing facility, can propose the basic equipment for proximate analysis and microbial load analysis**.	25.00
	Total	**275.00**

*The institute with existing building/space shall be given preference for the grant support.

**Basic equipment required for food testing lab

S.No.	Equipment	Approximate cost (in Lakhs)
1	Hot air oven	1.50
2	Soxhlet apparatus	2.50
3	Protein – Kjeldhal apparatus	7.50
4	Fibre analyser	5.50
5	Muffle furnace- ash content	2.00
6	Weighing balance	1.00
7	Microbial load analysis- laminar flow chamber, autoclave and incubator etc.	4.00
8	Refractometers, pH meter, Gun thermometer, glassware etc.	1.00
	Total	**25.00**

4.4 Special grant in aid support to host institutes for civil works

As a special case, if the host institute does not have building infrastructure for Incubation Center shall be supported by PM FME Scheme with grant of Rs.1.0 crore (Rupees One crore only) for construction of buildings.

4.5 Funding details

Allocation of fund shall follow the below norms

Government Institute / Organization	Private Agency	Private Agency in Tribal Areas, NE States and SC / ST category
100 percent of funding will be provided from PMFME scheme	50 percent of funding will be provided from PMFME scheme and balance from private agency	60 percent of funding will be provided from PMFME scheme and balance from the private agency

4.6 Role of host institute

- The selected host institute is responsible to arrange required land, building and other basic amenities like water, electricity, etc.
- The host institute is responsible for establishment of Incubation Centre with the processing line as per the cost norms and relevant guidelines of PM-FME scheme within one year from the date of sanction.
- Once the Incubation Center is set up, the common incubation facilities shall be leased out to an O&M operator though a transparent process. The O&M

operator should operate the Incubation Center on commercial basis. The O&M operator would charge for using the services of the Incubation Center from the micro enterprises and for training. The bidding criteria should be the maximum rates to be charged from micro enterprises for using the services of the Incubation Center and training. Maintenance of Incubation Center including the machinery shall be the responsibility of O&M operator. It shall be ensured by the host institution that the Incubation Center is utilized by a large number of micro enterprises and for all the trainings under PMFME and other State and Central Government Schemes. Any micro enterprise should be able to use the services of the Incubation Center if they are willing to pay for the charges.

- A monitoring and advisory committee shall be constituted by the Host Institute (HI) with a representative from mentor institution for continuous monitoring of the operations to ensure effective implementation of the scheme.

4.7 Mentor Institution

States should select one of the CSIR/ICAR or other research institutions as mentor institution for each Incubation Center. The role of the mentor institution would be as follow:

- Continuous monitoring of the implementation and establishment of Incubation Center at host institutes.
- Providing technical support to host institutes at the stage of establishment as well as running the Incubation Center.

4.8 Application procedure

Detailed project report (DPR) which should contain the following particulars:

- Host institution details like experience in food processing, technical manpower available, details of land and building, suitability of the proposed building to house the incubation center.
- Details of proposed location for establishing the incubation center: The location should preferably be at places where there is likelihood of micro enterprises to come and get their goods processed, It should not be inside any Agricultural University/research center located away from a city and

highway. Also can be at a location of farm produce in case of perishables and nearness to city market in case of goods produced for local market. Specify how accessible is the location to micro enterprises to come with raw material and depart with finished goods - distance from road, highway, city, etc.

- Details of the proposed incubation center
  - Proposed processing lines
  - Cost break up of each line (with machinery details, space requirement, cost of individual machines, capacity etc.)
  - Details of auxiliary units required, waste utilization plan from the center
  - Justification for choosing each line based on local production of raw material for perishables, market for finished goods, nearness to market/ cities
  - Expected demand for common processing and training
- Cost break up of upgradation civil and electrical works required
- Details of testing equipment required if any for food testing lab
- Details of cost break up in case of private agency (agency contribution details)
- Recommendation of SLTI and SLAC
- A feasibility report on the proposed incubation center.

4.9 Interested Institutes/agency should apply along with DPR to the State Nodal Agency.

MODEL DETAILED PROJECT REPORT FOR ESTABLISHMENT OF COMMON INCUBATION FACILITY UNDER PM FME SCHEME

II. Model Detailed Project Report for Establishment of Common Incubation Facility Under PMFME Scheme

1. DPR for establishing Common Incubation Center for Dairy Processing, Fruits and Vegetable Processing

S.No.	Details of Host Institute	
1	Name of the Host Institute	
2	Institute Head	
3	Email id and contact number	
4	Government/Private	
5	If Private the percentage contribution for establishing the common incubation Facility?	
6	Registration Details(for private agency)	
7	Name of the Mentor Institute	
8	Incubation Center applied for (which processing line)	
9	Building and space available for the proposed incubation facility	
10	Whether the space available for incubatee/startups in the proposed building	
11	If Yes, give the details If No, propose the plan	
12	Existing facility for the proposed common incubation center	
13	Activities carried out currently	
14	List of existing equipment available for the proposed incubation center	
15	Does the host institute requires upgradation of the existing facility	
16	**If Yes, address the gap**	Flooring has to be made according to FSSAI standards. Electrical and plumbing works has to done to facilitate functioning of incubation center
17	If upgradation required, cost required for the same	
18	Is food testing facility available at the host institute	
19	If No, mention the Equipments required with cost	

20	Measures to be adopted for human / food safety	
21	Expertise in the relevant processing	
22	Modality to fix the external agency to run the common incubation center	
23	Modalities for fixing commercial charges to run the facility	
24	Suitability of the proposed facility for processing other commodities	
25	Will the host institute provide water, electricity to run the common incubation facility	
26	Annual Maintenance Plan for the machineries installed at incubation center	
27	Expected number of entrepreneurs to be benefitted though common incubation facility per year	
28	Expected number of entrepreneurs to be benefitted though common incubation facility per year	

29. Justification for the proposed facility at the Host Institute (Modify as per the proposal)

(Raw material, nearness to market, expected demand)

Milk production is a very important part of the agricultural economy in the state of Punjab. Milk production in Punjab is increasing throughout the year in spite ofdecrease in bovine and ovine population. The reason being is that government is taking much more emphasis on the breed improvement of dairy animals with this advancement DAHD operating 18 central livestock organizations and allied institutions. The milk production was increased from 3.22 million tonnes to 10.01 million tonnes from 1980-81 to 2013-14 with a growth rate of 3.48 per cent per annum.The % share of Punjab in the central pool was decreasing over the years. The capability of Bathinda dairy cooperative to accomplish its full productive potential is affected by the availability and quality of extension services being delivered to the farmers apart from the mobilization of its resources and economic growth. Therefore,to encourage farmers to adopt dairy as an entrepreneur, a technically advanced incubation center is necessary to avail common services for the farmer entrepreneurs.

30. Map of the Host Institute showing accessibility for transport and market

31. Plan for upgrading/setting the proposed facility

(Details of space available, machineries required with cost and capacity)

Land required for setting the proposed plant: 6600 sq.ft

Approximate cost: 274.30 lakhs

Cost break up for machineries for proposed processing line as expressed by FPOs

The possible processing lines that can be established for common incubation facility is given below with the details and cost of machineries required for processing Dairy, Fruits & Vegetables:

Cost for Dairy processing and Fruits & Vegetables processing					
S.No.	**Crop Processing Line**	**Machineries required for processing**	**Capacity**	**Cost in Lakhs***	**Quantity**
1	**Milk Pasteurization (Market Milk Section)**				
		Modular Milk Pasteurizer provided with balance	1000 l/h	25.00	1
		Homogenizer	1000 l/h	8.50	1
		Cream Separator	250 kg/h	7.50	1
		Liquid Milk Packaging Machines	500 l/ h	12.50	1
			Sub-Total	**53.50**	
2	**Fat rich Dairy Products Section**				
		Butter Churner	100 kg/h	8.00	1
		Ghee Kettle Double Jacketed operated with steam	200 kg/h	4.50	1
		Butter Packaging Machine		7.50	1
	Accessories for dairy processing	Cold Room	1	10.00	1
		Storage racks	5	1.00	1
		Refrigerator	3	0.75	2
		Lactometer, Gerber apparatus, Utensils, storage containers		10.00	
			Sub-Total	**41.75**	

3	**Primary Processing of Fruits & Vegetables**				
		Washing- bubble washing, roller washing with slant conveyer belt or jet washing mechanism/ washing tub with conveyor roller system	500 Kg/h	10.00	1
		Curing facility	500 kg	3.00	1
		Precooling	250 Kg/h	4.00	1
		Size Grader	250 Kg/h	5.00	1
		Cold storage 5 degree C	1000 kg	5.00	1
		Multifunctional Vegetable Cutters	300-500/h cap	5.00	1
			Sub-Total	**32.00**	
4	**Juice & Beverages Processing Section**				
		Fruit pulper cum finisher	200 Kg/h	4.00	
		Hellicolloidal juice extractor	500 Kg/h	10.00	
		Raw juice collection tank	200 l	1.50	
		Raw juice screw transfer pump for automatic delivery	100l/h	5.00	
		Blending Tank with agitator	200 l	6.00	
		Homogenizer	200 l/ h	1.00	
		Tube in tube filter for automatic delivery	200 l/ h	1.00	
		Processed juice collection tank	200 l	1.50	
		Processed juice transfer pump	100l/ h	10.00	
		Tubular pasteurizer with all accessories and fittings	200 l/ h	10.00	

3	**Primary Processing of Fruits & Vegetables**				
		PET bottle rinsing / washing machine	100 bottles/min	2.00	
		Piston filler with capping provision	100 l/h	5.00	
		Cooling tank	500 l	3.00	
		Labelling and printing system	100 bottles/min	5.00	
			Sub-Total	**65.00**	
5	**Paste Making Section**				
		Ginger washer	50 kg/batch	3.00	1
		Ginger slicer	100 kg/batch	4.00	1
		Garlic clove separator	200 kg/h	2.00	1
		Garlic peeler	40 kg/h	2.00	1
		Ginger garlic paste pulverizer	100 kg/h	3.00	1
		Pouch packaging machine-band sealer	100/h	2.00	1
		Onion Detopper	500 Kg/h	5.00	1
		Onion Grader	1.5 ton/h	2.00	1
		Onion slicer	200 Kg/h	2.00	1
		Chilly destalking machine	200 Kg/h	5.00	1
		Blancher	200 Kg/h	3.00	1
		Pouch / Spout Packaging machine for different capacities	100-500 pouches/h	15.00	1
			Sub-Total	**48.00**	
6	**Food Testing Facilities**			25.00	
7	**Accessories**	Stove, cutter, spoons, utensils, storage racks, work tables		9.00	
			Grand Total	**274.30**	

B. Waste Management / By-Product Utilisation

C. Waste Disposal

Whether the host institute has Effluent treatment / Solid Waste management facility?	
1	If yes, the same can be utilized for waste management of the proposed incubation center?
2	If No, Propose the plan for waste management from the incubation center.

Summary of the cost break up

S.No.	Processing lines	Approx. cost (in lakhs)
1	Milk Pasteurization Section	53.50
2	Fat rich dairy products section Accessories for dairy processing	41.75
3	Primary Processing of fruits & Vegetables	32.00
4	Juice & Beverage Processing Section	65.00
5	Paste Making Section	48.00
6	Food testing facilities	25.00
7	Accessories	9.00
	Total	**274.30**

32. Can the facility be utilized to process other crops. If so, list out the allied crops that can be processed at the center

33. Feasibility report for commercially running the Common incubation facility

(To be provided by Host Institute)

a. Business plan for running the common incubation center

b. Minimum 5 years of operating plan should be provided

c. Man power requirement

d. Minimum operational hours/ days per year

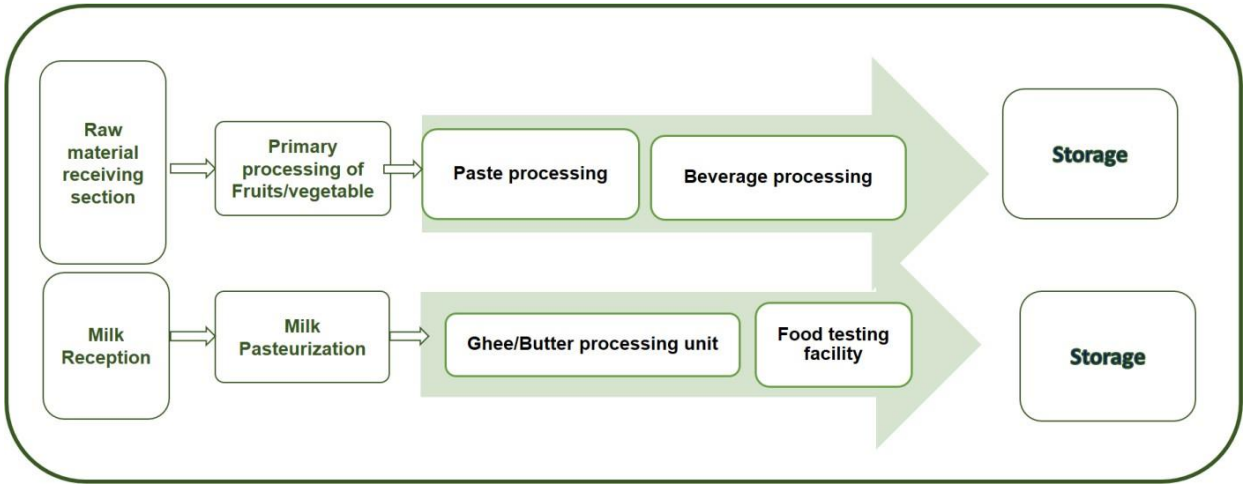
e. Operational cost involved (water, electricity, raw material cost, fuel charges, salary, etc.,)

f. Fixation of utility charges

g. Details of the agency identified to run the proposed incubation facility

h. Tripartite agreement format to be signed by private agency, stale level nodal agency and the Host Institute

34. Layout for the proposed facility



35. Recommendation of SNA with Signature

36. Signature of the Head of the SLTI/ Host Institute with Designation

2. DPR for establishing Common Incubation Center for processing food grains, millets and spices

S.No.	Details of Host Institute	
1	Name of the Host Institute	
2	Institute Head	
3	Email id and contact number	
4	Government/Private	
5	If Private the percentage contribution for establishing the common incubation Facility?	
6	Registration Details (for private agency)	
7	Name of the Mentor Institute	
8	Incubation Center applied for **(which processing line)**	
9	Building/space available for the proposed incubation center	
10	Whether the space available for incubatee / startups in the proposed building	
11	If Yes, give the details If No, propose the plan	
12	Existing facility for the proposed common incubation center	
13	Activities carried out currently	
14	List of existing equipment available for the proposed incubation center	
15	Does the host institute requires upgradation of the existing facility	
16	If Yes, address the gap	Flooring has to be made according to FSSAI standards. Electrical and plumbing works has to done to facilitate functioning of incubation center
17	If upgradation required, cost required for the same	
18	Is food testing facility available at the host institute	
19	If No mention the equipments required with cost	

S.No.	Details of Host Institute	
20	List out the GMP / GHP Practices to be followed in the proposed incubation center.	
21	Measures to be adopted for human / food safety	
22	Expertise in the relevant processing	
23	Modality to fix the external agency to run the common incubation center	
24	Modalities for fixing commercial charges to run the facility	
25	Suitability of the proposed facility for processing other commodities	
26	Will the host institute provide water, electricity to run the common incubation facility	
27	Annual Maintenance Plan for the machineries installed at incubation center	
28	Expected number of entrepreneurs to be benefitted though incubation center per year	

29. Justification for the proposed facility at the Host Institute (Modify as per the proposal)

(Raw material, nearness to market, expected demand)

The Host Institute is located near delta region and where large number of farmers are involved in agriculture. Food products are available throughout the year and the farmers are engaged only in primary processing. The awareness on value addition of food crops is minimum among the farmers and the post-harvest losses increase due to improper facility and knowledge on processing. Hence setting of common incubation center to process food grains, millets and spices for food processing at the proposed Host Institute can support many farmers in this region to utilize the facility and improve their economy by minimizing post-harvest losses.

30. Map of the Host Institute showing accessibility for transport and market

31. Plan for upgrading/setting the proposed facility

(Details of space available, machineries required with cost and capacity)

On discussion with farmers, FPOs/SHG, the Host Institute proposes to set incubation centre for processing multi food commodities. Accordingly, the land requirement, processing lines, machineries and the respective cost obtained from Expert institutes are given below.

i. Land required for setting the proposed plant: 6900 sq.ft

ii. Approximate cost: 270 lakhs

A. The possible processing lines that can be established for common incubation facility is given below with the details and cost of machineries required for processing Millets, Food grains and Spices:

Cost for Processing of millets/grains/spices*					
S. No.	**Crop Processing Line**	**Machineries required for processing**	**Capacity**	**Cost in Lakhs***	**Quantity**
1	**Primary Processing Line for Small Millets (Foxtail, Barnyard, Proso, Little, Kodo and Browntop Millets**				
	Primary Processing of Minor millet (Foxtail, Barnyard, Proso, Little and Kodo millet)	Cleaning cum De-stoner cum Grader	200 - 250 kg/h	3.50	1
		De-huller	200 - 250 kg/h	3.00	1
		Grader cum Aspirator/Gravity Separator	200 - 250 kg/h	3.00	1
		Packaging Machine	500-1000 packs/h	7.50	1
		Weighing Balance	1 -50 kg Range	0.50	1
		Polisher	200 - 250 kg/h	5.00	1
		Tray Dryer	96 trays	5.00	1
		Color Sorter	250 kg/h	4.00	1
		Packing Line (Band Sealer)	500-1000 packs/h	0.50	1
		Sub-total		**32.00**	
2	**Primary Processing Line for Major Millets (Sorghum, Pearl and Finger Millets)**				
	Primary Processing of Major millets (Finger, Jowar and Pearl Millet)	Cleaning cum De-stoner cum Grader	200 - 250 kg/h	3.50	1
		Grader cum Aspirator/Gravity Separator	200 - 250 kg/h	3.00	1
		Packaging Machine	500-1000 packs/h	7.50	1
		Weighing Balance	1 -50 kg Range	0.50	1

		Polisher	200 - 250 kg/h	5.00	1
		Tray Dryer	96 trays	5.00	1
		Color Sorter	250 kg/h	4.00	1
		Packing Line (Band Sealer)	500-1000 packs/h	0.50	1
			Sub-Total	**29.00**	
3	**Secondary Processing: Milling of grains into flour**				
	Millet flour & Millet semolina (Coarse, Fine and Medium) made of Sorghum, Pearl Millet, Finger Millet, Foxtail Millet, Kodo Millet, Proso Millet, Barnyard Millet, Little Millet	Flour/semolina line (mini) – Hammer type	250 - 500kg/h	15.00	1
		Ribbon Blender	150 - 200kg/h	2.00	1
		Conical Roaster	150 - 200kg/h	2.00	1
		Packaging Machine (big)	500-1000 packs/h	10.00	1
		Weighing Balance	1 -50 kg Range	0.50	1
		Packing Line (Band Sealer)	500-1000 packs/h	0.50	1
	Processing of rice/wheat into flour	Rice Grinder/pulverizer	250 kg/h	2.00	1
		Sieve shaker/Sifter	100 kg/h	3.50	3
		Storage tank/bin	250 kg/bin	3.00	2
		Packaging machine	250 kg/h	5.00	1
			Sub-Total	**43.50**	
4	**Secondary processing of turmeric / ginger/chilly/ for spice powder/ curry powder**				
		Tray Dryer	96 trays	5.00	1
		Roaster (rotary type)	100 kg/batch	3.00	1
		Micro pulveriser	100 kg/h	10.00	2
		Vibro sifter	100 kg/h	2.00	1
		Blender	50 kg/batch	2.00	1
		Continuous form fill sealing machine	40 packs per min	10.00	2
		Solar Dryers with multi rack tray system	1000 kg/batch	5.00	1
			Sub-Total	**37.00**	
5	**Cold Extrusion Line (RTC)**				

	Pasta & Vermicelli made of Sorghum, Pearl Millet, Finger Millet Foxtail Millet Kodo Millet Proso Millet Barnyard Millet Little Millet	Cold extruder	250 kg/h	15.00	1
		Steamer	250kg/h	5.00	1
		Tray Dryer	96 trays	5.00	1
		Packaging Machine (band sealing machine)	500-1000 packs/h	1.50	1
		Weighing Balance	1 -50 kg Range	0.50	1
		Packing Line (Band Sealer)	500-1000 packs/h	0.50	1
			Sub-Total	**27.50**	
6	**Processing of Bakery products**				
		Planetary mixer	100 kg/h	3.00	1
		Dough kneader	100 kg/h	2.00	1
		Dough sheeter	100 kg/h	3.00	1
		Rotary oven	100 kg/h	5.00	1
		Bread slicer	100 kg/h	2.00	1
		Cookies dropper	100 kg/h	5.00	1
		Weighing Balance	1 -50 kg Range	1.00	1
		Packing Line (Band Sealer/ Hand sealer)	500-1000 packs/h	4.00	1
			Sub-Total	**25.00**	
7	**Flaking of millets/food grains**				
		Grain Roaster	150kg/h	5.00	
		Roller flaker	250/h	10.00	
		Sieving machine	250kg/h	3.00	
		Tray Dryer	96 trays	5.00	
		Packing machine with nitrogen filling	500-1000 packs/h	15.00	
			Sub-Total	**38.00**	
8.	**Food testing facilities**	Digital refractometer, thermometer, pH meter, other minor instruments, Refrigerator	1 each	25.00	
9.	**Accessories**	Stove, baking moulds, trays, cutter, spoons, utensils, racks		10.00	
10.	**Fire safety measures**	Fire extinguishers		3.00	

	Grand Total	**270.00**	

*As per the cost received from Expert Institutes namely IIT-Kharagpur, IIH-Bengaluru, IISR-Calicut

B. Waste Management/By-product Utilisation

C. Waste Disposal

Whether the host institute has Effluent treatment / Solid Waste management facility	
1	If yes, the same can be utilized for waste management of the proposed incubation center?
2	If No, Propose the plan for waste management from the incubation center.

Summary of the cost break up

S.No.	Processing lines	Approx. cost (in lakhs)
1	Primary Processing of Minor millet	32.00
2	Primary Processing of Major millets	29.00
3	Secondary Processing for Milling of grains into flour	43.50
4	Secondary processing of turmeric / ginger/Chilli/ for spice powder/ curry powder	37.00
5	Cold Extrusion Line (RTC)	27.50
6	Processing of Bakery products	25.00
7	Flaking of millets/food grains	38.00
8	Food testing facilities	25.00
9	Accessories	10.00
10	Fire safety measures	3.00
	Total	**270.00**

32. Can the facility be utilized to process other crops. If so, list the allied crops that can be processed at the center?

Yes, the proposed facility can be used for:

Primary Processing: Integrated packing of fresh fruits and vegetables like guava, mango, chilly, tomato

Primary processing of Millets namely finger millet, pearl millet and Jowar

Secondary processing of food grains like rice, wheat, major millets, pulses, RTC food mixes into flour

Secondary processing of spices namely cumin, aniseed, turmeric, pepper and spice mixes into flour

Bakery products processing line

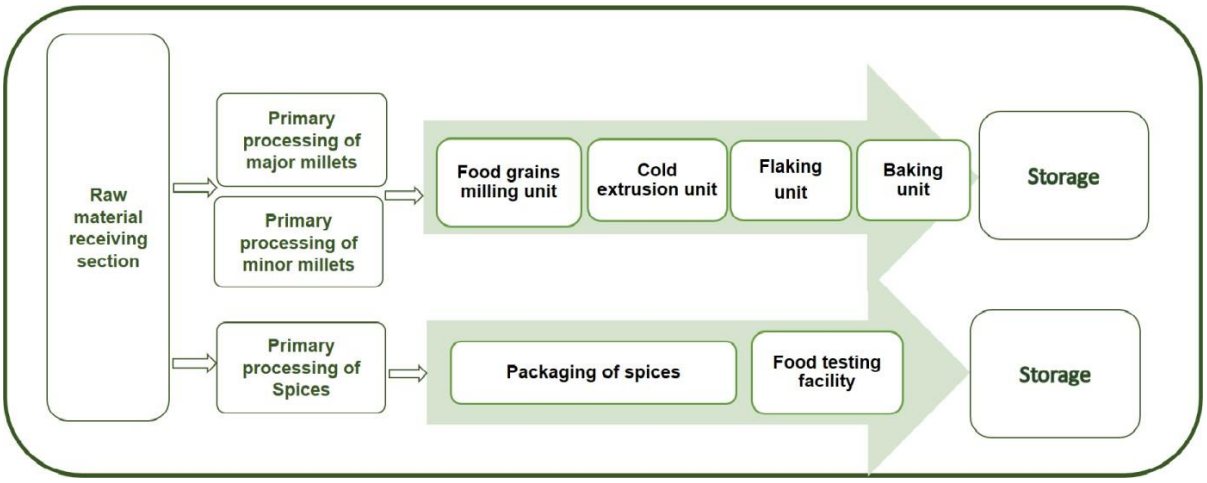
Processing of pasta

33. Will the host Institute make use of the machines already available for the proposed incubation center?

34. Feasibility report for commercially running the Common incubation facility (To be provided by Host Institute)

a. Business plan for running the common incubation center
b. Minimum 5 years of Operating plan should be provided.
c. Man power requirement
d. Minimum operational hours/ days per year
e. Operational cost involved (water, electricity, raw material cost, fuel charges)
f. Fixation of utility charges
g. Details of the agency identified to run the proposed incubation facility
h. Tripartite agreement format to be signed by private agency, stale level nodal agency and the Host Institute

35. Layout for the proposed facility



36. Recommendation of SNA with Signature

37. Signature of the Head of the SLTI/ Host Institute with Designation.

3. DPR for establishing Common Incubation Center for Fish Processing

S.No.	Details of Host Institute	
1	Name of the Host Institute	
2	Institute Head	
3	Email id and contact number	
4	Government/Private	

5	If Private the percentage contribution for establishing the common incubation Facility?	
6	Registration Details (for private agency)	
7	Name of the Mentor Institute	
8	Incubation Center applied for **(which processing line)**	
9	Building/space available for the proposed incubation center	
10	Whether the space available for incubatee /startups in the proposed building	
11	If Yes, give the details If No, propose the plan	
12	Existing facility for the proposed common incubation center	
13	Activities carried out currently	
14	List of existing equipment available for the proposed incubation center	
15	Does the host institute requires upgradation of the existing facility	
16	If Yes, address the gap	Flooring has to be made according to FSSAI standards. Electrical and plumbing works has to done to facilitate functioning of incubation center
17	If upgradation required, cost required for the same	
18	Is food testing facility available at the host institute	
19	If No mention the equipments required with cost	
20	List out the GMP / GHP Practices to be followed in the proposed incubation center.	
21	Measures to be adopted for human / food safety	
22	Expertise in the relevant processing	
23	Modality to fix the external agency to run the common incubation center	
24	Modalities for fixing commercial charges to run the facility	
25	Suitability of the proposed facility for processing other commodities	
26	Will the host institute provide water, electricity to run the common incubation facility	
27	Annual Maintenance Plan for the machineries installed at incubation center	
28	Expected number of entrepreneurs to be benefitted though incubation center per year	

29. Justification for the proposed facility at the Host Institute (Modify as per the proposal)

India's coastline stretches from Gulf of Khambhat in Gujarat to Sunderban forests in West Bengal stretching for the distance of 7516 kms including island territories of 2094 kms. The coastal states of the country consist of Gujarat, Maharashtra, Karnataka, Kerala and Goa in Western Coast and Tamil Nadu, Andha Pradesh, Odisha and West Bengal in East Coast. According to Central Marine Fisheries Research Institute's marine fisheries census, there were 3,288 marine fishing villages and 1,511 marine fish landing centres in 9 maritime states and 2 union territories. The total marine fisherfolk population was about 4 million comprising in 864,550 families. Nearly 61% of the fishermen families were under BPL category. The average family size was 4.63 and the overall sex ratio was 928 females per 1000 males. Almost 58% of the fisherfolk were educated with different levels of education. About 38% of marine fisherfolk were engaged in active fishing with 85% of them having full time engagement. About 63.6% of the fisherfolk were engaged in fishing and allied activities. Nearly 57% of the fisher folk engaged in fish seed collection were females and 43% were males. Among the marine fishermen households nearly 76% were Hindus, 15% were Chistians and 9% were Muslims. The overall percentage of SC/ST among the marine fishermen households was 17%.

The modernization of fishing sector started in 1960 – 70s under Indo-Norwegian pact when the trawl nets and mechanized boats were introduced along the coasts. The modernization further deepened the disparity among the community as who could afford this modernization or not. The traditional fishermen using non-destructive fishing practices were pushed to the fringes of society over the decades. Though the mechanized fishing has taken the country to leaps and bounds, the marine wealth of the country and state is steadily deteriorating due to overfishing.

Uplifting the fisher folks with food processing

For ages, the fishermen community has been processing the excess catch as dried fish, seasoning the fish with salt, sun and sand. Dry fish was the first food item that was exported from the coastal region to hinterland when there were no refrigeration and proper transport.

At present, prawns, cuttle and crabs are the major seafood exported from India. Along the coast, the seafood processing companies handle prawns, cuttle and crabs while the fishes like snappers and cods caught in huge volumes are grinded and turned into fishmeal and fish oil.

Most of the commercially viable fishes like mackerels, sardines, seer, groupers are sold in markets and there is little processing of them along the Indian coast. There is huge potential for tinning them and exporting them. The major problem the fishermen face along the coast is the syndicate of fish processing companies. The fish processing syndicate decides the prices of export fish varieties based on their market and fishermen in spite of their hard work and hefty expenses of fishes, incur very little profit. At least. 50,000 to 5 lakhs required to take out fishing operations depending on the size of craft and crew. Most of the mechanized boats hardly make even because

of the depletion of fish stock and prolonged fishing days. It is imperative to probe the cost effectiveness of the smaller fish processing units along the coast and involving the fisher women.

30. Map of the Host Institute showing accessibility for transport and market

31. Plan for upgrading/setting the proposed facility

(Details of space available, machineries required with cost and capacity)

Land required for setting the proposed plant: 6900 sq.ft

Approximate cost: 275 lakhs

A. The possible processing lines that can be established for common incubation facility is given below with the details and cost of machineries required for processing of Fish.

Cost for the proposed fish processing facility					
S. No.	**Fish Processing Lines**	**Machineries required for Processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
1	Pre processing	Pre-processing tables	8'x5' (SS 304)	2.00	4
		Flake Ice machine	100-200 kg/h	8.00	2
		Refrigerator	220 l	0.20	1
		Cold store unit (Freezer cum chiller unit)	2 Ton	12.00	1
		De-Scaling / Deskinning machine		2.00	1
		Weighing balances (platform type)		0.20	1
			Sub-total	**24.40**	
2	Processing for chilled and frozen products	Air blast freezer	200-500 kg/cycle	22.00	1
		Walk –in-Chiller	1.2 tons	11.00	1
		Flake Ice machine	3tonnes/24 h	20.00	1
		Cold store	50 tonnes	15.00	1
		Sealing Machines		0.50	5
		Processing Tables	8'x5' (SS 304)	0.50	2
			Sub- total	**69.00**	

3	**Fish Mince based products**	**Hand mincer**	**3kg/h**	**0.10**	**1**
		Table top batter& breading machine	50-60kg/h	7.00	1
		Mixer/grinder		0.50	1
		Pin bone remover		4.00	1
		Meat bone separator		12.00	1
		Meat mincer		1.50	1
		Forming machine		6.00	1
		Tray sealing machine		8.00	1
		Vacuum Sealing machine		3.00	1
		Form(Liquid) Fill Sealing machine		6.00	1
		Strapping machine		0.50	1
		Band Saw		2.00	1
			Sub-total	**50.60**	
4	RTE fish products in cans/pouches	Horizontal over pressure retort	600 pouch/batch	24.00	1
		Air compressor		1.00	1
		Water tank		0.75	1
		High pressure water pump		1.00	1
		Air Surge tank		1.00	1
		Boiler		6.00	1
		Can seamer		3.00	1
		L.P.G. commercial stove (SS)		1.00	3
		Air exhaust line (steam injection)		0.30	1
		Impulse Pouch Sealing Machine	12” length seal width 6mm	1.50	4
		Though flow pouch drying unit	(40-50^{o}C)	0.15	1
		S.S. dressing table, packing table etc		3.00	
		Steam jacketed kettles		2.00	
		Vegetable cutting machine		1.00	1
		Mixer/grinder – heavy duty		1.00	2
		Treadle embossing system		0.70	1
			Sub-total	**47.40**	

5	Solar dried fish	Solar dryer with LPG back up (including Drying chamber, SS trolleys, SS trays, Solar hot water system. LPG back up etc. with all control and PLC System)	50-60 kg/batch	4.20	1
		SS 304 Pre- processing table		0.294	
		SS 304 Dry fish sorting and packing table		0.263	1 No.
		SS 304 Trolley for fish handling		0.210	1 No
		Dry fish storage racks		0.300	1 No.
		Platform weighing balance		0.126	2 Nos.
		Electronic table balance		0.189	1 No.
		Hand sealing machine		0.126	1 No.
		Band sealing machine		0.147	2 Nos.
		Insulated fish tubs		0.100	1 No.
		Fish salting tanks		0.150	2 Nos.
		Plastic crates for fish storing, washing, and grading		0.050	2 Nos.
		Stainless steel (knives, knife stand, cutters etc.)		0.025	5 Nos.
		Chopping board		0.030	1 set
		Waste disposal drums		0.025	2 Nos.
		Sub-total		**6.235**	
6	Auxillary line for production of feed from fish processing waste	Shedder	100 kg/h	6.00	1
		Pulverizer	100 kg/h	3.00	1
		Blender	250 kg/h	3.00	1
		Steamer	250 kg/h	6.00	1
		Pelletizer & Dryer	250 kg/h	8.00	1
		Bag sealer		0.60	2
		Weighing balance (platform type)		0.40	2
			Sub-total	**27.00**	

7	**Accessories**	**Cutting Knives**	**SS**	**0.05**	**10**
		Industrial Water purifier		2.00	1
		Storage racks		1.00	5
		Power generator		5.00	1
		Insulated boxes		1.00	10
		Fish handling trays		0.50	20
		Solar-hybrid drier		3.00	1
		Water treatment/ Effluent treatment		3.00	1
		Gun thermometer		0.05	3
		Induction stove		0.05	1
		Accessories, Spares, AMC Charges		5.00	
		Pest Repellents		0.25	5
		Other Miscellaneous items		4.00	
			Sub-total	**24.90**	
8	Fire Safety Measures	Fire extinguishers		**0.50**	
		Fire hydrant			
9	Food testing facility	Estimation of protein, fat and other proximate analysis		**25.00**	
			Total	**275.10**	

B. Waste Management/ By-Product utilisation

C. Waste Disposal

Whether the host institute has Effluent treatment / Solid Waste management facility?	
1	If yes, the same can be utilized for waste management of the proposed incubation center?
2	If No, Propose the plan for waste management from the incubation center.

Summary of the cost break up

S.No.	Processing Lines	Approx. Cost (in lakhs)
1	Pre Processing	24.40
2	Processing for chilled and Frozen products	69.00
3	Fish Mince based Products	50.60
4	RTE fish Products in cans/ pouches	47.40
5	Solar dried Fish	6.235

6	Auxiliary line for production of feed from fish processing waste	27.00
7	Accessories	24.90
8	Fire Safety Measures	0.50
9	Food testing facility	25.00
	Total	**275.00**

32. Can the facility be utilized to process other crops. If so, list the allied crops that can be processed at the center?

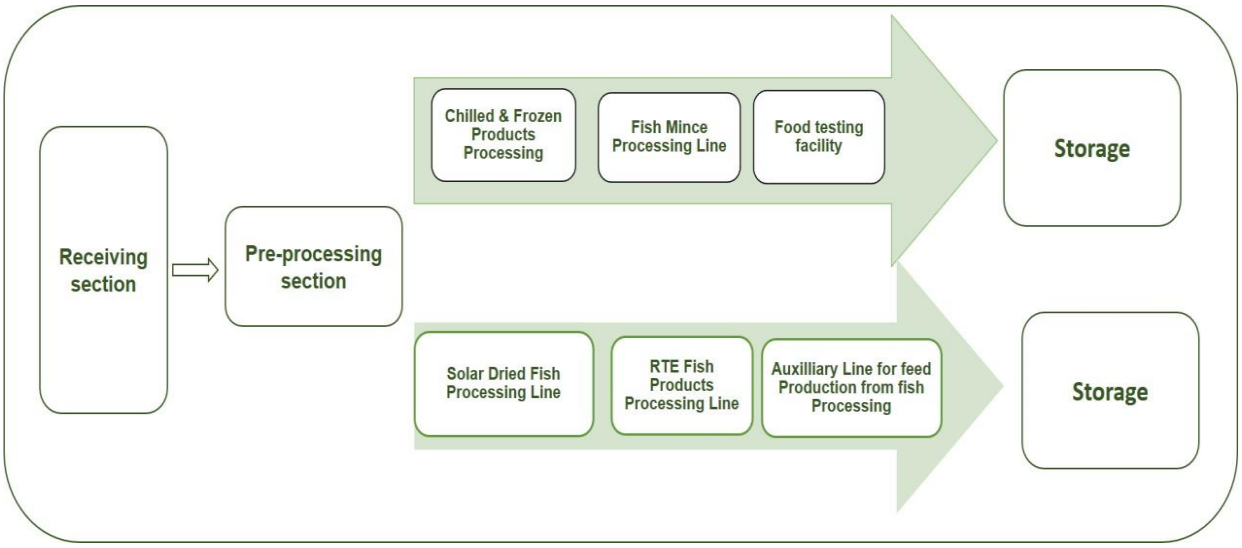
33. Will the host Institute make use of the machines already available for the proposed incubation center?

34. Feasibility report for commercially running the Common incubation facility

(To be provided by Host Institute)

a. Business plan for running the common incubation center
b. Minimum 5 years of Operating plan should be provided.
c. Man power requirement
d. Minimum operational hours/ days per year
e. Operational cost involved (water, electricity, raw material cost, fuel charges)
f. Fixation of utility charges
g. Details of the agency identified to run the proposed incubation facility
h. Tripartite agreement format to be signed by private agency, stale level nodal agency and the Host Institute

35. Layout for the proposed facility



36. Recommendation of SNA with Signature

37. Signature of the Head of the SLTI/ Host Institute with Designation.

4. DPR for establishing common incubation center for processing oilseeds, Coconut & Jaggery

S.No.	Details of Host Institute	
1	Name of the Host Institute	
2	Institute Head	
3	Email id and contact number	
4	Government/Private	
5	If Private the percentage contribution for establishing the common incubation Facility?	
6	Registration Details(for private agency)	
7	Name of the Mentor Institute	
8	Incubation Center applied for(which processing line)	
9	Building/space available for the proposed incubation center	
10	Whether the space available for incubatee /startups in the proposed building	
11	If Yes, give the details If No, propose the plan	
12	Existing facility for the proposed common incubation center	
13	Activities carried out currently	
14	List of existing equipment available for the proposed incubation center	
15	Does the host institute requires upgradation of the existing facility	
16	If Yes , address the gap	Flooring has to be made according to FSSAI standards. Electrical and plumbing works has to done to facilitate functioning of incubation center
17	If upgradation required, cost required for the same	
18	Is food testing facility available at the host institute	
19	If No mention the equipments required with cost	
20	List out the GMP / GHP Practices to be followed in the proposed incubation center.	

S.No.	Details of Host Institute	
21	Measures to be adopted for human / food safety	
22	Expertise in the relevant processing	
23	Modality to fix the external agency to run the common incubation center	
24	Modalities for fixing commercial charges to run the facility	
25	Suitability of the proposed facility for processing other commodities	
26	Will the host institute provide water, electricity to run the common incubation facility	
27	Annual Maintenance Plan for the machineries installed at incubation center	
28	Expected number of entrepreneurs to be benefitted though incubation center per year	Will follow as mentioned in guidelines

29. Justification for the proposed facility at the Host Institute

30. Map of the Host Institute showing accessibility for transport and market

31. Plan for upgrading/setting the proposed facility

(Details of space available, machineries required with cost and capacity)

i. Land required for setting the proposed plant: 6900 sq.ft

ii. Approximate cost: 274.4

A. The possible processing lines that can be established for common incubation facility is given below with the details and cost of machineries required for processing of Oil seeds/ Coconut/Jaggery

Cost Norms for Oilseed / Coconut Processing					
S.No.	**Processing Lines**	**Machineries required for Processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
1.	Seed Pre-processing Machineries	Seed cleaner		10.00	1
		Stone remover		4.00	1
		Decorticator and Roaster	350 kg/h	0.60	1
		Crusher		2.00	1

		Shaker screen with blower		1.00	
		Vibrating sifter	150-200 kg/h	1.00	1
		Flaker		10.00	1
		Seed cooker/ cooking machine		4.00	1
		Bean extrusion machine		2.00	1
			Sub-total	**34.60**	
2	Oil Extraction Unit	Oil Extraction Plant		34.60	
		Screw oil expeller - expellers complete with long heating kettle, other accessories and electrical	1.2 tons oil /day	25.00	2
		Cold press unit		2.00	
		Table Ghani		7.00	
			Sub-total	**68.60**	
3	Filtration Unit	Oil Filter Press		89.00	
		Filter press with plunger pump, filter cloth etc.		4.00	1
		Oil Refinery Plant		20.00	
			Sub-total	**113.00**	
4	Coconut oil extraction unit	Coconut splitter	250 nuts/h	1.00	1
		Shell fired copra dryer	200 nuts/batch	2.00	2
		Desheller for partially dried copra	200 nuts/batch	1.00	1
		Copra cutter	200 nuts/batch	1.00	1
		Steam blancher	200 nuts/batch	1.00	1
			Sub-total	**6.00**	
5	Oil Packaging Unit	Tin packing machines of	15 l	5.00	

		Volumetric filling and sealing machine		6.00	
		Can Sealing machine, Box stamping machine		0.20	
			Sub-total	**11.20**	
6	Primary Processing of Sugarcane	Crushing unit with accessories	1000 kg/h	10.00	1 set
		Juice filtration unit	1500 l/h	3.00	1 set
		Clarification and boiling unit	250 kg/h	5.00	1 set
		Cooling and moulding unit		3.00	
		Storage (SS 304) containers/bins	500 kg/bin	1.00	1 set
		Packaging Machine for Powder jaggery	100 kg/h	4.00	1
			Sub-total	**26.00**	
7	Food Testing Facilities	Soxhlet apparatus, Moisture meter, Hot air oven, Colour, sp gravity, pH, turbidity, viscosity analyzer		**10.00**	
8	Accessories			**5.00**	
			Total	**274.40**	

B. Waste Management / By-Product utilisation

C. Waste Disposal

Whether the host institute has Effluent treatment / Solid Waste management facility?	
1	If yes, the same can be utilized for waste management of the proposed incubation center?
2	If No, Propose the plan for waste management from the incubation center.

Summary of the cost break up

S.No.	Processing Lines	Approx. Cost (in lakhs)
1	Seed pre-processing Machineries	34.60

2	Oil Extraction Unit	68.60
3	Filtration Unit	113.00
4	Coconut oil (500 nuts/day) extraction unit	6.00
5	Oil packaging unit	11.20
6	Primary Processing of Sugarcane	26.00
7	Food Testing Facilities	10.00
8	Accessories	5.00
	Total	**274.40**

32. Can the facility be utilized to process other crops. If so, list the allied products that can be processed at the center?

33. Will the host Institute make use of the machines already available for the proposed incubation center?

34. Feasibility report for commercially running the Common incubation facility

(To be provided by Host Institute)

a. Business plan for running the common incubation center

b. Minimum 5 years of Operating plan should be provided.

c. Man power requirement

d. Minimum operational hours/ days per year

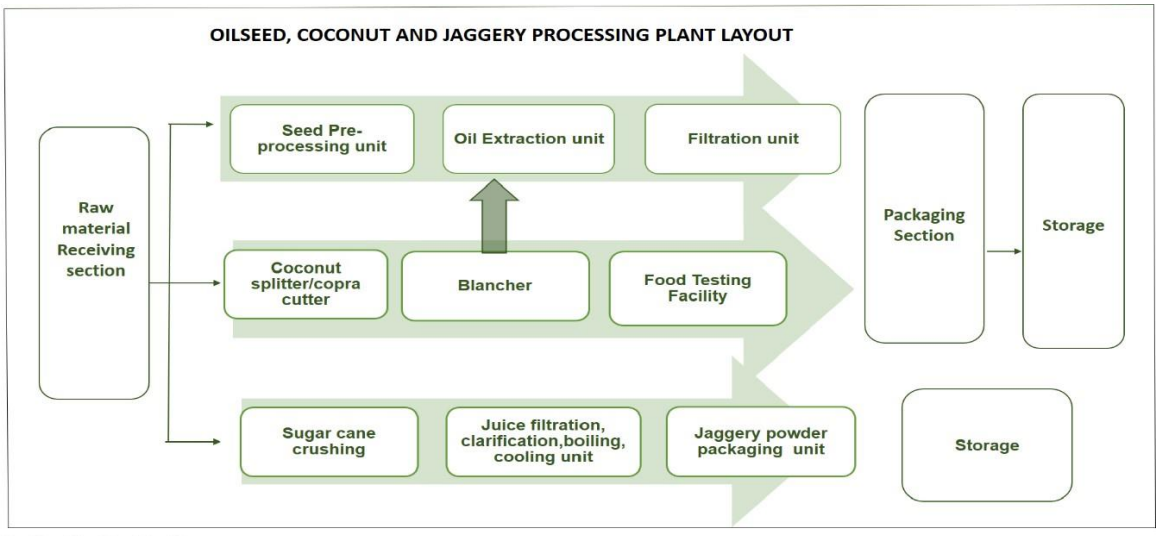
e. Operational cost involved (water, electricity, raw material cost, fuel charges)

f. Fixation of utility charges

g. Details of the agency identified to run the proposed incubation facility

h. Tripartite agreement format to be signed by private agency, state level nodal agency and the Host Institute

35. Layout for the proposed facility



36. Recommendation of SNA with Signature

37. Signature of the Head of the SLTI/ Host Institute with Designation.

5. DPR for establishing common incubation center for processing Minor Forest Produce

S.No.	Details of Host Institute	
1	Name of the host institute	
2	Institute head	
3	Email id and contact number	
4	Government/private	
5	If private the percentage contribution for establishing the common incubation facility?	
6	Registration details (for private agency)	
7	Name of the mentor institute	
8	Incubation center applied for (which processing line)	
9	Building/space available for the proposed incubation center	
10	Whether the space available for incubate / startups in the proposed building	
11	If Yes, give the details If No, propose the plan	
12	Existing facility for the proposed common incubation center	
13	Activities carried out currently	
14	List of existing equipment available for the proposed incubation center	
15	Does the host institute requires upgradation of the existing facility	
16	If yes , address the gap	
17	If upgradation required, cost required for the same	
18	Is food testing facility available at the host institute	Flooring has to be made according to FSSAI standards. Electrical and plumbing works has to done to facilitate functioning of incubation center
19	If No, mention the equipments required with cost	
20	List out the GMP / GHP Practices to be followed in the proposed incubation center.	

21	Measures to be adopted for human / food safety	
22	Expertise in the relevant processing	
23	Modality to fix the external agency to run the common incubation center	
24	Modalities for fixing commercial charges to run the facility	
25	Suitability of the proposed facility for processing other commodities	
26	Will the host institute provide water, electricity to run the common incubation facility	
27	Annual Maintenance Plan for the machineries installed at incubation center	
28	Expected number of entrepreneurs to be benefitted though incubation center per year	

29. Justification for the proposed facility at the Host Institute (Modify as per the proposal)

North-East India is endowed with abundance of natural resources and minor forest produce like mushroom, bamboo shoot, honey are few of such resources. One extensive use of bamboo in this region is the usage of young shoots as food. Bamboo shoots are the young, edible bamboo plants that have just emerged from the ground. Bamboo shoots are low in fat and calories but rich in fibre with about 90% water. Fresh shoots have a crisp and sweet flavour with limited shelf life and have to be sold immediately. The peak availability period is June to October. The shoots are usually harvested when they attain the height of 15-16 cm. In north-east India, bamboo shoot is consumed either raw or processed because of its exotic taste and flavour. Many nutritious and active materials-such as vitamins, amino acids and anti-oxidants such as flavones, phenols and steroids are present in the bamboo shoots.

Such forest produce are valuable in pharmaceutical and food processing industries and can be processed into beverages, medicines, additives or health foods. Beinga lesser-known food product, these forest produce processing has potential to be developed as an innovative and promising enterprise. Considering the potential shoot processing has potential to be developed as an innovative and promising enterprise. Considering the potential market opportunity of such units, the present detail project report has been developed. The main objective of such initiative is to

productively utilize the abundantly available resources of the local area and to enable uninterrupted supply of the products to market throughout the year.

30. Map of the Host Institute showing accessibility for transport and market

31. Plan for upgrading/setting the proposed facility

(Details of space available, machineries required with cost and capacity)

i. Land required for setting the proposed plant: 6900 sq.ft.

ii. Approximate cost: 246.9

A. The possible processing lines that can be established for common incubation facility is given below with the details and cost of machineries required for processing of Minor Forest Produce

S.	Processing	Machineries required	Capacity	Cost (In Lakhs)	Quantity
1	**Primary Processing of Bamboo Shoot**				
		Cleaner	40-50 kg/h	1.50	1
		Slicer	40-50 kg/h	2.00	1
		Boiler	100 l	5.00	1
		Steamer/ Blancher	150 kg/h	1.00	1
		Tray Drier	40- 50 kg/h	2.00	1
			Sub-total	**11.50**	
2	**Secondary Processing of Bamboo Shoot**				
	Bamboo Shoot Powder	Pin Mill	40- 50 kg/H	1.50	1
		Sieve Shaker	40- 50 kg/h	1.00	1
		Form Fill Seal Machine for Bamboo Shoot powder	40- 50 kg/h	5.00	1
			Sub-total	**7.50**	
	Bamboo Shoot Pickling	Fryer	40- 50 kg/batch	2.00	2
		Storage (SS 304) containers/bins	200 kg/h	1.00	4
			Sub-total	**3.00**	
	Bamboo Shoot Canning	Can Seamer	200 cans/ h	1.00	2
		Can Reformer	200 cans/ h	2.00	2
		Can Exhaust machine	400 cans/ h	5.00	2
			Sub-total	**8.00**	

3	Minimal processed mushroom (Milky mushrooms), marinated mushrooms (Porcini Mushrooms) and cured mushroom (Oyster Mushrooms)				
		Grading and sorting systems	100 kg/h	1.50	1
		Rotary rod washer with spray	100 kg/h	2.50	1
		Vibro screen	2 hp	1.00	1
		Spin water dryer (multi deck conveyor dryer with steam used as hot air source)	100 kg output Capacity	3.00	1
		Hydraulic forklift truck		2.50	1
		Mushroom cutting machine		1.00	1
		Pasteurizer		8.00	1
		Tray packing machine (with MAP unit)		12.00	1
			Sub-total	**31.50**	
4	**Dried mushroom and mushroom powder (Paddy Straw Mushrooms) / Mahua powder processing**				
		Tub bubble washer	100 kg/h	4.00	1
		Vibro screen	2 hp	3.00	1
		Blanching unit consist of 3 SS tanks, 3 trays	SS tanks (380X1140mm), SS bottom trays (1015mmX350mmX180mm), SS top trays (30mmX12mm) 1 hp	6.00	2
		Polycarbonate Solar tunnel drier (fixed type) 700sq.ft.	100 kg/batch per drier	8.00	1
		Cooling chamber (0 / -20DC 6X5m)	2 tonnes, area 1500 cu Ft	6.00	2
		SS tilting type steam jacketed double wall kettle	100 kg	1.80	2
		Fixed type tunnel type drying chamber 1200sq.ft.	100 kg/batch	8.00	1
		Pulverizer with accessories (SS hammer mill with rotary air lock, cyclone, duct collection bag filter of 2 sets, one for coarse milling and another one for fine milling)	100 kg/h	5.00	1

		Air classifier	100 kg/h	2.00	1
		Screener and sifter		2.00	1
		Powder collecting bin	0.5 hp	1.50	1
			Sub-total	**26.30**	
5	**Juice concentrates/ Squash/ RTS from Mahua**				
		Automatic dosing hoppers	100 kg/h	4.00	1
		Juice extractor	100 kg/h	4.00	1
		Storage tank with agitator	100 kg/h	1.50	1
		Piston pump	100 l/h	0.40	2
		Plate & frame filter press	100 l/h	2.50	1
		Storage tank with agitator	100 l	5.00	4
		S.S. feed pump	100 l/h	0.50	2
		Steam jacketed kettle	100 l/h	1.250	1
		Homogenizer	100 l/h	5.00	1
		UHT juice line	100 l/h	9.00	1
		Cooling tunnel [optional]	600 bottles/h	5.00	1
	Packaging unit	Counter pressure bottling line (rinser/ fillers/capper/triblocs or corkers & capping equipment	900 bottles/h	12.0	1
		Pressure sensitive bottle labeler	1.5hp	8.00	1
		Weighing, filling and sealing pack unit	100kg/Batch	8.00	1
		Weighing machine	1-5kg. 100 kg, 1g-1kg	1.00	1
			Sub-total	**67.15**	
6	**Processing of Honey**				
	Packed Honey in bottles of different sizes	Receiving SS Tank	750 l		
		Primary Filter Shell	25 l	0.56	1
		Gear Pump With Motor Capacity: 130 LPM Diff. Head: Max. 10 kg/cm Motor: 5.0 hp (3.7 kw)	30 l/min	0.95	1
		Bag Filter (Dual Type)		1.57	1
		Moisture Reduction Tank		9.65	1
		Jacketed Storage Tank		6.16	2
		Modular Frame Material of construction (MOC): MS		0.95	1

		Hot Water Boiler (Wood Fired) MOC: SS MS		1.57	1
		Pipes & Fittings		1.57	1
		Semi-Automatic Single head Machine To fill viscous products		3.47	1
			Sub-total	**26.45**	
	Food Testing facilities	Estimation of protein, fat and other proximate analysis, Gun Thermometer, Refractometer, pH meter, Moisture meter		25.00	
7	**Accessories**				
		Pouch Sealing Machines	200 Packs/h	2.00	2
		Bottle Sealing Machines	200 bottle/h	2.00	2
		Hand Fork lifter/ trollies	100 kg/ h	0.50	5
		Hygiene station/Air curtains		2.00	
		Packaging Machine	200 kg/h	10.00	1
		Weighing balance	1kg to 100kg	0.50	1
		Boiler	100 l	2.50	1
		Solar drier	500sqft	3.00	1
		Carboy barrels 1.200x1.000 mm		2.00	50
		Wooden palettes, prefabricated metal boards		0.50	1 LOT
		Modular kitchen		5.00	
			Sub-total	**30.00**	
8	**Safety Measures**				
		Pollution control equipments discharge of water treatment tanks		0.50	1 LOT
		Dust collector		1.00	1
		Metal detector		5.00	1
		Fire extinguisher		2.00	4
		Air curtains and film curtains		2.00	4
			Sub-total	**10.50**	
			Total	**246.90**	

B. Waste Management/ By- Product Utilisation

C. Waste Disposal

Whether the host institute has Effluent treatment / Solid Waste management facility?	
1	If yes, the same can be utilized for waste management of the proposed incubation center?
2	If No, Propose the plan for waste management from the incubation center.

Summary of the cost break up

S.No.	Processing Lines	Approx. Cost (in lakhs)
1	Primary Processing of Bamboo Shoot	11.50
2	Bamboo Shoot Powder Processing	7.50
3	Bamboo Shoot Pickling	3.00
4	Bamboo Shoot Canning	8.00
5	Minimal processed mushroom	31.50
6	Dried mushroom and mushroom powder/Mahua powder processing	26.30
7	Secondary processing of Mahua into beverage	67.15
8	Processing of Honey	26.45
9	Food testing facility	25.00
10	Accessories	30.00
11	Safety measures	10.50
	Total	**246.90**

32. Can the facility be utilized to process other crops. If so, list the allied products that can be processed at the center?

33. Will the host Institute make use of the machines already available for the proposed incubation center?

34. Feasibility report for commercially running the Common incubation facility (To be provided by Host Institute)

a. Business plan for running the common incubation center

b. Minimum 5 years of Operating plan should be provided.

c. Man power requirement

d. Minimum operational hours/ days per year

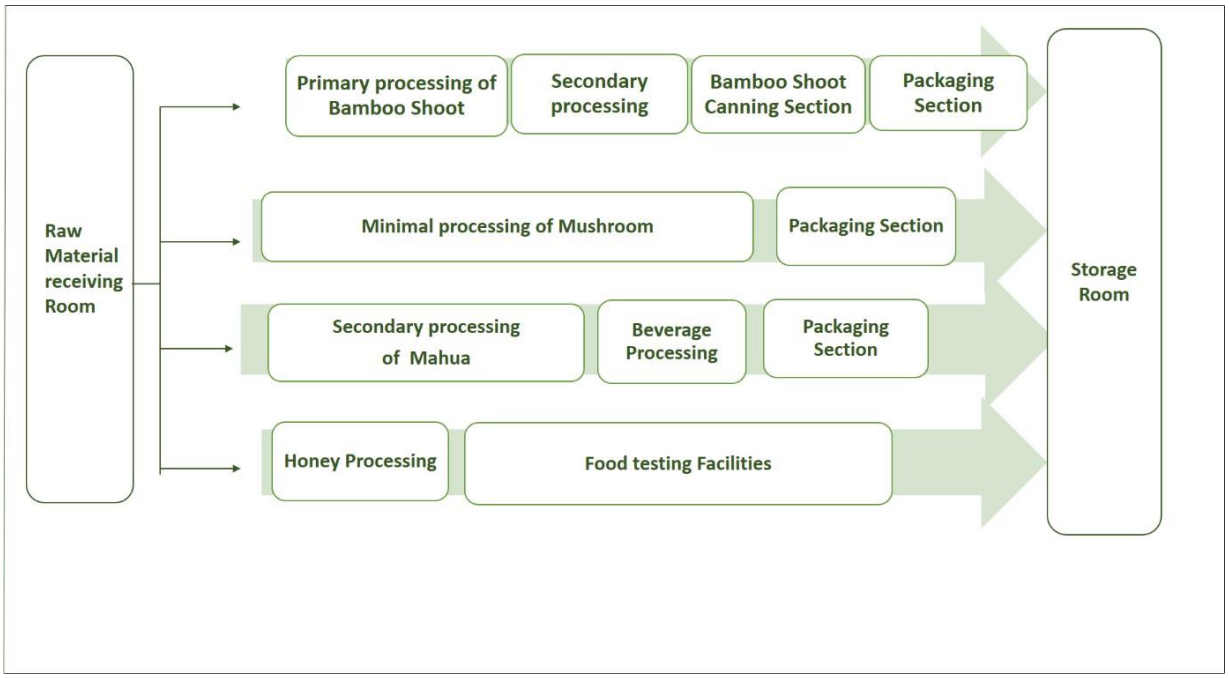
e. Operational cost involved (water, electricity, raw material cost, fuel charges)

f. Fixation of utility charges

g. Details of the agency identified to run the proposed incubation facility

h. Tripartite agreement format to be signed by private agency, stale level nodal agency and the Host Institute

35. Layout for the proposed facility



36. Recommendation of SNA with Signature

37. Signature of the Head of the SLTI/ Host Institute with Designation.

INDICATIVE COST NORMS FOR DIFFERENT PROCESSING LINES

III. Indicative cost norms for different processing lines

The indicative cost norms proposed by technical institutes are given below based on the machineries required for processing specific crop/product. The selection of equipment can be proposed in the DPR as per the requirement based on ODOP theme adhering to the limit set in the cost norms and scheme guidelines. The maximum eligible project cost as per the Scheme Guidelines* on Common Incubation Facility (FM-11/75/2020-AS dated 02.11.2020) is Rs. 275 Lakh which is inclusive of expenditure connected with 3-5 processing lines, minor renovation and food testing laboratories.

1. Indicative cost norms for grain processing

1.1 Paddy processing: Cost norms received from IIT - Kharagpur

1.1.1 Abstract Table

S.No.	Paddy Processing Lines	Cost (in Lakhs)
1	Primary processing Lines	12.00
2	Rice milling (White milled rice)	77.00
3	Rice flour using rice broken	13.50
4	RTC Extrusion Food Processing Line	62.50
5	RTE Food processing line using flaking machine	30.00
6	Puffed rice	24.00
7	Rice crackers	31.00
8	Oil extraction	33.50
9	Baking unit	20.00
10	Food testing facility	25.00
11	Auxiliary Equipments if any	95.50
12	Fire Safety Measures	5.00

1.1.2 Detailed Cost Norms

Cost Norms for Paddy Processing					
S.No.	**Paddy Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary processing					
1	**Pre-cleaning**				
		Thesher	500 kg/h	1.00	1
		Winnower	500 kg/h	0.50	1
		Dryer	500 kg/h	4.00	1
		Storage silo	2000 kg	5.00	2
		Screw conveyor (to load paddy in silo)	500 kg/h	1.50	1

** Please refer para no. 4.3 of Scheme Guidelines for Common Incubation facility dt. 02.11.2020*

2	**Rice milling (White milled rice)**				
		Screw conveyor (to load paddy in bucket elevator from silo)	500 kg/h	1.50	1
		Bucket elevators	500 kg/h	18.00	12
		Paddy cleaner with cyclone separator	500 kg/h	2.50	1
		Destoner (with magnetic separator)	500 kg/h	2.00	1
		Paddy husker (rubber sheller, husk aspirator and piping)	500 kg/h	4.00	1
		Paddy separator	500 kg/h	2.00	1
		Abrasive whitener	500 kg/h	2.00	1
		Rice polisher	500 kg/h	2.50	1
		Rotary sifter	500 kg/h	2.00	1
		Grader	500 kg/h	3.00	1
		Color sorter	500 kg/h	3.00	1
		Magnet separator (for final product)	500 kg/h	1.50	1
		Storage containers/bins	500 kg/bin	6.00	4
		Packaging Machine	500 kg/h	5.00	1
		Bran suction unit with cyclone separator	500 kg/h	2.00	1
		Parboiling unit (with all accessories)	500 kg/h	20.00	1
Secondary Processing					
3	**Rice flour using rice broken**				
		Rice Grinder/pulverizer	250 kg/h	2.00	1
		Sieve shaker/Sifter	100 kg/h	3.50	3
		Storage tank/bin	250 kg/bin	3.00	2
		Packaging machine	250 kg/h	5.00	1
4	**RTC Extrusion Food Processing Line**				
	Rice Pasta, Noodles	Cleaner	250 kg/h	2.50	1
		Grinder/Pulverizer (wit cyclone separator)	250 kg/h	2.50	1
		Mixing and conditioning unit (mixer)	250 kg/h	8.00	2
		Twin screw extruder	250 kg/h	25.00	1
		Dryer	250 kg/h	8.00	1

		Noodles Packaging Machine	250 kg/h	5.00	1
		Storage containers/ bins for rice flour	500 kg	4.00	2
		Conveyors	250 kg/h	6.00	4
		Magnet separator	250 kg/h	1.50	1
5	**RTE Food processing line using flaking machine**				
	Rice flakes	Cleaner	250 kg/h	2.50	1
		Bucket elevator	250 kg/h	1.50	1
		Soaking tank with coil heater	500 kg/tank	1.50	1
		Bucket elevator	300 kg/h	1.50	1
		Flaking machine	250 kg/h	6.00	1
		Roaster/Dryer	250 kg/h	5.00	1
		Grader/Sifter	250 kg/h	3.00	1
		Packaging Machine	250 kg/h	5.00	1
		Conveyors	250 kg/h	4.00	2
6	**Puffed rice**				
	Puffed snacks made of Sorghum, Pearl Millet, Finger Millet Foxtail Millet Kodo Millet Proso Millet Barnyard Millet Little Millet Rice	Salt water mixing unit	250 kg/h	2.00	2
		Tempering tank	500 kg	2.00	1
		Puffed Rice Making Machine	250 kg/h	6.00	1
		Grader/Sifter	250 kg/h	3.00	1
		Packaging Machine	250 kg/h	5.00	1
		Conveyor	250 kg/h	6.00	4
7	**Rice crackers**				
		Cleaner	100 kg/h	2.00	1
		Grinder/Pulverizer (wit cyclone separator)	100 kg/h	2.00	1
		Mixing unit	100 kg/h	2.50	1
		Dough Fermenter	100 kg/h	4.00	1
		Steamer	100 kg/h	3.50	1
		Dough sheeter	100 kg/h	5.00	1
		Baking oven	100 kg/h	5.00	1
		Conveyor	100 kg/h	2.00	6
		Packaging	100 kg/h	5.00	1

8	**Oil extraction**				
		Bran storage tank	1000 kg	1.50	1
		Solvent extraction and filtration unit	100 kg/h	25.00	1
		Storage tanks (SS304)	500 l/tank	2.00	1
		Packaging Machine	100 kg/h	5.00	1
9	**Baking unit**				
	By products bran can used for cookies processing)	Flour Mixer	100 kg/h	3.00	1
		Dough kneader	100 kg/h	2.00	1
		Dough sheeter	100 kg/h	3.00	1
		Rotary oven	100 kg/h	5.00	1
		Bread slicer	100 kg/h	2.00	1
		Cookies dropper	100 kg/h	5.00	1
10	**Food testing facility**				
		Estimation of protein, fat and other proximate analysis		25.0	
11	**Auxiliary Equipment, if any**				
		Work tables		2.00	2
		Weighing balance		1.50	5
		Boiler / gas cylinder		10.00	5
		Storage racks		1.00	1
		Power generator/controller		30.00	1
		Refrigerator		1.00	1
		Cold room facility		5.00	1
		Water treatment/Effluent treatment		10.00	
		Machines required for waste utilization		5.00	1
		Quality control laboratory		20.00	1
		Accessories		**10.00**	1
		Gun thermometer			1
		Refractometer			1
		Induction stove			
		Baking mould, trays, cutter, rolling pins,			
		colander, ladles, measuring spoons, etc.			

12	**Fire Safety Measures**				
		Fire extinguishers		5.00	
		Fire hydrant			

1.2 Wheat processing: Cost norms received from IIT- Kharagpur

1.2.1 Abstract Table

S.No.	Wheat Processing Lines	Cost (in Lakhs)
1	Primary processing Lines	13.50
2	Flour milling (Maida, atta and suji)	70.00
3	Atta chakki flour Processing	12.50
4	Wheat porridge (Daliya)	15.50
5	RTC Extrusion Food Processing Line (Cold Extrusion unit)	55.00
6	RTE Food processing line using hot extruder	48.00
7	Bread,cookies and confectionary Processing	31.50
8	Food testing facility	25.00
9	Auxillary Equipments if any	95.50
10	Fire Safety Measures	5.00

1.2.2 Detailed Cost Norms

Cost Norms for Wheat Processing					
S.No.	**Wheat Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary processing					
1	**Pre cleaning**				
		Thesher unit	500 kg/h	1.00	1
		Grading unit	500 kg/h	1.00	1
		Storage silo	2000 kg	5.00	2
		Packaging machine	500 kg/h	5.00	1
		Conveyor	500 kg/h	1.50	1
2	**Flour milling (Maida, atta and suji)**				
		Precleaning unit (Reel machine, vibrosifter, destoner, magnetic separator, aspirator, pneumatic suction,	500 kg/h	10.00	1

		conveyor and accessories)			
		Storage silo	2000 kg	5.00	2
		Conditioning and tempering unit	500 kg/h	5.00	1
		Size reduction machineries and accessories (Roller mill, suction unit and other)	500 kg/h	20.00	1
		Plan sifter	500 kg/h	5.00	1
		Purifier	500 kg/h	5.00	1
		Storage (SS 304) containers/bins	2000 kg	5.00	2
		Packaging Machine	500 kg/h	15.00	3
3	**Atta chakki flour**				
		Grinder/Pulveriser/Atta chakki with cyclone separator	250 kg/h	2.00	1
		Plan sifter	250 kg/h	3.00	1
		Storage (SS 304) containers/bins	1000 kg	2.50	1
		Packaging Machine	250 kg/h	5.00	1
4	**Wheat porridge (Daliya)**				
		Conditioning unit	250 kg/h	3.00	1
		Grinder/Pulveriser/Atta chakki with cyclone separator	250 kg/h	2.00	1
		Plan sifter	250 kg/h	3.00	1
		Storage (SS 304) containers/bins	1000 kg	2.50	1
		Packaging Machine	250 kg/h	5.00	1
Secondary processing of Wheat					
5.	**RTC Extrusion Food Processing Line (Cold Extrusion unit)**				
	Pasta, Noodles, Macaroni	**Cold extrusion unit**	250 kg/h	10.00	1
		Mixing, kneading, sheeting and cutting unit	250 kg/h	15.00	1
		Pasta making machine with die	250 kg/h	5.00	1
		Conditioning/steaming unit	250 kg/h	8.00	1
		Dryer	250 kg/h	10.00	1

		Frying unit	250 kg/h	7.00	1
		Packaging Machine			
6.	**RTE Food processing line using hot extruder**				
	Extruded Wheat flakes	Storage (SS 304) containers/bins	1000 kg	2.50	1
		Flour Mixer	100 kg/h	3.00	1
		Twin Screw Extruder	100 kg/h	15.00	1
		Conveyor (Air, Cooling)	100 kg/h	2.50	1
		Multilayer Drier	100 kg/h	4.00	1
		Flavouring, coating, oil sprayer and spice mixing	100 kg/h	5.00	1
		Traditional flaking			
		Soaking tanks	100 kg/h	1.00	1
		Flaking machine	100 kg/h	5.00	1
		Roaster	100 kg/h	5.00	1
		Packaging machine	100 kg/h	5.00	1
7.	**Bread, cookies and confectionary**				
	Rusk (toast)	Storage (SS 304) containers/bins	1000 kg	2.50	1
		Flour Mixer	100 kg/h	3.00	1
		Dough kneader	100 kg/h	2.00	1
		Dough sheeter	100 kg/h	3.00	1
		Rotary oven	100 kg/h	5.00	2
		Bread slicer	100 kg/h	1.00	1
		Bread packaging	100 kg/h	2.00	1
		Sugar Pulveriser	100 kg/h	1.00	1
		Cookies dropper	100 kg/h	5.00	1
		Cookies packaging unit	100 kg/h	5.00	1
		Rusk making machine	100 kg/h	2.00	1
8.	**Food testing facility**				
		Estimation of protein, fat and other proximate analysis		25.00	
9.	**Auxillary Equipments if any**				
		Work tables		2.00	
		Weighing balance		1.50	
		Boiler / gas cylinder		10.00	
		Storage racks		1.00	
		Power generator/ controller		30.00	

		Refrigerator		1.00	
		Cold room facility		5.00	
		Water treatment/ Effluent treatment		10.00	
		Machines required for waste utilization		5.00	
		Quality control laboratory		20.00	
		Accessories			
		Gun thermometer			
		Refractometer			
		Induction stove			
		Baking mould, trays, cutter, rolling pins,			
		colander, ladles, measuring spoons,			
10.	**Fire Safety Measures**				
		Fire extinguishers		5.00	
		Fire hydrant			

1.3 Pulse processing: Cost norms received from IIFPT - Thanjavur

1.3.1 Abstract Table

S.No.	Pulse Processing Lines	Cost (in Lakhs)
1	Primary processing Lines	80.15
2	Secondary Processing of Pulses	29.00
3	Extrusion Unit	96.00
4	Cold Extrusion unit	34.50
5	Papad unit	21.50
6	Food testing facility	25.00
7	Auxillary Equipments if any	61.50

1.3.2 Detailed cost norms

Cost Norms for Pulse Processing					
S.No.	**Paddy Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary processing of Pulses					
1	**Primary Processing**				
		Elevator	4	0.92	1
		Classifier	4	6.15	1
		Aspirator		0.84	1

		Destoner	4	5.50	1
		Elevator	4	0.69	1
		Magnetic Separator		0.44	1
		Huller 1	2	5.00	1
		Elevator	4	0.69	1
		Magnetic Separator		0.44	1
		Huller 2	2	5.00	1
		Elevator	4	0.92	1
		Classifier	4	6.15	1
		Aspirator		0.84	1
		Elevator	4	0.92	1
		Elevator	4	0.92	1
		Magnetic Separator		0.44	1
		Huller 3	2	5.00	1
		Elevator	4	0.92	1
		Classifier	4	6.15	1
		Aspirator		0.84	1
		Color Sorter	2	30.00	1
		Elevators	4	1.38	2
Secondary Processing of Pulses					
2	**Secondary Processing**				
		Urli roaster	200 kg/h	2.00	1
		Pulveriser	200 kg/h	15.00	1
		Ribbon blender		2.00	
		Packaging Machine for Grains/flour		10.00	
Tertiary Processing of Pulses					
3	**Extrusion Unit**				
		Twin Screw Extruder			
		Flour Mixer			
		Conveyor (Air, Cooling)			
		Multilayer Drier			
		Hoister			
		Oil Sprayer	8 kg/h	85.00	1
		Flavoring Machine			
		Flaker			
		Roaster			
		Vibro Sifter			
		Core Filler			
		Shaper			
		Puff Gun Machine			

		Packaging Machine		11.00	1
4	**Cold Extrusion unit**				
		Pasta making machine with die	200 kg/h	14.00	1
		Steamer/ Blancher		7.00	1
		Drier		2.50	1
		Packaging Machine	200 kg/h	10.00	1
		Storage (SS 304) containers/bins		1.00	4
5	**Papad unit**				
		Flour sieving Unit		1.00	
		Flour kneading Unit		1.50	
		Papad sheeting unit		6.50	
		papad stacking unit		0.50	
		Drier		7.50	
		Packaging unit		4.50	
6	**Food Testing facilities**				
		Flour testing seive set		0.50	
		Dough tester		1.50	
		Protein analyser		4.50	
		Fat analyser		5.50	
		Fibre analyser		4.50	
		Hot air Oven		1.50	
		Muffle furnace		0.50	
		Microbial load test facilities		2.50	
		Lab Furniture		2.50	
		Glassware and Chemical		0.50	
		Miscellaneous		10.00	
7	**Accessories**				
		Moisture meter			
		Gun thermometer			
		Refractometer			
		Induction stove			
		Baking mould, trays, cutter, rolling pins,			

8	Auxiliary Equipment, if any				
		Steam Boiler with accessories	100kg/h	6.00	1
		RO Plant	100 l/h	2.00	1
		Chilled water system (Optional)	2TR	4.00	1
		Air Compressor for automation, if needed		1.50	1
		Generator		10.00	1
		Work tables		2.00	4
		Storage racks		1.00	5
		Power generator		10.00	1
		Water treatment/ Effluent treatment		5.00	1
		Bio composting Unit	100 kg/day	20.00	1 unit

1.4 Millet processing: Cost norms received from ICAR –IIMR, Hyderabad

1.4.1 Abstract Table

S.No.	Millet Processing Lines	Cost (in Lakhs)
1	Primary Processing Line for Small Millets	32.00
2	Primary Processing Line for Major Millets	29.00
3	Milling & Grinding Line	32.00
4	Cold Extrusion Line (RTC)	27.50
5	Hot Extrusion Line (RTE)	80.00
6	Puffing Line	32.50
7	Cookies Making Line	39.00
8	Flaking Line	38.00
9	Nutri Bar processing line	20.00
10	RTE Snacks processing line	23.50
11	Auxiliary Equipment, if any	13.00
12	Accessories	10.50
13	Fire Safety Measures	0.50
14	Mini Laboratory Facility/quality control/Mini R&D	25.00

1.4.2 Detailed Cost Norms

Cost Norms for Millet Processing					
S.No.	**Millet Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary processing					
1	**Primary Processing Line for Small Millets (Foxtail, Barnyard, Proso, Little, Kodo and Browntop Millets**				
	Primary Processing of Minor millet (Foxtail, Barnyard, Proso, Little and Kodo millet)	Cleaning cum De-stoner cum Grader	200 - 250 kg/h	3.50	1
		De-huller	200 - 250 kg/h	3.00	1
		Grader cum Aspirator/Gravity Separator	200 - 250 kg/h	3.00	1
		Packaging Machine	500-1000 packs/h	7.50	1
		Weighing Balance	1 -50 kg Range	0.50	1
		Optional			
		Polisher	200 - 250 kg/h	5.00	1
		Tray Dryer	96 trays	5.00	1
		Color Sorter	250 kg/h	4.00	1
		Packing Line (Band Sealer)	500-1000 packs/h	0.50	1
2	**Primary Processing Line for Major Millets (Sorghum, Pearl and Finger Millets)**				
	Primary Processing of Major millets (Finger, Jowar and Pearl Millet)	Cleaning cum De-stoner cum Grader	200 - 250 kg/h	3.50	1
		Grader cum Aspirator/Gravity Separator	200 - 250 kg/h	3.00	1
		Packaging Machine	500-1000 packs/h	7.50	1
		Weighing Balance	1 -50 kg Range	0.50	1
		Optional			

		Polisher	200 - 250 kg/h	5.00	1
		Tray Dryer	96 trays	5.00	1
		Color Sorter	250 kg/h	4.00	1
		Packing Line (Band Sealer)	500-1000 packs/h	0.50	1
Secondary Processing					
3	**Milling & Grinding Line**				
	Millet flour & Millet semolina (Coarse, Fine and Medium) made of Sorghum, Pearl Millet, Finger Millet, Foxtail Millet, Kodo Millet, Proso Millet, Barnyard Millet, Little Millet	Flour/semolina line (mini) – Hammer type	250 - 500kg/h	15.00	1
		Ribbon Blender	150 - 200kg/h	2.00	1
		Conical Roaster	150 - 200kg/h	2.00	1
		Packaging Machine (big)	500-1000 packs/h	10.00	1
		Weighing Balance	1 -50 kg Range	0.50	1
		Optional			
		Entoleter	100 - 150 kg/h	2.00	1
		Packing Line (Band Sealer)	500-1000 packs/h	0.50	1
4	**Cold Extrusion Line (RTC)**				
	Pasta & Vermicelli made of Sorghum, Pearl Millet, Finger Millet Foxtail Millet Kodo Millet Proso Millet Barnyard Millet Little Millet	Cold extruder	250 kg/h	15.00	1
		Steamer	250kg/h	5.00	1
		Tray Dryer	96 trays	5.00	1
		Packaging Machine (band sealing machine)	500-1000 packs/h	1.50	1
		Weighing Balance	1 -50 kg Range	0.50	1
		Optional			
		Packing Line (Band Sealer)	500-1000 packs/h	0.50	1

5	Hot Extrusion Line (RTE)				
	Millet Crispies& Flakes made of Sorghum Pearl Millet Finger Millet Foxtail Millet Kodo Millet Proso Millet Barnyard Millet Little Millet	Flour mixing tank	250kg/h	65.00	1
		Conveyor			
		Twin screw hot extruder along with dies (including core filler die)			
		Roller flaker along with line			
		Conveyor (Air Cooling)			
		Flavor coating machine along with oil spraying			
		Hoister			
		Roaster			
		Vibro Sifter			
		Core Filler			
		Shaper			
		Packing machine with nitrogen filling	500-1000 packs/h	15.00	1
6	**Puffing Line**				
	Puffed snacks made of Sorghum, Pearl Millet, Finger Millet Foxtail Millet Kodo Millet Proso Millet Barnyard Millet Little Millet Rice	Puff Gun Machine	200kg/h	10.00	1
		Separator/grader	150kg/h	2.00	1
		Conical roaster	100kg/h	2.00	1
		Packing machine with nitrogen filling	500-1000 packs/h	15.00	1
		Optional			
		Frying Tanks		1.50	1
		Flavor Coating Machine		2.00	1
7	**Cookies Making Line**				
	Millet cookies made of Sorghum, Pearl Millet, Finger Millet Foxtail Millet, Kodo Millet, Proso Millet, Barnyard Millet, Little Millet, Wheat	Planetary mixer	100kg/h	6.00	1
		Cookie dropping/cutting machine	250kg/h	15.00	1
		Rotary Rack oven	Trays (250kg/h)	8.00	1
		Packing machine for cookies	500-1000 packs/h	10.00	1

8	Flaking Line				
	Millet flakes made of Sorghum, Pearl Millet, Finger Millet, Foxtail Millet, Kodo Millet, Proso Millet, Barnyard Millet, Little Millet, Rice	Grain Roaster	150kg/h	5.00	1
		Roller flaker	250/h	10.00	1
		Sieving machine	250kg/h	3.00	1
		Tray Dryer	96 trays	5.00	1
		Packing machine with nitrogen filling	500-1000 packs/h	15.00	1
9	**Nutri Bar processing line**				
	Millet nutri bar made of Sorghum, Pearl Millet, Finger Millet, Foxtail Millet, Kodo Millet, Proso Millet, Barnyard Millet, Little Millet and Other Grains	Mixing Cooker	200kg/h	5.00	1
		Sheeting and cutting machine	200kg/h	10.00	1
		Packing machine	500-1000 packs/h	5.00	1
10	**RTE Snacks processing line**				
	Millet Muruku made of Sorghum, Pearl Millet, Finger Millet, Foxtail Millet, Kodo Millet, Proso Millet, Barnyard Millet, Little Millet	Dough Kneader	200kg/h	1.50	1
		Muruku Forming Machine	200kg/h	5.00	1
		Deep Frying Machine	500-1000 packs/h	1.00	1
		Oil Squeezing Machine	500-1000 packs/h	1.00	1
		Packing machine with nitrogen filling	500-1000 packs/h	15.00	1
11	**Auxiliary Equipment, if any**				
		Working tables		1.00	2
		Gas Cylinder		0.50	5
		Storage racks		1.00	5
		Power generator		10.00	1
		Refrigerator		0.50	1
		Water treatment/ Effluent treatment			1
		Machines required for waste utilization			1
		Accessories		10.00	
		Gun thermometer			1
		Refractometer			1
		Induction stove			1

		Infrared moisture meter			1
		Baking moulds, tray, cutter, rolling pins,			1
12	**Fire Safety Measures**				
		Ladder		0.50	2
		Fire extinguishers		0.50	
		Fire hydrant			
13	**Mini Laboratory Facility/quality control/Mini R&D**				
		Estimation of protein, fat and other proximate analysis		25.00	

1.5 Corn processing: Cost norms received from IIT - Kharagpur

1.5.1 Abstract Table

S.No.	Corn Processing Lines	Cost (in Lakhs)
1	Primary Processing Line	26.50
2	Corn dry milling process	50.00
3	RTE Cook Foods	8.00
4	RTC Extrusion Food Processing Line	39.00
5	Extruded Corn flakes	32.00
6	Traditional flaking	16.00
7	Sweet corn processing line	74.00
8	Canned sweet corn Processing	72.00
9	Auxillary Equipments if any	85.50
10	Food testing facility	25.00
11	Accessories	10.00
12	Fire Safety Measures	5.00

1.5.2 Detailed Cost Norms

Cost Norms for Corn Processing					
S.No.	**Millet Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary processing					

1.	**Postharvest operations in primary Processing of maize**				
		Maize Sheller	500 kg/h	1.50	1
		Maize dryer	500 kg/h	4.50	1
		Maize cleaning	500 kg/h	1.50	1
		Maize grader	500 kg/h	1.50	1
		Storage silo	2000 kg	5.00	2
		Packaging machine	500 kg/h	5.00	1
		Conveyor	500 kg/h	7.50	5
2	Corn dry milling process				
		Precleaning unit (Reel machine, vibrosifter, destoner, magnetic separator, aspirator, pneumatic suction, conveyor and accessories)	500 kg/h	10.00	1
		Tempering/conditioning tank	1000 kg	2.00	2
		Degerminator, aspirator and bran separation unit	500 kg/h	6.00	1
		Pulverizer, grader, sifter and other accessories	500 kg/h	15.00	1
		Conveyors	500 kg/h	12.00	8
		Packaging Machine for grits and flour	500 kg/h	5.00	1
Secondary processing					
3.	RTE Cook Foods				
		Popcorn making unit	50 kg/h	5.00	1
		Pop corn packaging	50 kg/h	3.00	1
4.	RTC Extrusion Food Processing Line				
	Puffed corn snack (kurkure), Puffed ring corn snack	Storage (SS 304) containers/bins	1000 kg	2.50	1
		Flour Mixer	100 kg/h	3.00	1
		Single screw extruder/Kurkure making machine	100 kg/h	15.00	1
		Frying unit	100 kg/h	2.00	1
		Conveyor (Air, Cooling)	100 kg/h	2.50	1

		Flavouring, coating, oil sprayer and spice mixing	100 kg/h	5.00	1
		Packaging Machine	100 kg/h	5.00	1
		Puff Ring Crux Making Machine	100 kg/h	4.00	1
5.	Extruded Corn flakes				
		Storage (SS 304) containers/bins	1000 kg	2.50	1
		Flour Mixer	100 kg/h	3.00	1
		Twin screw extruder	100 kg/h	15.00	1
		Conveyor (Air, Cooling)	100 kg/h	2.50	1
		Multilayer Drier	100 kg/h	4.00	1
		Flavouring, coating, oil sprayer and spice mixing	100 kg/h	5.00	1
6.	Traditional flaking				
		Soaking tanks	100 kg/h	1.00	1
		Flaking machine	100 kg/h	5.00	1
		Roaster	100 kg/h	5.00	1
		Packaging machine	100 kg/h	5.00	1
7.	Sweet corn processing line				
		Sweet corn dehusker	500 kg/h	4.00	1
		Pre-cleaner	500 kg/h	1.00	1
		Sweet corn sheller	500 kg/h	10.00	5
		High pressure air cleaner	500 kg/h	1.50	1
		Hot water blancher	500 kg/h	5.00	1
		Vibration filter	500 kg/h	1.50	1
		Color sorter	500 kg/h	4.00	1
		Freezer (-20°C - 10°C)	500 kg/h	10.00	1
		Packaging machine	500 kg/h	7.00	1
		Cold storage	5 tonnes	10.00	1
		Conveying system	500 kg/h	20.00	1
8.	Canned sweet corn				
		Sweet corn dehusker	500 kg/h	4.00	1
		Pre-cleaner	500 kg/h	1.00	1
		Sweet corn sheller	500 kg/h	10.00	5
		High pressure air cleaner	500 kg/h	1.50	1
		Hot water blancher	500 kg/h	5.00	1
		Vibration filter	500 kg/h	1.50	1

		Color sorter	500 kg/h	4.00	1
		Canning system	500 kg/h	10.00	1
		Sterilization	500 kg/h	5.00	1
		Cooling	500 kg/h	5.00	1
		Storage	5 tonne	5.00	1
		Conveying system	500 kg/h	20.00	1
9.	Auxillary Equipments if any				
		Work tables		2.00	
		Weighing balance		1.50	
		Boiler / gas cylinder		10.00	
		Storage racks		1.00	
		Power generator/controller		30.00	
		Refrigerator		1.00	
		Cold room facility		5.00	
		Water treatment/ Effluent treatment		10.00	
		Machines required for waste utilization		5.00	
		Quality control laboratory		20.00	
10.	Food testing facility				
		Estimation of protein, fat and other proximate analysis		25.00	
11.	Accessories				
		Gun thermometer		10.00	
		Refractometer			
		Induction stove			
		Baking mould, trays, cutter, rolling pins,			
		colander, ladles, measuring spoons,			
12.	Fire Safety Measures				
		Fire extinguishers		5.00	
		Fire hydrant			

2. Indicative cost norms for Fruits and Vegetable Processing

2.1 Fruit processing: Cost norms received from ICAR – IIH, Bangalore

2.1.1 Abstract Table

S.No.	Fruit Processing Lines	Cost (in Lakhs)
1	Primary Processing Line	49.00
2	Dehydration of fruits slices and cubes-	145.00
3	Dehydration of fruits pulps in to fruit bar-	25.00
4	Fruit concentrates	225.00
5	Secondary processing -processing in to juice and beverages	89.50
6	Food testing facility	25.00
7	Utilities	23.50
8	Auxillary Equipments if any	38.00

2.1.2 Detailed Cost Norms

Cost Norms for Fruit Processing					
S. No.	**Fruit Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary Processing Lines					
1.	**Primary processing of fruits for RTE- Osmo- dried fruits and fruit bar**				
	Activity involve- handling, precooling, washing, ripening, curing, storage, grading and processing in to various products	Washing- bubble washing, roller washing with slant conveyer belt or jet washing mechanism/ washing tub with conveyor roller system	500 kg/h	15.00	1
		Ripening chamber	500kg	10.00	1
		Precooling	250kg/h	4.00	1
		Grading system based on size	250 kg/h	5.00	1
		Sorting table with slant conveyer	250 kg/h	5.00	1
		Colour sorting (Optional)	200kg/h	5.00	1
		Cold storage 5℃	1000kg	5.00	1
2.	**Dehydration of fruits slices and cubes-**				
	mango, papaya, pineapple, guava	Cold storage - 20 ℃	1000kg	8.00	1
		Multifunctional Fruit Cutter	300-500 kg/h	5.00	1

		Pineapple peeler, corer, cube cutter	200kg/h	5.00	1
		Papaya peeler. Slicer, cube cutter	200kg/h	5.00	1
		Mango peeler, slicer cube cutter for raw or mature fruits	200kg/h	5.00	1
		Anola blancher, segmenter, shedder	200kg/h	5.00	1
		Sugar syrup making machine	200kg/ h	5.00	1
		Syrup storage tanks	500 l	4.00	2
		Impregnation tanks	300 l /batch	10.00	3
		Hoist in case of automation	0.5 ton	8.00	1
		Vibrator shaker in case of automation	100 kg/h	6.00	1
		Mixing and Blending System	500 l/batch	5.00	1
		Cabinet Dryer	96 trays	25.00	1
		Solar dryer	500 kg/ Batch	12.00	1
		Multipurpose blender	50.0kg capacity	4.00	1
		Packaging equipments-vacuum/band sealer	100kg/h	8.00	1
		Vacuum packaging	200 pack/ h	10.00	1
		Blast Freezer	100 kg/ batch	15.00	1
3.	**Dehydration of fruits pulps in to fruit bar**				
	mango, papaya, pineapple, guava	Pulper and finisher	200kg/h	5.00	1
		Pulp storage tanks	1000 kg	5.00	1
		Bar cutting and packing and coding	200 pack/h	15.00	1
Secondary processing					
4.	**Fruit concentrates**				
		Fruit Mill	200 kg/h	4.00	1
		Fruit Pulper cum Finisher	200 kg/h	4.00	1
		Steam Jacketed kettle for crushed tomatoes	100 kg/ Batch	2.00	1

		Raw juice cum pulp collection tank	200 l	1.00	1
		Mixing and Blending tank	200 l	2.00	1
		Processed pulp cum juice storage tank	200 l	1.00	1
		Screw pumps for transfer of raw and processed products	100 l/h	3.00	2
		Helicolloidal juice extractor	500kg /h	10.00	1
		Filter press	500 l/h	3.00	1
		Homogenizer, Double stage	200 l/h	15.00	2
		Storage Tank	500 l	10.00	4
		Tubular pasteurizer with connections and fittings	200 l/h	10.00	1
		Vacuum concentrator and aseptic filling plant (Optional)	200kg water evaporation	120.00	
		Vacuum concentration only		25.00	
		Pouch / Spout Packaging machine for different capacities for crushed tomato, puree, juice, Mango pulp etc	100-500 pouches/h	15.00	1
5.	**Secondary processing - processing in to juice and beverages**				
		Fruit pulper cum finisher	200 kg/h	4.00	1
		Heli colloidal juice extractor	500 kg/h	10.00	1
		Raw juice collection tank	200 l	10.00	1
		Raw juice screw transfer pump for automatic delivery	100l/h	1.50	1
		Blending Tank with agitator	200 l	5.00	1
		Homogenizer	200 l /h	6.00	1
		Tube in tube filter for automatic delivery	200 l /h	1.00	1

		Processed juice collection tank	200 l	1.00	1
		Processed juice transfer pump	100l/h	1.50	1
		Tubular pasteurizer with all accessories and fittings	200 l/h	10.00	1
		PET bottle rinsing / washing machine	100 bottles/min	2.00	1
		Piston filler with capping provision	100 l/h	5.00	
		Monobloc filler (Optional)	100 l/h	25.00	1
		Cooling tank	500 l/h	3.00	1
		Labelling and printing system	100 bottles/min	5.00	1
		Piston filler with capping provision	100 l/h	5.00	
		Monobloc filler (Optional)	100 l/h	25.00	1
		Cooling tank	500 l	3.00	1
6.	**Quality control**				
		Miscellaneous instruments required for Food safety and quality laboratory, electronic weighing scales, Refractometer, pH meter, water, spectrophotometer, baths, refrigerators, precision balance, laminar flow, overhead water tank, storage tanks, etc.		25.00	
7.	**Utilities**				
		Steam Boiler with accessories (100kg/h)	100 kg/h	6.00	1
		RO Plant	100 l/h	2.00	1
		Chilled water system (Optional)	2TR	4.00	1
		Air Compressor for automation, if needed		1.50	1

		Generator		10.00	1
8.	**Auxillary Equipments if any**				
		Work tables		2.00	4
		Storage racks		1.00	5
		Power generator		10.00	1
		Water treatment/Effluent treatment		5.00	1
		Bio composting Unit	100 kg/day	20.00	1 unit
		Cost of CIP system, SS pipelines, inter connections, are not included and will vary with the level of automation			

2.2 Banana processing: Cost norms received from NRCB, Banana -Trichy

2.2.1 Abstract Table

S.No.	Banana Processing Lines	Cost (in Lakhs)
1	Fresh Produce handling for domestic and export markets	60.00
2	Banana flour and flour based products	70.00
3	Ripe banana based products	57.00
4	Pickles and other related products	32.00
5	Food testing facility	29.00
6	Auxillary Equipments if any	16.00

2.2.2 Detailed Cost Norms

Cost Norms for Banana Processing					
S.No.	**Millet Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary processing					
1	**Fresh Produce handling for domestic and export markets**				
		Precooled	20 tons capacity	15.00	
		Cold Storage	20 tons capacity	15.00	
		Ripening Chamber	10 tons capacity	10.00	
		Peeler cum slicer	100 kg/ h	5.00	

		Chips making machine (Semi-Automatic)		5.00	
		Packaging machine	500 packs/h	10.00	
Secondary processing					
2.	**Banana flour and flour based products**				
		Tray dryer		7.00	
		Hammer mill/ Attrition mill		5.00	
		Flour Packing machine		3.00	
		Bakery unit including Planetary mixer, rotary rack oven, with all accessories	250 kg/h	25.00	
		Extruder Machine (For different products)	250 kg/h	20.00	
		Packaging line including weighing machine, entoleter, sealer etc.		10.00	
				7.00	
3.	**Ripe banana based products**				
		Basket press		5.00	
		Homogenizer		12.00	
		Juice unit including pasteurizer, filling unit		15.00	
		Packaging line		5.00	
		Solar Drier		10.00	
		Filtration unit		5.00	
		Jam, Jelly, Sauce units		5.00	

4.	Pickles and other related products				
		Pickle pan and other accessories		5.00	
		Packaging line		5.00	
		Central stem minimal processing		10.00	
		Central stem based Juice unit		10.00	
		Siever		2.00	
5.	**Food testing laboratory**				
		Centrifuge		10.00	
		Digital refractometer, colour meter, pH meter, other minor instruments		15.00	
		Refrigerator		2.00	
		Hot air oven		2.00	
6.	**Auxillary equipment**				
		Water activity meter		8.00	
		Weighing balance		2.00	
		Storage racks, thermometers, baking moulds, cutter, spoons etc		6.00	

2.3 Vegetable processing: Cost norms received from ICAR- IIH, Bangalore

2.3.1 Abstract Table

S.No.	Vegetable Processing Lines	Cost (in Lakhs)
1	Primary processing of vegetables	36.00
2	Dehydration of vegetables- dried vegetables flakes/ cubes/ sheds/ powders	56.00
3	Vacuum frying of vegetables- RTE	40.00
4	Frozen and IQF Processing	40.00
5	Vegetable paste making Unit	50.00
7	Food testing Facilities	20.00
8	Auxillary Equipments if any	39.00
9	Accessories	19.00

2.3.2 Detailed Cost Norms

Cost Norms for Vegetable Processing					
S.No.	**Vegetable Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
1	**Primary processing of vegetables**				
	Activity involve- handling, precooling, washing, ripening, curing, storage, grading and processing in to various products	Washing- bubble washing, roller washing with slant conveyer belt or jet washing mechanism/ washing tub with conveyor roller system	500 kg/h	10.00	1
		Curing facility	500kg	3.00	1
		Precooling (Optional)	250kg/h	4.00	1
		Size Grader	250 kg/h	5.00	1
		Sorting table with slant conveyer		5.00	1
		Colour sorting (Optional)	100/h	4.00	1
		Cold storage 5 deg C	1000kg	5.00	1
2	**Dehydration of vegetables- dried vegetables flakes/ cubes/ sheds/ powders**				
	vegetables- Onion, carrot, cabbage, pumpkin, drumstick, French Beans mushrooms etc	Multifunctional Vegetable Cutters	300-500/h cap	5.00	1
		Steam blancher	200kg/h	3.00	1
		Cabinet Dryer	96 trays	25.00	1
		Solar dryer	500 kg/ Batch	12.00	1
		Pulveriser	100/kg /h	3.00	1
		Packaging equipments- vacuum/ band sealer	100kg/h	8.00	1
3	**Vacuum frying of vegetables – RTE**				
	Vegetables- Okra, carrot, pumpkin, peas, French Beans, beet root	Blast freezer	100kg/ batch	15.00	1
		Vacuum fryer with deoiler and agitator and centrifugal system	15 kg/ batch	15.00	1
		Packaging machines- pouch packaging	500pack/h	10.00	1
4	**Frozen and IQF Vegetables- Peas, cauliflower, carrot French beans etc.**				
		IQF freezing line	200kg/ h	20.00	1
		Deep Freezers (-20°C to -40°C)	500 l cap	10.00	4
		Cold storage (-20oC)	1000 kg cap	10.00	1

5	**Vegetable paste making Unit (Specialised Equipments)**				
		Ginger washer	50kg/ batch	3.00	1
		Ginger slicer	100kg/ batch	4.00	1
		Garlic clove separator	200kg/h	2.00	1
		Garlic peeler	40 kg/h	2.00	1
		Ginger garlic paste pulverizer	100kg/h	3.00	1
		Pouch packaging machine -band sealer	100/h	2.00	1
		Onion Detopper	500 kg/h	5.00	1
		Onion Grader	1.5 ton/h	2.00	1
		Onion slicer	200 kg/h	2.00	1
		Chilli destalking machine	200 kg/h	5.00	1
		Wet Grinder	200 kg/h	2.00	1
		Blancher	200 kg/h	3.00	1
		Pouch / Spout Packaging machine for different capacities	100-500 pouches /h	15.00	1
6	**Quality control**				
		Miscellaneous instruments required for Food safety and quality laboratory, such as electronic weighing scales, Refractometer, pH meter, water activity meter, spectrophotometer, baths, refrigerators, precision balance, laminar flow, etc.		20.00	1
7	**Auxillary Equipments if any**				
		Working tables		3.00	6
		Storage racks		1.00	5
		Power generator		10.00	1
		Water treatment/Effluent treatment		5.00	1
		Bio composting Unit	100 kg/day	20.00	1 unit

8	Accessories				
		Steam Boiler with accessories (100Kg/h) (Optional for vacuum frying machine)	100 kg/h	6.00	1
		Generator		10.00	1
		Overhead tanks with fittings	500 l capacity	3.00	5

3. Dairy Processing: Cost norms received from ICAR- NDRI, Karnal

3.1 Abstract Table

S.No.	Dairy Processing Lines	Cost (in Lakhs)
1	Basic Milk Processing Line	4.50
2	Milk Reception unit	9.00
3	Milk Pasteurization	53.50
4	Khoa & Sweet Manufacturing Unit	29.00
5	Heat acid Coagulated & Cheese Section (1000 l/h)	35.00
6	Fermented Milk Products Section	32.50
7	Fat Rich Dairy products Section	20.00
8	Ice cream & frozen Dessert Section	35.00
9	Additional processing line	22.50
10	Food testing Facilities	35.00
11	Auxillary Equipments if any	90.25
12	Fire Safety Measures	1.00

3.2 Detailed Cost Norms

Cost Norms for Dairy Processing					
S. No.	**Dairy Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
1	**Basic Milk Processing Equipments**				
		Weighing scale	up to 5000 kg capacity	3.00	1
		Air separator		1.50	1
2	**Milk Reception Doc**				
		Dump tank	1000 & 2000 l /h	1.50	1 each
		Milk Transfer Pump	1000 l /h	1.00	1

		Raw milk storage tanks	1000 & 2000 l capacity	5.00	1 each
		Milk Chiller	1000 l	1.50	1
3	**Milk Pasteurization (Market Milk Section)**				
		Modular Milk Pasteurizer provided with balance tank, clarifier, PHE, FDV)	1000 l /h	25.00	1
		Homogenizer	250 kg/h	8.50	1
		Cream separator	500 l/h	7.50	1
		Liquid Milk Packaging Machines		12.50	1
4	**Khoa & Sweet Manaufactruring Unit**				
		Continuous khoa making kettles	100 kg/h	8.00	4
		Conical process vat	50 kg/h	6.00	2
		Scrapped Heat Exchanger	100 kg/h	10.00	1
		Barfi &Peda Ball making machine/mould		5.00	2
5	**Heat acid Coagulated & Cheese Section (1000 l/h)**				
		Mixing tanks with stirrer (Double jacketed)	1000 l	8.50	1
		Tubular Heat Exchanger (500L/h)		5.00	1
		Incubation cabinet	500 l/h	5.00	1
		Cup filling machine		5.00	
		Chilling Unit		9.00	1
		Processed Cheese cooker			1
		Cheese Hoops	5 kg/batch	2.50	10
6	**Fermented Milk Products Section (500L/h)**				
		Mixing tanks with stirrer (Double jacketed)	1000 l capacity	2.50	1
		Tubular Heat Exchanger (500l/h)	500 l/h	10.00	1
		Incubation cabinet	500 kg/batch	7.50	1
		Cup filling machine		7.50	1
		Chilling Unit	1000 kg/h	5.00	1
7	**Fat rich Dairy Products Section**				
		Butter churner	100 kg/h	8.00	1

		Ghee kettle Double jacketed operated with steam	200 kg/h	4.50	1
		Butter packaging machine		7.50	1
8	**Ice cream & frozen Dessert Section**				
		Semi-continuous Ice cream manufacturing unit	250 kg/h	20.00	1
		Hardening Room/room	1000 kg/batch	5.00	1
		Batch pasteurizer for Ice cream	100 kg/h	5.00	1
		Kulfi making unit	200 kg/h	5.00	1
9	**Equipments for additional processing line**				
		Planetary mixer (Shikhand, Rasagolla,		0.50	
		Ghee packaging line			
		Ice cream cup filling machine			
		Ripening room			
10.	**Food Testing Facilities**				
		Quality control lab equipments including automatic milk analyser, gerber centrifuge, water bath , hot air oven, muffle furnace, refractometer, spectrophotometer, bio-safety cabinet, autoclave, colony counter, incubator, refrigerators, milk adulteration		35.00	
11	**Auxillary Equipments if any**				
		Working tables (SS)		2.50	
		Weighing balance		1.50	
		Boiler / gas cylinder		15.00	
		Storage racks		1.00	
		Power generator		15.00	
		Refrigerator		0.75	

		cold room facility		10.00	
		Deep Freezers		4.00	
		Water treatment/Effluent treatment		12.50	
		Machines required for waste utilization		2.50	
		Accessories including metal detector,		10.00	
		Air curtains		8.00	
12	**Fire Safety Measures**				
		Fire extinguishers			
		Fire hydrant		0.50	

4. Fish processing: Cost norms received from ICAR – CIFT, Cochin

4.1 Abstract Table

S.No.	Fish Processing Lines	Cost (in Lakhs)
1	Pre-processing Line	24.40
2	Processing for chilled and frozen products	69.00
3	Fish Mince based products	50.60
4	RTE fish products in cans/pouches	47.40
5	Extruded fish based Products Section	35.50
6	Solar Dried Fish	6.2350
7	Auxillary line for production of feed from fish processing waste	27.00
8	Accessories	25.00
9	Food testing Facilities	25.00
10	Fire Safety Measures	0.50

4.2 Detailed Cost Norms

Cost Norms for Fish Processing					
S.No.	**Paddy Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
1	**Pre Processing**				
		Pre-processing tables	8'x5' (SS 304)	2.00	4

		Flake Ice machine	100-200kg / h	8.00	2
		Refrigerator	220 L	0.20	1
		Cold store unit (Freezer cum chiller unit)	2 Ton	12.00	1
		De-Scaling / Deskinning machine		2.00	1
		Weighing balances (platform type)		0.20	1
2	**Processing for chilled and frozen products**				
		Air blast freezer	200-500kg/cycle	22.00	1
		Walk –in-Chiller	1.2 tons	11.00	1
		Flake Ice machine	3tonnes/24 h	20.00	1
		Cold store	50 tonnes	15.00	1
		Sealing Machines		0.50	5
		Processing Tables	8'x5' (SS 304)	0.50	2
3	**Fish Mince based products**				
		Hand mincer	3kg/h	0.10	1
		Table top batter& breading machine	50-60kg/h	7.00	1
		Mixer/grinder		0.50	1
		Pin bone remover		4.00	1
		Meat bone separator		12.00	1
		Meat mincer		1.50	1
		Forming machine		6.00	1
		Tray sealing machine		8.00	1
		Vacuum Sealing machine		3.00	1
		Form(Liquid) Fill Sealing machine		6.00	1
		Strapping machine		0.50	1
		Band Saw		2.00	1
4	**RTE fish products in cans/pouches**				
		Horizontal over pressure retort	600 pouch/batch	24.00	1
		Air compressor		1.00	1
		Water tank		0.75	1

		High pressure water pump		1.00	1
		Air Surge tank		1.00	1
		Boiler		6.00	1
		Can seamer		3.00	1
		L.P.G. commercial stove (SS)		1.00	3
		Air exhaust line (steam injection)		0.30	1
		Impulse Pouch Sealing Machine	12” length seal width 6mm	1.50	4
		Though flow pouch drying unit	(40-50^{o}C)	0.15	1
		S.S. dressing table, packing table etc		3.00	
		Steam jacketed kettles		2.00	
		Vegetable cutting machine		1.00	1
		Mixer/grinder – heavy duty		1.00	2
		Treadle embossing system		0.70	1
5	**Extruded fish based products**				
		Ingredients Mixer/Mixing Machine		3.00	1
		Twin Screw Extruder	100 kg/h	20.00	1
		Coating Machine		2.00	1
		Infra Red Moisture Analyser		1.50	1
		Automatic Flushing & Sealing machine		6.00	1
		Storage racks		2.50	5
		Processing Tables	8'x5' (SS 304)	0.50	2
6	**Solar dried fish**				
		Solar dryer with LPG back up (including Drying chamber, SS trolleys, SS trays,	50-60 kg/batch	4.20	1

		Solar hot water system. LPG back up etc. with all control and PLC System)			
		SS 304 Pre-processing table		0.294	
		SS 304 Dry fish sorting and packing table		0.263	1 No.
		SS 304 Trolley for fish handling		0.210	1 No
		Dry fish Storage racks		0.300	1 No.
		Platform weighing balance		0.126	2 Nos.
		Electronic table balance		0.189	1 No.
		Hand sealing machine		0.126	1 No.
		Band sealing machine		0.147	2 Nos.
		Insulated fish tubs		0.100	1 No.
		Fish salting tanks		0.150	2 Nos.
		Plastic crates for fish storing, washing, and grading		0.050	2 Nos.
		Stainless steel (knives, knife stand, cutters etc.)		0.025	5 Nos.
		Chopping board		0.030	1 set
		Waste disposal drums		0.025	2 Nos. 3 Nos

7	Auxillary line for production of feed from fish processing waste				
		Shedder	100 kg/ h	6.00	1
		Pulverizer	100 kg/ h	3.00	1
		Blender	250 kg/ h	3.00	1
		Steamer	250 kg/ h	6.00	1
		Pelletizer & Dryer	250 kg/ h	8.00	1
		Bag sealer		0.60	2
		Weighing balance (platform type)		0.40	2
8	**Accessories**				
		Cutting Knives	SS	0.05	10
		Industrial Water purifier		2.00	1
		Weighing balance (small)		0.10	4
		Storage racks		1.00	5
		Power generator		5.00	1
		Insulated boxes		1.00	10
		Fish handling trays		0.50	20
		Solar-hybrid drier		3.00	1
		Water treatment/Effluent treatment		3.00	1
		Gun thermometer		0.05	3
		Induction stove		0.05	1
		Accessories, Spares, AMC Charges		5.00	
		Pest Repellents		0.25	5
		Other Miscellaneous items		4.00	
9	**Fire Safety Measures**				
		Fire extinguishers		0.50	
		Fire hydrant			
10	**Food testing facility**				
		Estimation of protein, fat and other proximate analysis		25.00	

5. Indicative cost norms for Fat and Oil Seeds Processing

5.1 Oil seeds processing: Cost norms received from IIFPT, Thanjavur

5.1.1 Abstract Table

S.No.	Oilseed Processing Lines	Cost (in Lakhs)
1	Seed Pre-processing Unit	271.20
2	Coconut Process plant	65.00
3	Peanut butter process line	9.00
4	Soy process plant	30.00
5	Packaging	11.20
6	Margarine /Shortening processing	23.00
7	Oil Powder Processing	21.00
8	Food testing Facilities	31.75
9	Accessories	22.00

5.1.2 Detailed Cost Norms

Cost Norms for Oilseed Processing					
S.No.	**Oilseed Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
1	**Seed Pre-processing Unit**				
	Sunflower Seeds Oil, Peanut Oil, Sesame Oil, Castor Oil, Canola Oil, Cottonseed Oil, Corn Oil, Soybean Oil (100l/Day)	Seed cleaner		10.00	1
		Stone remover		4.00	1
		Decorticator and Roaster	350 kg/h	0.60	1
		Crusher		2.00	1
		Shaker screen with blower		1.00	
		Vibrating sifter	150-200 kg/h	1.00	1
		Flaker		10.00	1
		Seed cooker/cooking machine		4.00	1
		Bean extrusion machine		2.00	1
		Oil Extraction plant		34.60	
		Small scale veg oil solvent extraction unit – rotary extractor, Evaporator, Desolventizer		50.00	
		Screw oil expeller - expellers complete with long heating kettle, other accessories and electrical	1.2 tons oil /day	25.00	2

		Cold press unit		2.00	
		Table Ghani		7.00	
		Super baby oil expeller bolt crushing		5.00	
		Oil Filter Press		89.00	
		Filter press with plunger pump, filter cloth etc		4.00	1
		Oil Refinery plant	100 l/h	20.00	1
2	**Coconut process plant**				
		Copra oil pressing line	100 l/h	30.00	
		Virgin Coconut Oil Pressing Process	100 l/h	25.00	
		Desiccated Coconut Powder	100 kg/h	10.00	
3	**Peanut butter Processing**				
	Peanut butter Process Line		100 kg/h	9.00	
4	**Soy process plant**				
	Flavoured soybean milk, tofu, curd		100 kg/h	30.00	
5	**Packaging**				
		Tin packing machines of 15 lt		5.00	1
		Volumetric filling and sealing machine		6.00	1
		Can Sealing machine, Box stamping machine		0.20	1
6	**Margarine /Shortening processing**				
		Crystallizer/Mobiliser	100 kg/h	2.00	1
		Fractionator/Separator (to separate saturated fats from refined oil; separate soft and hard fat)	100 kg/h	3.00	2
		Hydrogenator	500 l	5.00	1
		Interesterification unit with all accessories	100 kg/h	5.00	1
		Packaging machine	100 kg/h	5.00	1
		Storage container		3.00	1

7	Oil powder processing				
		Homogeniser (for blending & emulsions)	100 l/h	2.00	1
		Spray dryer	100 l/h	10.00	1
		Storage container for dried powders	500 kg	3.00	1
		Conveyor	100 kg/h	3.00	2
		Packaging machine	100 kg/h	3.00	1
8	**Analytical equipment**				
		Soxhlet apparatus, Moisture meter, Hot air oven, Colour, sp gravity, pH, turbidity, viscosity analyser		10.00	
		Axillary		0	
		Oil Storage Tank	200 l	5.00	2
		Mini Boiler with super heater	200 kg	4.00	
		DG Set	150 KVA	10.00	
		Electronics Weighing scale	100 kg	0.55	1
		Electronics Weighing scale	3 kg	0.20	2
		Electrical Accessories: Electric Meter 15 hp (2 Nos.) Starter, Switch & others		2.00	
		Accessories		**2.00**	
		Machinery for waste utilization (Chikki, cookies processing, animal feed processing)		**20.00**	

6. Indicative cost norms for Meat and Poultry Processing

6.1 Meat Processing: Cost norm received from NRC on Meat, Hyderabad

6.1.1 Abstract table

S.No.	Meat Processing Lines	Cost (in Lakhs)
1	Primary processing of sheep/goat for production of mutton	57.00
2	Secondary processing of meat into value added products	107.00
3	Effluent treatment plant and solid waste disposal	50.00
4	Food Testing facilities	61.00
5	Accessories	5.00

6.1.2 Detailed Cost Norms

Cost Norms for Meat Processing					
S.No.	**Millet Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary processing					
1.	**Primary processing of sheep/goat for production of mutton**				
		Restrainer	200 Animals/day	2.50	1
		Electric stunner		5.00	1
		Bleeding platform		1.00	1
		Overhead rail		10.00	1
		Carcass washing facility		2.00	1
		Electric stimulator		5.00	1
		Chiller		10.00	1
		Freezer		10.00	1
		Trolleys		1.00	2
		Wheeled carcass stand		0.50	1
		Miscellaneous equipment		10.00	
Secondary processing					
2.	**Meat (mutton) products processing plant for production of value added meat (mutton) products**				
	Secondary processing of mutton into value added products	Slicer		3.50	1
		Meat mincer		5.00	1
		Bowl chopper		10.00	1
		Planetary Mixer		2.00	1
		Sausage filler		5.00	1
		Cooking vat		3.00	1
		Brine injector		10.00	1
		Smoking unit		8.50	1
		Vacuum packaging unit		5.00	1
		Tumbler		4.00	1
		Massager		3.00	1
		Cold storage		20.00	1
		Blast freezer		18.00	1
		Miscellaneous equipment		10.00	
3.	**Effluent treatment plant and solid waste disposal**				
				50.00	

4.	Food Testing facilities				
		Automated nitrogen analyser		13.00	1
		Automated fat analyser		8.00	1
		Rancido meter		16.00	1
		Water purification unit (Millipore)		7.00	1
		Incubator		3.00	1
		Centrifuge		10.00	1
		Muffle furnace		4.00	1
5.	**Accessories**				
				5.00	

7. Indicative cost norms for Spices and Plantation Crop Processing

7.1 Spice processing: Cost norms received from ICAR – IISR, Calicut

7.1.1 Abstract table

S.No.	Spice Processing Lines	Cost (in Lakhs)
1	Primary processing of black pepper	20.50
2	Primary Processing of turmeric	12.00
3	Secondary processing of turmeric / ginger/Chilli/ for spice powder/ curry powder	88.75
4	Processing of Cardamom	14.00
	Secondary processing to jams/squash/candy/paste/pickle	26.75
5	Secondary processing to spice based cookies/cakes/others	20.0
6	Pilot plant for Essential oil Extraction Unit	20.0
7	Auxillary Equipments	36.25
8	Accessories	10.00
9	Fire extinguishers	0.5
10	Water treatment/effluent treatment	6.00

7.1.2 Detailed Cost Norms

Cost Norms for Spice Processing					
S. No.	**Spice Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**

1	**Primary processing of black pepper including cleaning and grading**				
		Black pepper thesher (SS 304)	500 kg/h	3.00	1
		Cleaner cum grader provided with bucket elevator, aspirator, destoner, multideck grading	250 kg/h	6.00	1
		Spiral separator with bucket elevator	250 kg/h	3.00	1
		Metal detector	250 kg/h	4.00	1
		Automatic weighing and sealing machine for retail packaging	50-200 g weighing range	4.50	1
2	**Primary processing of turmeric**				
		Turmeric boiler	100 kg/batch	1.00	2
		Turmeric boiler (commercial model)	1000 kg/batch	3.50	1
		Turmeric polisher	500 kg/h	2.50	1
		Solar Dryers with multi rack tray system	1000 kg/batch	5.00	1
3	**Secondary processing of turmeric / ginger/Chilli/ for spice powder/ curry powder**				
		Washer cum peeler	300 kg/h	4.50	1
		Continuous slicer	100 kg/h	5.25	1
		Tray dryer (batch Type)	500 kg/batch	20.00	2
		Roaster (rotary type)	100 kg/batch	3.00	1
		Micro pulveriser	100 kg/h	10.00	2
		Vibro sifter	100 kg/h	2.00	1
		Blender	50 kg/batch	2.00	1
		Continuous form fill sealing machine	40 packs/min	10.00	2

		Solar Dryers with multi rack tray system	1000 kg/batch	5.00	1
		Cryogenic Grinding Facility		25.00	
		Continuous Sealing & Vacuum Machine		2.00	
4	**Processing of Cardamom**				
		Mechanical washer	100 kg/h	3.00	
		Cardamom drying (Bin type with electronic control panel)	200 kg/batch	5.00	1
		Polisher	100 kg/h	3.50	1
		Cardamom grader	100 kg/h	2.00	1
		Sealing unit	8 mm wide sealing	0.50	1
5	**Secondary processing to jams/squash/candy/paste/pickle**				
		Fruit mill	50 kg/h	2.50	1
		Colloidal mill	50 kg/h	2.50	1
		Pulper	100 kg/h	2.00	1
		Juice expeller (singer screw press)	100 kg/h	2.25	1
		Cooking kettle (with stirrer and Jacketed)	150 l capacity/batch	3.25	1
		Sautiner (with Stirrer and bottom Jacketed	100 l capacity/batch	3.25	1
		Thermic Fluid Heating System (for 2 system)	with 25 KW heater coil	4.00	1
		Semi solid dozer	dozing range 200-500 gm	4.00	1
		Pickle blender	50 kg/batch	3.00	1
6	**Secondary processing to spice based cookies/cakes/others**				
		Planetary mixer		4.00	1
		Dough kneader		2	1
		Cookies dropper		5	1
		Dough sheeter		3	1
		Bread slicer		1	1
		Rotary oven		5	1

7	Pilot plant for Essential oil Extraction Unit				
		Essential Oil extraction system	500 l/ batch	20.00	1
8	**Equipments in general**				
		Moisture metre		2.50	1
		Electronic balance		1.50	1
		Work tables (SS)		1.00	2
		Side table (SS)		2.00	4
		Weighing balance	100 kg	1.00	2
		Weighing balance	10 kg	0.50	2
		Continuous band sealer	8 mm wide sealing/ vertical/horizontal sealing	0.75	1
		Gas cylinders		2.50	2
		Storage racks		2.00	5
		Power generator		10.00	1
		Refrigerator		0.50	1
		cold room facility		5.00	1
		Compressor		4.00	1
		Hot air oven		3.00	1
9	**Accessories**				
		Gun thermometer			1
		Refractometer			1
		Induction stove			1
		Baking moulds, trays, cutter, rolling pins, colander, ladles,measuring spoons,		10.0	
		Trolleys, Collecting vessels (SS)			
		Misc. items			
10	**Fire Safety Measures**				
		Fire extinguishers			
		Fire hydrant		1.0	

11	Water treatment/effluent treatment				
		Water Purification system		1.00	
		Effluent treatment		3.00	
		Machines required for waste utilization		2.00	

7.2 Coconut processing: Cost norms received from ICAR – CPCRI, Kasargod

7.2.1 Abstract table

S.No.	Coconut Processing Lines	Cost (in Lakhs)
1	Primary processing of Coconuts	20.00
2	Virgin coconut oil (VCO) Processing	16.00
3	Coconut chips processing	4.00
4	Packaged coconut milk unit	52.00
5	Coconut milk based ice cream processing	10.00
6	Desiccated coconut powder processing unit	19.00
7	Kalpa krunch (Coconut milk residue and VCO cook based extrudate) Unit	57.00
8	Bakery products from coconut milk residue Processing	22.00
9	Coconut oil Processing Line	11.00
10	Tender coconut water bottling	36.00
11	Auxillary Equipments	32.00
12	Fire Safety measures	1.00

7.2.2 Detailed Cost Norms

Cost Norms for Coconut Processing					
S.No.	**Coconut Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary processing					
1	**Primary processing of Coconuts**				
		Dehusker	350 nuts/h	7.50	3
		Desheller	250 nuts/h	3.00	3
		Testa remover	250 nuts/h	3.00	3
		Tray Drier	20 kg/batch	4.00	2
		Storage (SS 304) containers/bins	500kg/bin	2.50	8

2	Virgin coconut oil (VCO) (500 nuts/day)				
		Pulveriser	250 nuts/h	1.50	1
		Milk expeller	300 nuts/h	3.50	1
		VCO cooker	100 l	3.50	1
		Fermentation tank	100 l	1.00	1
		Vacuum dryer	20 kg/batch	2.50	1
		Packaging machine	250 nuts/h	3.00	1
		Miscellaneous items (Weighing balance, SS trolley with container, electrical heater etc.)		1.00	
3	**Coconut chips (250 nuts/day)**				
		Multicommodity slicer	60 nuts/h	1.00	1
		Blancher	60 nuts/h	1.00	1
		Solar drier	60 nuts/h	1.00	1
		Miscellaneous items such as gas stove, SS containers with stirrers, band sealers, manual plastic filters, muslin cloth etc.		1.00	
4	**Packaged coconut milk (500 nuts/day)**				
		Pasteurizer	100 l / batch	4.00	1
		Homogenizer	100 l/batch	4.00	1
		Batch sterilizer / autoclave*	100 l / day	4.00	1
		Retort processing unit*	100 l / batch	40.00	1
5	**Coconut milk based ice cream (500 nuts/day)**				
		Mixing vat	50 l/batch	0.50	1
		Ageing vat	50 l/batch	1.00	1
		Continuous freezer	50 l/batch	4.50	1
		Hardening system	300 l	4.00	1

6	Desiccated coconut powder (2000 coconuts/day)				
		Vertical flow dryer	250 nuts/h	8.00	1
		Vibrating filter	250 nuts/h	1.00	1
		Packaging system (FFS)	250 nuts/h	5.00	1
		Steam boiler		3.00	1
		Miscellaneous items		2.00	
7	**Kalpakrunch (Coconut milk residue and VCO cook based extrudate) (10 kg/h)**				
		Twin screw extruder		36.00	1
		Ingredient mixer		3.00	1
		Pulverizer		4.00	1
		Sieve shaker		1.00	1
		Tray dryer		2.00	1
		Cold extruder		5.00	1
		Flavor coater with oil sprayer attachment		2.00	1
		Band sealed packaging with inert gas		2.00	1
		Miscellaneous		2.00	
8	**Bakery products from coconut milk residue and VCO cooker (100 kg/day)**				
		Planetary / dough mixer		3.00	1
		Dough kneader		2.00	1
		Cookies dropper		5.00	1
		Bakery oven and accessories		4.00	1
		Hot air oven		3.00	1
		Dough sheeter		1.00	1
		Bread slicer		1.00	1
		SS working table		1.00	1
		Miscellaneous items		2.00	

9	Tender coconut water bottling (5000 nuts / day)				
		Mechanical washing system with conveyor	1000 nuts/h	5.00	1
		Automatic boring and sucking system	1000 nuts/h	5.00	1
		Stainless steel filter / clarifier		3.00	1
		Collection tank		2.00	2
		Treatment tank		2.00	2
		Pasteurization unit	300 l/batch	5.00	1
		Filling and sealing unit		5.00	1
		Shink wrapping unit		3.00	1
		Air compressor		3.00	1
		Miscellaneous items		3.00	
10	**Auxillary Equipments if any**				
		Storage racks		1.00	5
		Power generator		10.00	1
		Refrigerator		1.00	1
		cold room facility		5.00	1
		Machines required for waste utilization		5.00	1
		Accessories for quality evaluation		10.00	
		Gun thermometer			1
		Refractometer			1
		Induction stove			1
		pH meter			1
		IR moisture meter			1
10	**Fire Safety Measures**				
		Fire extinguishers		1.00	
		Fire hydrant			

7.3 Sugarcane Processing: Cost norms received from ICAR- IISR, Lucknow

7.3.1 Abstract table

S.No.	Sugarcane Processing Lines	Cost (in Lakhs)
1	Primary processing of Sugarcane	57.00
2	Secondary processing of jaggery	30.00
3	RTS sugarcane juice based beverages	58.00
4	Auxillary Equipments , if any	33.50
5	Food testing facility	25.00
6	Fire Safety measures	0.50
7	Pollution control measures	3.00

7.3.2 Detailed Cost Norms

Cost Norms for Sugarcane Processing					
S.No.	**Sugarcane Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary processing					
1	**Primary Processing of Sugarcane**				
		Crushing unit with accessories	1000 kg/h	10.00	1 set
		Juice filtration unit	1500 l/h	3.00	1 set
		Clarification and boiling unit	250 kg/h	5.00	1 set
		Bagasse Drier	250 kg/h	12.00	1 set
		Cooling and moulding unit		3.00	
		Storage (SS 304) containers/bins	500 kg/bin	1.00	1 set
		Automatic moulding unit	50 kg/h	10.00	4
		Packaging Machine for solid jaggery	50 kg/h	4.00	1 set
		Packaging Machine for Powder jaggery	100 kg/h	4.00	1
		Mingler	50 kg/h	5.00	1
Secondary processing					

2	**Secondary processing of jaggery**				
		blender	51 kg/h	2.00	1
		Pulveriser	100 kg/h	15.00	1
		mixer	100 kg/h	2.00	1
		Packaging machine liquid jaggery	250 l/h	11.00	1
3	**RTS sugarcane juice based beverages**				
		Sugarcane cleaner		2.00	
		Sugarcane set cutter		1.00	
		Sugarcane steaming unit		5.00	
		Sugarcane crusher SS		5.00	
		Sugarcane juice filter		2.00	
		Ultra high temperature Pasteurization unit	5 l/h	15.00	1
		Flavouring Machine			
		Induction unit	250 l/h	5.00	1
		Packaging Machine		11.00	1
		Modified atmosphere cool chamber		12.00	1
4	**Auxillary Equipments, if any**				
		Work tables		1.00	2
		Weighing balance		0.50	2
		Boiler / gas cylinder		2.50	1
		Storage racks		1.00	5
		Power generator		10.00	1
		Refrigerator		0.50	1
		cold room facility		5.00	1
		Solar drier		3.00	1
		Water treatment/Effluent treatment			1
		Machines required for waste utilization			1
		Accessories		**10.00**	

		Gun thermometer			1
		Refractometer			1
		Induction stove			1
		Jaggery moulds, pump, transfer plates, pipes etc.			
		colander, ladles, measuring spoons,			
		Moisture meter			
		pH meter			
5	**Food testing facility**				
		Estimation of protein, fat and other proximate analysis		25.00	
6	**Fire Safety Measures**				
		Fire extinguishers			
		Fire hydrant		1.00	
7	**Pollution control measures**				
		Pollution control devices		3.00	1

8. Indicative cost norms for Minor Forest Produce Processing

8.1 Bamboo shoot processing: Cost norms received from IIFPT, Thanjavur

8.1.1 Abstract table

S.No.	Bamboo shoot Processing Lines	Cost (in Lakhs)
1	Primary processing	11.50
2	Bamboo shoot Powder Processing unit	7.50
3	Bamboo Shoot Pickling unit	3.00
4	Bamboo Shoot Canning unit	8.00
5	Composite Bamboo Shoot Cookies	15.00
6	Auxillary Equipments	41.75
7	Food testing facility	25.00
8	Fire Safety measures	7.00

8.1.2 Detailed Cost Norms

Cost Norms for Integrated Bamboo Shoot Processing					
S.No.	**Bamboo Shoot Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary processing					
1.	**Primary Processing of Bamboo Shoot**				
	Primary processing	Cleaner	40-50 kg/h	1.50	1
		Slicer	40-50 kg/h	2.00	1
		Boiler	100l	5.00	1
		Steamer/ Blancher	150 kg/h	1.00	1
		Tray Drier	40- 50 kg/h	2.00	1
Secondary Processing of Bamboo Shoot					
2.	**Bamboo Shoot Powder**				
		Pin Mill	40- 50 kg/h	1.50	1
		Sieve Shaker	40- 50 kg/h	1.00	1
		Form Fill Seal Machine for Bamboo Shoot powder	40- 50 kg/h	5.00	1
		Pin Mill	40- 50 kg/h	1.50	1
		Sieve Shaker	40- 50 kg/h	1.00	1
3.	**Bamboo Shoot Pickling**				
		Fryer	40- 50 kg/batch	2.00	2
		Storage (SS 304) containers/bins	200 kg/h	1.00	4
4.	**Bamboo Shoot Canning**				
		Can Seamer	200 cans/ h	1.00	2
		Can Reformer	200 cans/ h	2.00	2
		Can Exhaust machine	400 cans/ h	5.00	2
Tertiary Processing of Bamboo Shoot					

5.	Composite Bamboo Shoot Cookies				
		Planetary mixer	10 kg/h	2.00	2
		Cookies dropper	Roller length 500-600 mm	3.00	5
		Dough sheeter	20 kg/ h	5.00	2
		Rotary oven	12 Trays/Oven	5.00	2
6.	**Auxillary Equipments for Bamboo Shoot Unit**				
		Work tables	SS tables	1.00	4
		Weighing balance	1kg to 100kg	0.25	2
		Boiler/gas cylinder	100 l	0.50	4
		Storage racks	SS racks	1.00	4
		Power generator/ controller	100 KVA	12.00	1
		Refrigerator	250 l	0.50	1
		Water treatment/ Effluent treatment	5.00		
		Pouch Sealing machines			
		Bottle Sealing Machine			
		Hand Fork lifter/ trollies			
		Hygiene station/ Air curtains			
		Moisture meter			
		Gun thermometer			
		Refractometer			
		Induction stove			
		Baking mould, trays, cutter, rolling pins,			
		colander, ladles, measuring spoons, sieve and allied items			
		Plumbing, electrification, pipelines, panels and controls, fittings, Installation and commissionin		10.00	

10.	Food testing facility				
		Estimation of protein, fat and other proximate analysis		25.00	
12.	**Fire Safety Measures**				
		Fire extinguishers		5.00	
		Fire hydrant		2.00	

8.2 Mahua processing: Cost norms received from IIFPT, Thanjavur

8.2.1 Abstract table

S.No.	Mahua Processing Lines	Cost (in Lakhs)
1	Primary processing of Mahua	37.50
2	Juice concentrates/RTS/Beverage Processing Unit	43.15
3	Non-alcoholic / low-alcoholic beverages Mahua Wine Processing	43.00
4	Packaging unit	29.00
5	Food testing facility	1.10
6	Auxillary Equipments	26.24
7	Safety measures	14.50

8.2.2 Detailed Cost Norms

Cost Norms for Integrated Mahua Processing					
S. No.	**Mahua Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary processing					
1.	**Primary Processing of Mahua**				
	Dried Flower & Powder flower Non-fermented, fermented flower	Tub bubble washer	100 kg/h	4.00	1
		Vibro screen	2 hp	3.00	1
		Blancher	1 hp	3.00	1
		Spin water dryer (multi deck conveyor dryer with steam used as hot air source)	100 kg output capacity	3.00	1
		Polycarbonate Solar tunnel drier	100 kg/Batch per drier	8.00	1

		(fixed type) 700sq.ft.			
		Air classifier	100 kg/h	4.00	1
		Pulverizer with accessories (SS hammer mill with rotary air lock, cyclone, duct collection bag filter of 2 sets, one for coarse milling and another one for fine milling)	100 kg/h	5.00	1
		Powder collecting bin	0.5	1.50	1
		Ribbon blender	100-150 kg/h	4.00	1
		Storage bin	100 kg/bin	2.00	1
Secondary Processing					
2.	**Juice concentrates/ Squash/ RTS/ Puree/ sauce/ Jam/ Jelly/ Candied & Glazed flowers/ Toffee beverages and Preserves**				
		Automatic dosing hoppers	100 kg/h	4.00	1
		Juice extractor	100 kg/h	4.00	1
		Storage tank with agitator	100 kg/h	1.50	1
		Piston pump	100 l /h	0.40	2
		Plate & frame filter press	100 l/ h	2.50	1
		Storage tank with agitator	100 l	5.00	4
		S.S. feed pump	100 l / h	0.50	2
		Steam jacketed kettle	100 l / h	1.25	1
		Homogenizer	100 l / h	5.00	1
		UHT juice line	100 l / h	9.00	1
		LTLT pasteurizer [optional]	100 l / h	5.00	1
		Cooling tunnel [optional]	600 bottles / h	5.00	1

3.	Non-alcoholic / low-alcoholic beverages Mahua Wine				
		Auto Sorting Systems	100 kg/h	4.00	1
		Destemmer Crusher	100 kg/h	5.00	1
		Elevators		1.50	1
		Pneumatic wine Presses	9HL	4.00	1
		Peristaltic pump	3 phase	1.50	1
		Roto / Ganimede fermenters	100 l	4.00	1
		Self emptying wine fermentation tanks	100 kg / h	4.00	1
		Plate & Frame Filters	20 plate filter with 12 or 20 plates	5.00	1
		Rotary Vacuum Drum Filters	70/90 micron	6.00	1
		Sparkling wine equipment (dosage/ discorging/ levelling/ neck freezing equipment)	3-way valve system	8.00	1
4.	**Packaging unit**				
		Counter pressure bottling line (rinser/ fillers/capper/triblo cs or corkers & capping equipment	900 bottles/h	12.00	1
		Pressure sensitive bottle labeller	1.5 hp	8.00	1
		Weighing, filling and sealing pack unit	100 kg/ batch	8.00	1
		Weighing machine	1-5kg. 100 kg, 1g-1kg	1.00	1
5.	**Analytical instruments**				
		LCD Refractometer (complete set sugar brix meter)	0 to 95% sugar	0.40	1
		Portable alcohol tester	0 to 80% concentration	0.30	1
		Gun thermometer	1-5-550°C, G41Accuracy: ±1.5°C	0.20	1

		Potable water proof pH/TDC meter	0.00 to 14.00 pH, 0.0 to 60.0°C temp.	0.20	
6.	**Auxillary Equipments**				
		Boiler (includes, piping, insulation, cladding, instrumentation, chimney, feed water tank)	100 kg/h	10.00	1
		RO/RC Plant		2.00	1
		Inter connecting process pump with stand pipe/piping / fittings / valves / support structural		0.94	1 lot
		Wash water pipe lines & fittings		0.30	1 lot
		Electrical control panel –		2.00	1
		Electrical Wiring and Fittings		1.50	1 lot
		Accessories: barrels, racks, storage bins, working table, trolleys, trays and containers		5.00	
		Generator		1.50	1
		Air compressor		3.00	2
7.	**Safety Measures**				
		Dust collector		0.50	1
		Metal detector		2.00	1
		Fire extinguisher		5.00	4
		Air curtains and film curtains		2.00	4
		Effluent water treatment		5.00	1

8.3 Malabar Tamarind processing: Cost norms received from IIFPT, Thanjavur

8.3.1 Abstract table

S.No.	Tamarind Processing Lines	Cost (in Lakhs)
1	Primary Processing of *Garcinia cambogia*	5.05
2	Osmotic dehydration Unit	9.00
3	Chutney /Pickle Processing	3.50
4	Ready to serve unit	2.50
5	Auxillary Equipments	64.50
6	Accessories	12.50
6	Fire Safety measures	3.00

8.3.2 Detailed Cost Norms

Cost Norms for Integrated Tamarind Processing					
S.No.	**Tamarind Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary Processing					
1.	**Primary Processing of *Garcinia Cambogia***				
		Washing tank (SS 304)	100-120 kg/Batch	2.00	1
		Work tables (SS 304)	9' × 4'	1.50	4
		Pulp removing (Manual operation)	100-120 kg/Batch	0.05	
		Drying	100-120 kg/Batch	1.50	1
Secondary Processing					
2.	**Osmotic dehydration**				
		Blanching vessel	50 kg/Batch	2.00	1
		Pressure vessel for osmotic dehydration	50 kg/Batch	3.00	1
		cabinet Drier	12 trays	4.00	1
		Blanching vessel	50 kg/Batch	2.00	1
3.	**Chutney /Pickle**				
		Mincer/Pulper	50 kg/Batch	1.50	1
		Steam kettle (SS 304)	50 kg/Batch	2.00	1

4.	Ready to serve				
		Ready to serve	100-120 kg/Batch	1.00	
		Ready to serve	500 bottle/Batch	1.50	
5.	**Auxillary Equipments if any**				
		Packaging Machine	200 kg/h	10.00	1
		Sealing machines	Horizontal wrapping machine	15.00	3
		Storage (SS 304) containers/bins	200kg/bin	1.00	4
		Weighing balance	1kg to 100kg	0.50	1
		Boiler	100l	2.50	1
		Storage racks	SS racks	1.00	4
		Power generator	25 KVA	10.00	1
		Refrigerator	250 l	0.50	1
		Solar drier	poly carbonate 500sqft	3.00	1
		Water treatment/ Effluent treatment	RO/Ozone system	10.00	1
		Hand Fork lifter/ trollies	100kg-1000kg	1.00	5
		Hygiene station/ Air curtains		10.00	
6.	**Accessories**				
		Moisture meter		2.50	1
		Gun thermometer		1.50	1
		Refractometer		0.50	1
		Induction stove, modular kitchen with gas lines		4.00	1
		Fire extinguishers and fire hydrant		3.00	2
		Plumbing, electrification, pipelines, panels and controls, fittings, Installation and commissioning		4.00	

8.4 Honey processing: Cost norms received from IIFPT, Thanjavur

8.4.1 Abstract table

S.No.	Honey Processing Lines	Cost (in Lakhs)
1	Bee Keeping Apiary Unit	45.36
2	Osmotic dehydration Unit	90.19
3	Honey powder processing unit	25.00

8.4.2 Detailed Cost Norms

Cost Norms for Integrated Honey Processing					
S.No.	**Honey Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary Processing					
1.	**Bee Keeping Apiary Unit for 1000 Bee Colonies**				
		Beehive.		20.00	1000
		Nucleus Box		1.00	100
		Hive Stand		0.60	300
		Ant Well		0.50	1000
		Queen excluder Sheet		0.50	500
		Feeder Frame		0.40	400
		Hive Tool		0.15	10
		Swarm Net		0.06	30
		Bee veil		0.06	30
		Smoker		0.09	30
		Honey Extractor S.S		0.30	2
		Bee Colonies		20.00	1000
		Wire embedder		0.60	10
		Misc. Equipment Weigh Balance etc.		0.20	LS
		Honey/Sugar Storage Drums		0.40	20
		Laboratory Equipments etc.		0.50	LS

2.	Packed Honey in bottles of different sizes				
		Receiving SS Tank	750 l	8.74	2
		Primary Filter Shell	25l	0.56	1
		Gear Pump With Motor Capacity: 130 LPM Diff. Head: Max. 10 kg/cm Motor: 5.0 hp (3.7 kw)	30l/min	0.95	1
		Bag Filter (Dual Type)		1.57	1
		Moisture Reduction Tank		9.65	1
		Jacketed Storage Tank		6.16	2
		Modular Frame Material of construction (MOC): MS		0.95	1
		Hot Water Boiler (Wood Fired) MOC: SS MS		1.57	1
		Pipes & Fittings:		1.57	1
		Semi-Automatic Single head Machine To fill viscous products		3.47	1
		Misc. equipments Laboratory Equipments etc.		5.00	
		packaging material		20.00	
		Plumbing, electrification, pipelines, panels and controls, fittings, Installation and commissioning		30.00	
3.	**Honey powder processing (5L/h)**				
				25.00	1

8.5 Mushroom processing: Cost norms received from IIFPT, Thanjavur

8.5.1 Abstract table

S.No.	Mushroom Processing Lines	Cost (in Lakhs)
1	Minimal processed mushroom Unit	31.50
2	Dried mushroom and mushroom powder (Paddy Straw Mushrooms) Processing	29.30
3	Frozen mushroom	15.00
4	Canned mushroom, pickled mushroom and RTE mushroom curry Processing	32.50
5	Nuggets, chips and soup powder Processing	23.00
6	Sauce, Ketchup Processing Section	24.10
7	Auxillary Equipments	49.40
8	Accessories	14.50
9	Safety Measures	20.00

8.5.2 Detailed Cost Norms

Cost Norms for Integrated Mushroom Processing					
S. No.	**Mushroom Processing Lines**	**Machineries required for processing**	**Capacity**	**Cost (in Lakhs)**	**Quantity**
Primary Processing					
1.	**Minimal processed mushroom (Milky mushrooms), marinated mushrooms (Porcini Mushrooms) and cured mushroom (Oyster Mushrooms)**				
		Steving and sorting systems	100 kg/h	1.50	1
		Rotary rod washer with spray	100 kg/h	2.50	1
		Vibro screen	2 hp	1.00	1
		Spin water dryer (multi deck conveyor dryer with steam used as hot air source)	100 kg output capacity	3.00	1
		Hydraulic forklift truck		2.50	1
		Mushroom cutting machine		1.00	1
		Pasteurizer		8.00	1
		Tray packing machine (with MAP unit)		12.00	1

2.	**Dried mushroom and mushroom powder (Paddy Straw Mushrooms)**				
		Blanching unit consist of 3 SS tanks, 3 trays	SS Tanks (380 x 1140mm), SS bottom trays (1015mm x 350mm x 180mm), SS Top trays (30mm x 12mm) 1hp	3.00	2
		Cooling chamber (0 / -20DC 6X5m)	2T, area 1500 cu Ft	6.00	2
		SS tilting type steam jacketed double wall kettle	100 Kg	1.80	2
		Fixed type tunnel type drying chamber 1200sq.ft.	100 Kg/batch	8.00	1
		Pulverizer with accessories (SS hammer mill with rotary air lock, cyclone, duct collection bag filter of 2 sets, one for coarse milling and another one for fine milling)	100 Kg/h	5.00	1
		Air classifier	100 Kg/h	2.00	1
		Screener and sifter		2.00	1
		Powder collecting bin	0.5 hp	1.50	1
3.	**Frozen mushroom (Portobello / White button)**				
		Ice making machine	100 Kg/h	3.00	1
		Tunnel Freezer -35 to - 40DC	100 Kg/batch	10.00	1
		Frozen mushroom thawing chamber 1 to 15DC	100 Kg/batch	2.00	1

Secondary processing					
4.	**Canned mushroom, pickled mushroom and RTE mushroom curry (Shiitake Mushrooms)**				
		Pre- cooking unit	1 ton capacity	2.00	1
		Retorts with grates, dial thermometer, pressure gauge &safety valve	300 cans	6.00	2
		Can washing tanks cum drying unit	100 kg	2.00	1
		Brine tank and syrup tank	100 kg	2.00	2
		Steel belt conveyer cum brine/Oil filling unit		2.00	1
		Conveyor type exhaust chamber	16ft/18 ft.	4.00	1
		Cooling tanks	100 kg	5.00	2
		Can reformer for reforming flattened can body (with flanging dies with rings and rubber mandral with shaft & cone)	600/800 cans/h	1.00	1
		Can flanger and can rectifier		2.00	1
		Semi automatic double seamer with clincher (with seaming chunks & seaming rollers)	600 cans/h	2.00	1
		Lid embossing machine	2 row 6 digits die	0.50	1
		High pressure pouch sealer		4.00	1
5.	**Nuggets, chips and soup powder (Shimeji Mushrooms)**				
		Ribbon blender	100-150 kg/h	4.00	1
		Storage bin	100 kg/bin	2.00	1
		Extruder unit with necessary dies, cutter and accessories	80 kg/h	15.00	1
		Thee-tier tunnel dryer	100 kg/Batch	2.00	1

6.	**Sauce, Ketchup (Enoki Mushrooms) (Porcini Mushrooms) and Cream soups (Shimeji Mushrooms)**				
		Mushroom mincer	100 kg/h	2.00	1
		Plate and Frame Filters	20 plate filter with 12 or 20 plates	3.00	1
		Rotary vacuum drum	70/90 micron	5.00	1
		Steam jacketed kettle	100 kg/h	0.90	1
		Storage tank with agitator	100 kg/h	1.20	1
		UHT line	100 l / h	9.00	1
		Cooling tunnel	600 Bottles / h	3.00	1
7.	**Auxillary Equipments**				
		Vacuum packing unit semi-automatic, single chamber		6.00	1
		Semi automatic can filling, sealing and box strapping unit		1.50	1
		Counter pressure bottling line (rinser/fillers/ capper/triblocs or corkers & capping equipment	900 bottles/h	10.00	1
		Pressure sensitive bottle labeller	1.5 hp	3.00	1
		Form fill cum sealing pack unit	100 kg/ batch	3.00	1
		Weighing machine	1-5 kg, 100 kg, 1 g-1 kg	5.00	3
		LCD Refractometer (complete set sugar brix meter)	0 to 95% sugar	1.00	1
		Seam checking gauge, can tester, vacuum tester		0.50	1
		Portable salinometer	0 to 80% concentration	0.20	1
		Gun thermometer	1-5-550°C, G41 Accuracy: ±1.5°C	0.20	1

		Potable water proof pH/TDC meter	0.00 to 14.00 pH, 0.0 to 60.0°C temp.	0.50	1
		Hygrometer for dry mushrooms		0.50	1
		Can Tester pneumatically operated with two pressure cylinders and water tanks		3.00	2
		Boiler with necessary fittings and accessories		5.00	1
		RO/RC Plant, bore well water storage tanks and raw water distribution system		2.00	3
		Electrical generator		3.00	1
		Air compressor		1.00	1
		Pelletizer		4.00	1
8.	**Auxillary Equipments**				
		Carboy barrels 1.200 x 1.000 mm		2.00	50
		Wooden pallets, prefabricated metal boards		0.50	1 LOT
		Paper cardboard, corrugated cardboard, stackable wooden boxes)		1.00	1 LOT
		Can containers A1, A2 1/2 size		2.00	
		Cardboard thee-layer boxes for frozen mushroom		2.00	50
		Inter connecting process pump with stand pipe lines, fittings, valves and support structural		2.00	1 lot
		Electrical control panel, electrical wiring and fittings		1.50	1 lot
		Accessories for material handling		3.00	1 lot

		systems (SS work tables, retort crates, baskets, barrels, racks, storage bins, working table, trolleys, trays and containers)			
		Pollution control equipments discharge of water treatment tanks		0.50	1 lot
9.	**Safety Measures**				
		Dust collector		1.00	1
		Metal detector		5.00	1
		Fire extinguisher		2.00	4
		Air curtains and film curtains		2.00	4

IV. Conclusion

This handbook can be used as a guide by any micro entrepreneur or startups in food processing sector to establish a plant based on their requirement and product range. All the machineries suggested are with a capacity of 1-3 tons per day and also for varied products from each sub sector of food processing like grain processing (rice, wheat, corn, pulses, millets etc.), milk processing, meat and poultry processing, fruits and vegetable processing, fat and oil seeds processing, spices and plantation crops, minor forest produce processing etc. Apart from that to have a sustainable unit which can function throughout the year, model DPRs are also incorporated in this hand book with one main processing line along with 2-3 allied lines. The users can make use of any such combinations based on their requirement which will facilitate to have successful business throughout the year.