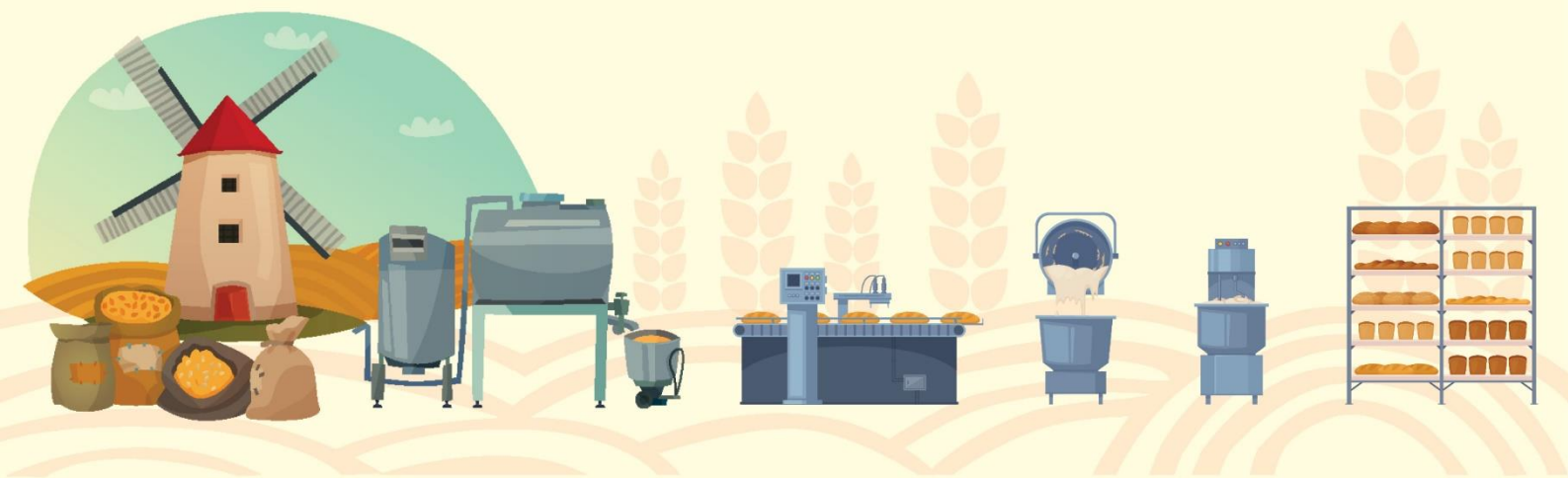




# **Guidelines and Cost Norms for Establishment of Common Incubation Centers to be Setup under PMFME Scheme**



## 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. This has been prepared with tremendous support and guidance from the Ministry of Food Processing Industries, 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. Through 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) through 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 related 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 three 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           |
| <b>Total</b> |  | <b>275.00</b>   |

\*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                        |
|       | <b>Total</b>  | <b>25.00</b>                |

#### 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 through 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<br>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                              | <b>If Yes, address the gap</b>  | 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 of decrease 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 |
| <b>1</b>   | <b>Milk Pasteurization ( Market Milk Section)</b> |  |          |                |          |
|  |   | 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        |
|  |   | <b>Sub-Total</b>   |          | <b>53.50</b>   |          |
| <b>2</b>   | <b>Fat rich Dairy Products Section</b>            |  |          |                |          |
|  |   | 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          |          |
|  |   | <b>Sub-Total</b>   |          | <b>41.75</b>   |          |



| 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 |
|   |  |  | <b>Sub-Total</b> | <b>32.00</b> |   |
| 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          |   |
|   |                                | <b>Sub-Total</b>  |                   | <b>65.00</b>  |   |
| 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 |
|   |                                | <b>Sub-Total</b>  |                   | <b>48.00</b>  |   |
| <b>6</b>                                    | <b>Food Testing Facilities</b> |   |                   | 25.00         |   |
| <b>7</b>                                    | <b>Accessories</b>             | Stove, cutter, spoons, utensils, storage racks, work tables |                   | 9.00          |   |
| <b>Grand Total</b>                          |                                |   |                   | <b>274.30</b> |   |

## 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<br>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                    |
|       | <b>Total</b>  | <b>274.30</b>           |

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

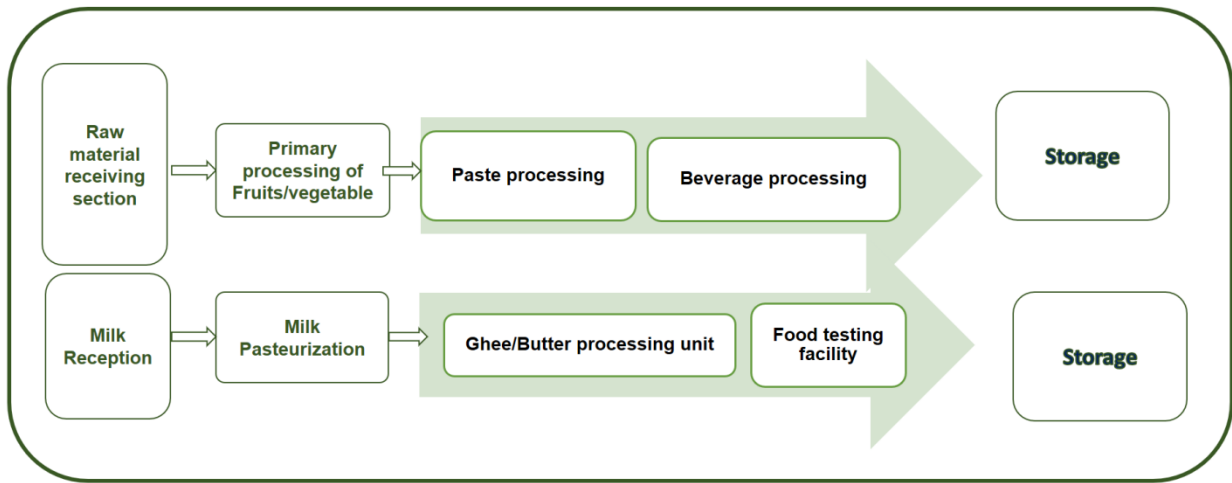
**33. Feasibility report for commercially running the Common incubation facility**

**(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, state 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<br><b>(which processing line)</b>                         |  |
| 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<br>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 through 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     |
| <b>1</b>                                      | <b>Primary Processing Line for Small Millets (Foxtail, Barnyard, Proso, Little, Kodo and Browntop Millets)</b> |  |                  |                |              |
|   | 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            |
|   |  | <b>Sub-total</b>                       |                  |                | <b>32.00</b> |
| <b>2</b>                                      | <b>Primary Processing Line for Major Millets (Sorghum, Pearl and Finger Millets)</b>                           |  |                  |                |              |
|   | 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 |
|          |  | <b>Sub-Total</b>                         |                  | <b>29.00</b> |   |
| <b>3</b> | <b>Secondary Processing: Milling of grains into flour</b>  |  |                  |              |   |
|          | 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 |
|          |  | <b>Sub-Total</b>                         |                  | <b>43.50</b> |   |
| <b>4</b> | <b>Secondary processing of turmeric / ginger/chilly/ for spice powder/ curry powder</b>  |  |                  |              |   |
|          |  | 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 |
|          |  | <b>Sub-Total</b>                         |                  | <b>37.00</b> |   |
| <b>5</b> | <b>Cold Extrusion Line (RTC)</b>   |  |                  |              |   |



|            |  |   |                  |              |   |
|------------|--|---|------------------|--------------|---|
|            | 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 |
|            |  | <b>Sub-Total</b>  |                  | <b>27.50</b> |   |
| <b>6</b>   | <b>Processing of Bakery products</b>   |   |                  |              |   |
|            |  | 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 |
|            |  | <b>Sub-Total</b>  | <b>25.00</b>     |              |   |
| <b>7</b>   | <b>Flaking of millets/food grains</b>  |   |                  |              |   |
|            |  | 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        |   |
|            |  | <b>Sub-Total</b>  | <b>38.00</b>     |              |   |
| <b>8.</b>  | <b>Food testing facilities</b>   | Digital refractometer, thermometer, pH meter, other minor instruments, Refrigerator | 1 each           | 25.00        |   |
| <b>9.</b>  | <b>Accessories</b>   | Stove, baking moulds, trays, cutter, spoons, utensils, racks                        |                  | 10.00        |   |
| <b>10.</b> | <b>Fire safety measures</b>  | Fire extinguishers  |                  | 3.00         |   |

|  |                    |               |
|--|--------------------|---------------|
|  | <b>Grand Total</b> | <b>270.00</b> |
|--|--------------------|---------------|

\*As per the cost received from Expert Institutes namely IIT-Kharagpur, IIT-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                    |
|       | <b>Total</b>   | <b>270.00</b>           |

## 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

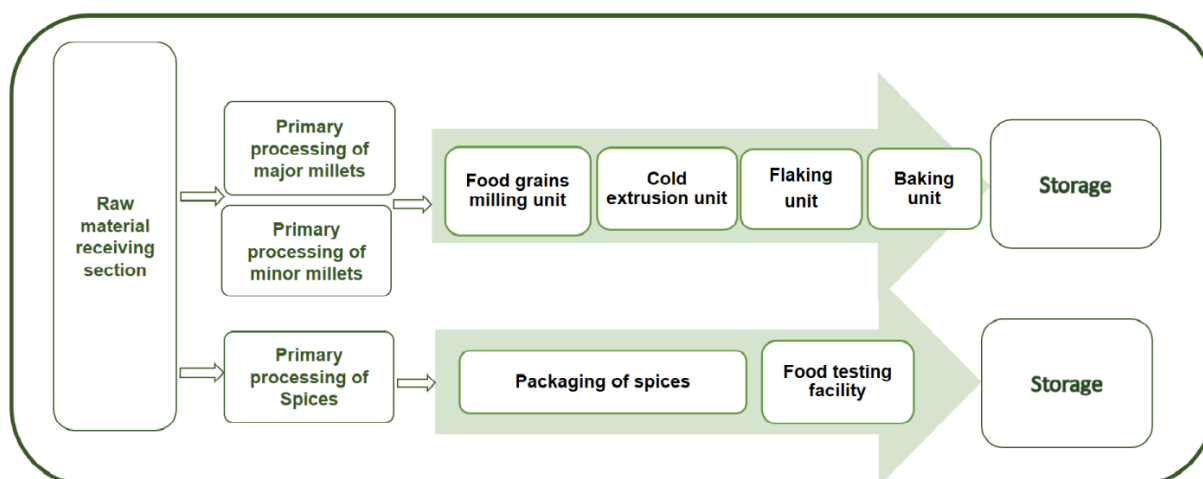
Processing of pasta

**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, 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.**

### 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<br><b>(which processing line)</b>                          |  |
| 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<br>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, Andhra 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 fisherfolk engaged in fish seed collection were females and 43% were males. Among the marine fishermen households nearly 76% were Hindus, 15% were Christians 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            |
|  |  | <b>Sub-total</b>                           |                  |                 | <b>24.40</b> |
| 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            |
|  |  | <b>Sub- total</b>                          |                  |                 | <b>69.00</b> |

|   |                                   |  |                           |       |              |
|---|-----------------------------------|--|---------------------------|-------|--------------|
| 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            |
|   |                                   | <b>Sub-total</b>                       |                           |       | <b>50.60</b> |
| 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°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            |
|   |                                   | <b>Sub-total</b>                       |                           |       | <b>47.40</b> |

|                  |  |  |                |       |              |
|------------------|--|--|----------------|-------|--------------|
| <b>5</b>         | 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.       |
| <b>Sub-total</b> |  |  | <b>6.235</b>   |       |              |
| <b>6</b>         | 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            |
|                  |  | <b>Sub-total</b>   |                |       | <b>27.00</b> |



|              |                       |   |           |               |              |
|--------------|-----------------------|---|-----------|---------------|--------------|
| <b>7</b>     | <b>Accessories</b>    | <b>Cutting Knives</b>                                   | <b>SS</b> | <b>0.05</b>   | <b>10</b>    |
|              |                       | 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/<br>Effluent treatment                  |           | 3.00          | 1            |
|              |                       | Gun thermometer   |           | 0.05          | 3            |
|              |                       | Induction stove   |           | 0.05          | 1            |
|              |                       | Accessories, Spares,<br>AMC Charges                     |           | 5.00          |              |
|              |                       | Pest Repellents   |           | 0.25          | 5            |
|              |                       | Other Miscellaneous<br>items                            |           | 4.00          |              |
|              |                       | <b>Sub-total</b>  |           |               | <b>24.90</b> |
| <b>8</b>     | Fire Safety Measures  | Fire extinguishers                                      |           | <b>0.50</b>   |              |
|              |                       | Fire hydrant  |           |               |              |
| <b>9</b>     | Food testing facility | Estimation of protein, fat and other proximate analysis |           | <b>25.00</b>  |              |
| <b>Total</b> |                       |   |           | <b>275.10</b> |              |

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         |
| <b>Total</b> |  | <b>275.00</b> |

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

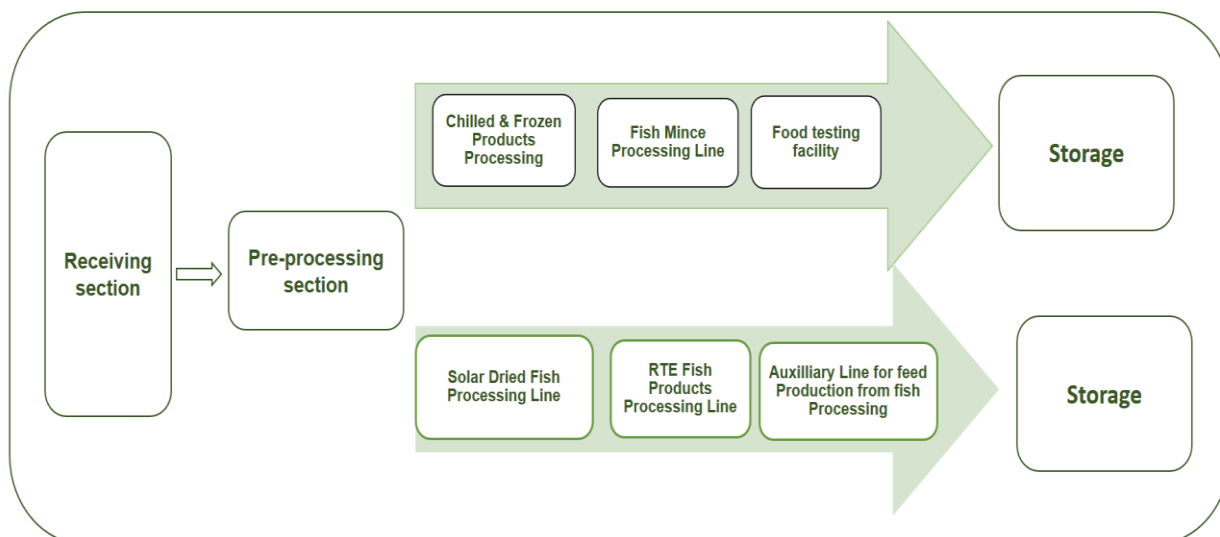
**33. Will the host Institute make use of the machines already available for the proposed incubation center?**

**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, 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.**

#### 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<br>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 through 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 |
|   |                             | <b>Sub-total</b>   |                   | <b>34.60</b>  |   |
| 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          |   |
|   |                             | <b>Sub-total</b>   |                   | <b>68.60</b>  |   |
| 3 | Filtration Unit             | Oil Filter Press   |                   | 89.00         |   |
|   |                             | Filter press with plunger pump, filter cloth etc.  |                   | 4.00          | 1 |
|   |                             | Oil Refinery Plant   |                   | 20.00         |   |
|   |                             | <b>Sub-total</b>   |                   | <b>113.00</b> |   |
| 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 |
|   |                             | <b>Sub-total</b>   |                   | <b>6.00</b>   |   |
| 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          |       |
|   |                                 |  | <b>Sub-total</b> | <b>11.20</b>  |       |
| 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     |
|   |                                 |  | <b>Sub-total</b> | <b>26.00</b>  |       |
| 7 | Food Testing Facilities         | Soxhlet apparatus, Moisture meter, Hot air oven, Colour, sp gravity, pH, turbidity, viscosity analyzer |                  | <b>10.00</b>  |       |
| 8 | Accessories                     |  |                  | <b>5.00</b>   |       |
|   |                                 |  | <b>Total</b>     | <b>274.40</b> |       |

## 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          |
|   | <b>Total</b>                               | <b>274.40</b> |

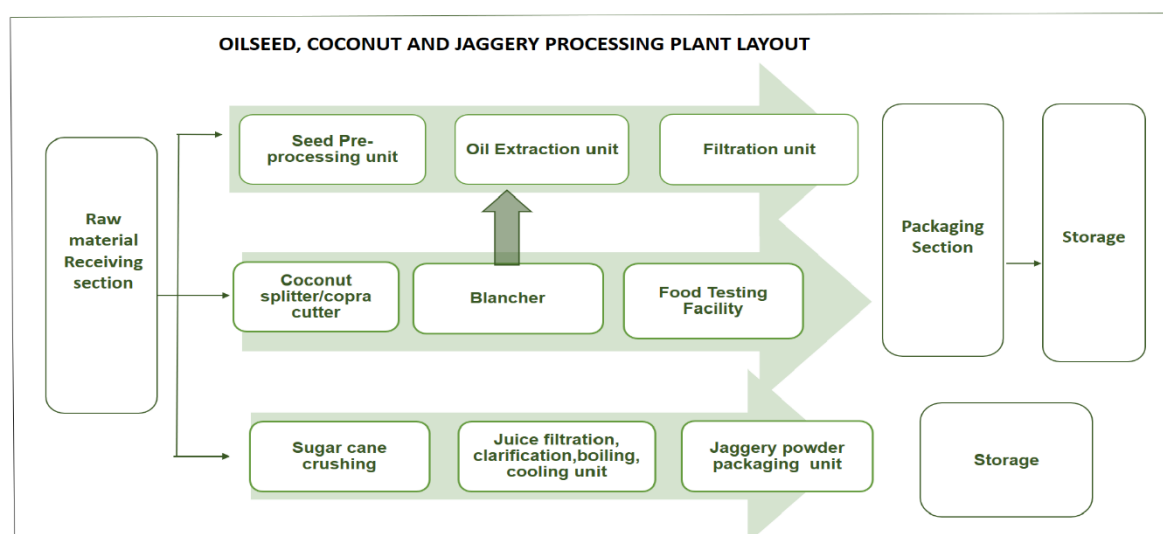
**32. Can the facility be utilized to process other crops. If so, list the allied products that can be processed at the center?**

**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)**

- Business plan for running the common incubation center
- Minimum 5 years of Operating plan should be provided.
- Man power requirement
- Minimum operational hours/ days per year
- Operational cost involved (water, electricity, raw material cost, fuel charges)
- Fixation of utility charges
- Details of the agency identified to run the proposed incubation facility
- 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<br>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. Being a 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. No.   | Processing Lines                            | Machineries required for Processing            | Capacity        | Cost (in Lakhs) | Quantity |
|----------|---|--|-----------------|-----------------|----------|
| <b>1</b> | <b>Primary Processing of Bamboo Shoot</b>   |  |                 |                 |          |
|          |   | 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        |
|          |   | <b>Sub-total</b>                               |                 | <b>11.50</b>    |          |
| <b>2</b> | <b>Secondary Processing of Bamboo Shoot</b> |  |                 |                 |          |
|          | 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        |
|          |   | <b>Sub-total</b>                               |                 | <b>7.50</b>     |          |
|          | Bamboo Shoot Pickling                       | Fryer  | 40- 50 kg/batch | 2.00            | 2        |
|          |   | Storage (SS 304) containers/bins               | 200 kg/h        | 1.00            | 4        |
|          |   | <b>Sub-total</b>                               |                 | <b>3.00</b>     |          |
|          | 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        |
|          |   | <b>Sub-total</b>                               |                 | <b>8.00</b>     |          |

| 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 |
|   |  |   | <b>Sub-total</b>  | <b>31.50</b> |   |
| 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)<br>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 |
|          |  |  | <b>Sub-total</b>      | <b>26.30</b> |   |
| <b>5</b> | <b>Juice concentrates/ Squash/ RTS from Mahua</b>      |  |                       |              |   |
|          |  | Automatic dosing<br>hoppers  | 100 kg/h              | 4.00         | 1 |
|          |  | Juice extractor  | 100 kg/h              | 4.00         | 1 |
|          |  | Storage tank with<br>agitator  | 100 kg/h              | 1.50         | 1 |
|          |  | Piston pump  | 100 l/h               | 0.40         | 2 |
|          |  | Plate & frame filter<br>press  | 100 l/h               | 2.50         | 1 |
|          |  | Storage tank with<br>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<br>unit                                      | Counter pressure<br>bottling line (rinser/<br>fillers/capper/triblocs or<br>corkers & capping<br>equipment | 900 bottles/h         | 12.0         | 1 |
|          |  | Pressure sensitive<br>bottle labeler   | 1.5hp                 | 8.00         | 1 |
|          |  | Weighing, filling and<br>sealing pack unit   | 100kg/Batch           | 8.00         | 1 |
|          |  | Weighing machine   | 1-5kg. 100 kg, 1g-1kg | 1.00         | 1 |
|          |  |  | <b>Sub-total</b>      | <b>67.15</b> |   |
| <b>6</b> | <b>Processing of Honey</b>                             |  |                       |              |   |
|          | Packed<br>Honey in<br>bottles of<br>different<br>sizes | Receiving SS Tank  | 750 l                 |              |   |
|          |  | Primary Filter Shell   | 25 l                  | 0.56         | 1 |
|          |  | Gear Pump With Motor<br>Capacity: 130 LPM Diff.<br>Head: Max. 10 kg/cm<br>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<br>of construction (MOC):<br>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     |
|          |                         | <b>Sub-total</b>  |              | <b>26.45</b>  |       |
|          | Food Testing facilities | Estimation of protein, fat and other proximate analysis, Gun Thermometer, Refractometer, pH meter, Moisture meter |              | 25.00         |       |
| <b>7</b> | <b>Accessories</b>      |   |              |               |       |
|          |                         | 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          |       |
|          |                         | <b>Sub-total</b>  |              | <b>30.00</b>  |       |
| <b>8</b> | <b>Safety Measures</b>  |   |              |               |       |
|          |                         | 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     |
|          |                         | <b>Sub-total</b>  |              | <b>10.50</b>  |       |
|          |                         | <b>Total</b>  |              | <b>246.90</b> |       |

## 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                   |
| <b>Total</b> |  | <b>246.90</b>           |

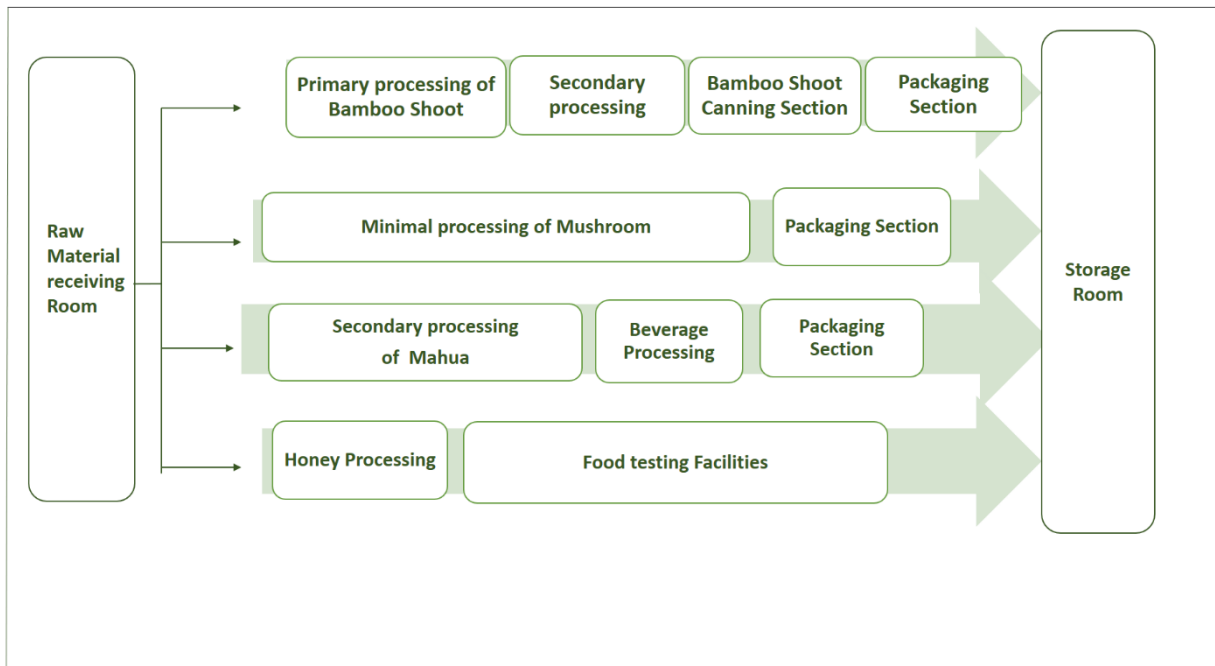
**32. Can the facility be utilized to process other crops. If so, list the allied products that can be processed at the center?**

**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)**

- Business plan for running the common incubation center
- Minimum 5 years of Operating plan should be provided.
- Man power requirement
- Minimum operational hours/ days per year
- Operational cost involved (water, electricity, raw material cost, fuel charges)
- Fixation of utility charges
- Details of the agency identified to run the proposed incubation facility
- 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.

# 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 |
| <b>Primary processing</b>       |                        |  |          |                 |          |
| <b>1</b>                        | <b>Pre-cleaning</b>    |  |          |                 |          |
|                                 |                        | Thresher                               | 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 (with 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 |
| <b>5</b> | <b>RTE Food processing line using flaking machine</b>   |  |             |      |   |
|          | 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 |
| <b>6</b> | <b>Puffed rice</b>  |  |             |      |   |
|          | 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 |
| <b>7</b> | <b>Rice crackers</b>  |  |             |      |   |
|          |   | 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        |
|                                |   | <b>Accessories</b>                                      |            | <b>10.00</b> | <b>1</b> |
|                                |   | Gun thermometer   |            |              | 1        |
|                                |   | Refractometer   |            |              | 1        |
|                                |   | Induction stove   |            |              |          |
|                                |   | Baking mould, trays, cutter, rolling pins,              |            |              |          |
|                                |   | colander, ladles, measuring spoons, etc.                |            |              |          |

|    |                             |                    |  |      |  |
|----|-----------------------------|--------------------|--|------|--|
| 12 | <b>Fire Safety Measures</b> |                    |  |      |  |
|    |                             | 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

| <b>Cost Norms for Wheat Processing</b> |   |  |          |                 |          |
|--|---|--|----------|-----------------|----------|
| S.No.                                  | Wheat Processing Lines                      | Machineries required for processing  | Capacity | Cost (in Lakhs) | Quantity |
| <b>Primary processing</b>              |   |  |          |                 |          |
| 1                                      | <b>Pre cleaning</b>                         |  |          |                 |          |
|  |   | 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                                      | <b>Flour milling (Maida, atta and suji)</b> |  |          |                 |          |
|  |   | 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 |
| <b>3</b>  | <b>Atta chakki flour</b>  |  |          |       |   |
|           |   | 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 |
|           |   |  |          |       |   |
| <b>4</b>  | <b>Wheat porridge (Daliya)</b>                                  |  |          |       |   |
|           |   | 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 |
|           |   |  |          |       |   |
|           | <b>Secondary processing of Wheat</b>                            |  |          |       |   |
| <b>5.</b> | <b>RTC Extrusion Food Processing Line (Cold Extrusion unit)</b> |  |          |       |   |
|           | Pasta, Noodles, Macaroni  | <b>Cold extrusion unit</b>   | 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                                       |          |       |   |
| <b>6.</b> | <b>RTE Food processing line using hot extruder</b> |   |          |       |   |
|           | 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 |
| <b>7.</b> |  | <b>Bread, cookies and confectionary</b>                 |          |       |   |
|           | 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 |
| <b>8.</b> |  | <b>Food testing facility</b>                            |          |       |   |
|           |  | Estimation of protein, fat and other proximate analysis |          | 25.00 |   |
| <b>9.</b> | <b>Auxillary Equipments if any</b>                 |   |          |       |   |
|           |  | 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/<br>Effluent treatment  |  | 10.00 |  |
|            |                             | Machines required for<br>waste utilization  |  | 5.00  |  |
|            |                             | Quality control<br>laboratory   |  | 20.00 |  |
|            |                             | Accessories   |  |       |  |
|            |                             | Gun thermometer   |  |       |  |
|            |                             | Refractometer   |  |       |  |
|            |                             | Induction stove   |  |       |  |
|            |                             | Baking mould, trays,<br>cutter, rolling pins,<br>colander, ladles,<br>measuring spoons, |  |       |  |
| <b>10.</b> | <b>Fire Safety Measures</b> |   |  |       |  |
|            |                             | 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    |                           |                                     |          |                 |          |
| <b>1</b>                        | <b>Primary Processing</b> |                                     |          |                 |          |
|                                 |                           | 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 |
| <b>Secondary Processing of Pulses</b> |                             |                                    |          |       |   |
| <b>2</b>                              | <b>Secondary Processing</b> |                                    |          |       |   |
|                                       |                             | 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 |   |
| <b>Tertiary Processing of Pulses</b>  |                             |                                    |          |       |   |
| <b>3</b>                              | <b>Extrusion Unit</b>       |                                    |          |       |   |
|                                       |                             | 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 |
| <b>4</b> | <b>Cold Extrusion unit</b>     |  |          |       |   |
|          |                                | 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 |
| <b>5</b> | <b>Papad unit</b>              |  |          |       |   |
|          |                                | 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  |   |
| <b>6</b> | <b>Food Testing facilities</b> |  |          |       |   |
|          |                                | 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 |   |
| <b>7</b> | <b>Accessories</b>             |  |          |       |   |
|          |                                | 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 |
| <b>Primary processing</b>        |  |  |                  |                 |          |
| <b>1</b>                         | <b>Primary Processing Line for Small Millets (Foxtail, Barnyard, Proso, Little, Kodo and Browntop Millets)</b> |  |                  |                 |          |
|                                  | 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        |
|                                  |  | <b>Optional</b>                        |                  |                 |          |
|                                  |  | 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        |
| <b>2</b>                         | <b>Primary Processing Line for Major Millets (Sorghum, Pearl and Finger Millets)</b>                           |  |                  |                 |          |
|                                  | 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        |
|                                  |  | <b>Optional</b>                        |                  |                 |          |

|                             |  |  |                  |       |   |
|-----------------------------|--|--|------------------|-------|---|
|                             |  | 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 |
| <b>Secondary Processing</b> |  |  |                  |       |   |
| <b>3</b>                    | <b>Milling &amp; Grinding Line</b>   |  |                  |       |   |
|                             | 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 |
|                             |  | <b>Optional</b>                          |                  |       |   |
|                             |  | Entoleter                                | 100 - 150 kg/h   | 2.00  | 1 |
|                             | Packing Line (Band Sealer)   | 500-1000 packs/h                         | 0.50             | 1     |   |
| <b>4</b>                    | <b>Cold Extrusion Line (RTC)</b>   |  |                  |       |   |
|                             | 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 |
|                             |  | <b>Optional</b>                          |                  |       |   |
|                             |  | 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                               |                  |       |   |  |
|  | 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 |  |
|  | <b>Optional</b>   |                  |       |   |  |
|  | 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 |  |

|           |   |   |                  |       |   |
|-----------|---|---|------------------|-------|---|
| <b>8</b>  | <b>Flaking Line</b>   |   |                  |       |   |
|           | 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 |
| <b>9</b>  | <b>Nutri Bar processing line</b>  |   |                  |       |   |
|           | 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 |
| <b>10</b> | <b>RTE Snacks processing line</b>   |   |                  |       |   |
|           | 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 |
| <b>11</b> | <b>Auxiliary Equipment, if any</b>  |   |                  |       |   |
|           |   | 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 |
|           |   | <b>Accessories</b>                      |                  | 10.00 |   |
|           |   | Gun thermometer                         |                  |       | 1 |
|           |   | Refractometer                           |                  |       | 1 |
|           |   | Induction stove                         |                  |       | 1 |

|           |  |   |  |       |   |
|-----------|--|---|--|-------|---|
|           |  | Infrared moisture meter                                 |  |       | 1 |
|           |  | Baking moulds, tray, cutter, rolling pins,              |  |       | 1 |
| <b>12</b> | <b>Fire Safety Measures</b>                                  |   |  |       |   |
|           |  | Ladder  |  | 0.50  | 2 |
|           |  | Fire extinguishers                                      |  | 0.50  |   |
|           |  | Fire hydrant  |  |       |   |
| <b>13</b> | <b>Mini Laboratory Facility/quality control/Mini R&amp;D</b> |   |  |       |   |
|           |  | 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 |
| <b>Primary processing</b>      |                         |                                     |          |                 |          |



| 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 |
| <b>5.</b> | <b>Extruded Corn flakes</b>       |   |          |       |   |
|           |                                   | 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 |
| <b>6.</b> | <b>Traditional flaking</b>        |   |          |       |   |
|           |                                   | 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 |
| <b>7.</b> | <b>Sweet corn processing line</b> |   |          |       |   |
|           |                                   | 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 |
| <b>8.</b> | <b>Canned sweet corn</b>          |   |          |       |   |
|           |                                   | 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 |
| <b>9.</b>  | <b>Auxillary Equipments if any</b> |   |          |       |   |
|            |                                    | 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/<br>Effluent treatment  |          | 10.00 |   |
|            |                                    | Machines required for<br>waste utilization  |          | 5.00  |   |
|            |                                    | Quality control<br>laboratory   |          | 20.00 |   |
| <b>10.</b> | <b>Food testing facility</b>       |   |          |       |   |
|            |                                    | Estimation of protein,<br>fat and other proximate<br>analysis                           |          | 25.00 |   |
| <b>11.</b> | <b>Accessories</b>                 |   |          |       |   |
|            |                                    | Gun thermometer   |          | 10.00 |   |
|            |                                    | Refractometer   |          |       |   |
|            |                                    | Induction stove   |          |       |   |
|            |                                    | Baking mould, trays,<br>cutter, rolling pins,<br>colander, ladles,<br>measuring spoons, |          |       |   |
| <b>12.</b> | <b>Fire Safety Measures</b>        |   |          |       |   |
|            |                                    | 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 |
| <b>Primary Processing Lines</b> |  |  |              |                 |          |
| <b>1.</b>                       | <b>Primary processing of fruits for RTE- Osmo- dried fruits and fruit bar</b>  |  |              |                 |          |
|                                 | 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°C   | 1000kg       | 5.00            | 1        |
| <b>2.</b>                       | <b>Dehydration of fruits slices and cubes-</b>   |  |              |                 |          |
|                                 | mango, papaya, pineapple, guava  | Cold storage - 20 °C   | 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 |
| <b>3.</b>                   | <b>Dehydration of fruits pulps in to fruit bar</b> |   |                 |       |   |
|                             | 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 |
| <b>Secondary processing</b> |  |   |                 |       |   |
| <b>4.</b>                   | <b>Fruit concentrates</b>                          |   |                 |       |   |
|                             |  | 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 |
| <b>5.</b> | <b>Secondary processing - processing in to juice and beverages</b> |   |                         |        |   |
|           |  | 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 |
| <b>6.</b> | <b>Quality control</b> |   |                 |       |   |
|           |                        | 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 |   |
| <b>7.</b> | <b>Utilities</b>       |   |                 |       |   |
|           |                        | 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      |
| <b>8.</b> | <b>Auxillary Equipments if any</b> |  |            |       |        |
|           |                                    | 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 |
| <b>Primary processing</b>        |   |                                     |                  |                 |          |
| <b>1</b>                         | <b>Fresh Produce handling for domestic and export markets</b> |                                     |                  |                 |          |
|                                  |   | 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 |  |
| <b>Secondary processing</b> |  |   |             |       |  |
| <b>2.</b>                   | <b>Banana flour and flour based products</b> |   |             |       |  |
|                             |  | Tray dryer  |             | 7.00  |  |
|                             |  | Hammer mill/<br>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  |  |
| <b>3.</b>                   | <b>Ripe banana based products</b>            |   |             |       |  |
|                             |  | 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  |  |

|           |   |  |  |       |  |
|-----------|---|--|--|-------|--|
| <b>4.</b> | <b>Pickles and other related products</b> |  |  |       |  |
|           |   | 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  |  |
| <b>5.</b> | <b>Food testing laboratory</b>            |  |  |       |  |
|           |   | Centrifuge   |  | 10.00 |  |
|           |   | Digital refractometer, colour meter, pH meter, other minor instruments |  | 15.00 |  |
|           |   | Refrigerator   |  | 2.00  |  |
|           |   | Hot air oven   |  | 2.00  |  |
| <b>6.</b> | <b>Auxillary equipment</b>                |  |  |       |  |
|           |   | 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 |
| <b>1</b>                            | <b>Primary processing of vegetables</b>  |  |               |                 |          |
|                                     | 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        |
| <b>2</b>                            | <b>Dehydration of vegetables- dried vegetables flakes/ cubes/ sheds/ powders</b>   |  |               |                 |          |
|                                     | 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        |
| <b>3</b>                            | <b>Vacuum frying of vegetables – RTE</b>   |  |               |                 |          |
|                                     | 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        |
| <b>4</b>                            | <b>Frozen and IQF Vegetables- Peas, cauliflower, carrot French beans etc.</b>  |  |               |                 |          |
|                                     |  | 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 |
| <b>1</b>                        | <b>Basic Milk Processing Equipments</b> |                                     |                        |                 |          |
|                                 |   | Weighing scale                      | up to 5000 kg capacity | 3.00            | 1        |
|                                 |   | Air separator                       |                        | 1.50            | 1        |
| <b>2</b>                        | <b>Milk Reception Doc</b>               |                                     |                        |                 |          |
|                                 |   | 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      |
| <b>3</b> | <b>Milk Pasteurization (Market Milk Section)</b>            |   |                        |       |        |
|          |   | 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      |
| <b>4</b> | <b>Khoa &amp; Sweet Manufacturing Unit</b>                  |   |                        |       |        |
|          |   | 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      |
| <b>5</b> | <b>Heat acid Coagulated &amp; Cheese Section (1000 l/h)</b> |   |                        |       |        |
|          |   | 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     |
| <b>6</b> | <b>Fermented Milk Products Section (500L/h)</b>             |   |                        |       |        |
|          |   | 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      |
| <b>7</b> | <b>Fat rich Dairy Products Section</b>                      |   |                        |       |        |
|          |   | 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 |
| <b>8</b>   | <b>Ice cream &amp; frozen Dessert Section</b>    |  |               |       |   |
|            |  | 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 |
| <b>9</b>   | <b>Equipments for additional processing line</b> |  |               |       |   |
|            |  | Planetary mixer (Shikhand, Rasagolla,  |               | 0.50  |   |
|            |  | Ghee packaging line  |               |       |   |
|            |  | Ice cream cup filling machine  |               |       |   |
|            |  | Ripening room  |               |       |   |
| <b>10.</b> | <b>Food Testing Facilities</b>                   |  |               |       |   |
|            |  | 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 |   |
| <b>11</b>  | <b>Auxillary Equipments if any</b>               |  |               |       |   |
|            |  | 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  |  |
| <b>12</b> | <b>Fire Safety Measures</b> |   |  |       |  |
|           |                             | Fire extinguishers                      |  | 0.50  |  |
|           |                             | Fire hydrant                            |  |       |  |

#### 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 |
| <b>1</b>                       | <b>Pre Processing</b>  |                                     |                |                 |          |
|                                |                        | 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 |
| <b>2</b> | <b>Processing for chilled and frozen products</b> |  |                 |       |   |
|          |   | 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 |
| <b>3</b> | <b>Fish Mince based products</b>                  |  |                 |       |   |
|          |   | 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 |
| <b>4</b> | <b>RTE fish products in cans/pouches</b>          |  |                 |       |   |
|          |   | 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°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 |
| <b>5</b> | <b>Extruded fish based products</b> |  |                           |       |   |
|          |                                     | 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 |
| <b>6</b> | <b>Solar dried fish</b>             |  |                           |       |   |
|          |                                     | 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.<br>3 Nos |

|           |   |   |           |       |    |
|-----------|---|---|-----------|-------|----|
| <b>7</b>  | <b>Auxillary line for production of feed from fish processing waste</b> |   |           |       |    |
|           |   | 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  |
| <b>8</b>  | <b>Accessories</b>  |   |           |       |    |
|           |   | 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  |    |
| <b>9</b>  | <b>Fire Safety Measures</b>   |   |           |       |    |
|           |   | Fire extinguishers                                      |           | 0.50  |    |
|           |   | Fire hydrant  |           |       |    |
| <b>10</b> | <b>Food testing facility</b>  |   |           |       |    |
|           |   | 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                                 | <b>Seed Pre-processing Unit</b>   |  |                   |                 |          |
|                                   | 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 |
| <b>2</b> | <b>Coconut process plant</b>            |  |          |       |   |
|          |   | 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 |   |
| <b>3</b> | <b>Peanut butter Processing</b>         |  |          |       |   |
|          | Peanut butter Process Line              |  | 100 kg/h | 9.00  |   |
| <b>4</b> | <b>Soy process plant</b>                |  |          |       |   |
|          | Flavoured soybean milk, tofu, curd      |  | 100 kg/h | 30.00 |   |
| <b>5</b> | <b>Packaging</b>                        |  |          |       |   |
|          |   | 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 |
| <b>6</b> | <b>Margarine /Shortening processing</b> |  |          |       |   |
|          |   | 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         |   |
|                         |  | <b>Accessories</b>   |          | <b>2.00</b>  |   |
|                         |  | Machinery for waste utilization (Chikki, cookies processing, animal feed processing)                   |          | <b>20.00</b> |   |

## 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 |
| <b>Primary processing</b>      |   |                                     |                 |                 |          |
| <b>1.</b>                      | <b>Primary processing of sheep/goat for production of mutton</b>                                    |                                     |                 |                 |          |
|                                |   | 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           |          |
| <b>Secondary processing</b>    |   |                                     |                 |                 |          |
| <b>2.</b>                      | <b>Meat (mutton) products processing plant for production of value added meat (mutton) products</b> |                                     |                 |                 |          |
|                                | 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           |          |
| <b>3.</b>                      | <b>Effluent treatment plant and solid waste disposal</b>  |                                     |                 |                 |          |
|                                |   |                                     |                 | 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  |   |
| <b>4</b> | <b>Processing of Cardamom</b>                                   |   |                         |       |   |
|          |   | 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 |
| <b>5</b> | <b>Secondary processing to jams/squash/candy/paste/pickle</b>   |   |                         |       |   |
|          |   | 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 |
| <b>6</b> | <b>Secondary processing to spice based cookies/cakes/others</b> |   |                         |       |   |
|          |   | 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 |

|           |  |   |   |       |   |
|-----------|--|---|---|-------|---|
| <b>7</b>  | <b>Pilot plant for Essential oil Extraction Unit</b> |   |   |       |   |
|           |  | Essential Oil extraction system   | 500 l/ batch                                      | 20.00 | 1 |
| <b>8</b>  | <b>Equipments in general</b>                         |   |   |       |   |
|           |  | 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/<br>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 |
| <b>9</b>  | <b>Accessories</b>                                   |   |   |       |   |
|           |  | 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   |   |       |   |
| <b>10</b> | <b>Fire Safety Measures</b>                          |   |   |       |   |
|           |  | 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        |

|          |  |   |               |       |   |
|----------|--|---|---------------|-------|---|
| <b>2</b> | <b>Virgin coconut oil (VCO) (500 nuts/day)</b>     |   |               |       |   |
|          |  | 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  |   |
| <b>3</b> | <b>Coconut chips (250 nuts/day)</b>                |   |               |       |   |
|          |  | 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  |   |
| <b>4</b> | <b>Packaged coconut milk (500 nuts/day)</b>        |   |               |       |   |
|          |  | 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 |
| <b>5</b> | <b>Coconut milk based ice cream (500 nuts/day)</b> |   |               |       |   |
|          |  | 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 |

|          |  |            |       |   |
|----------|--|------------|-------|---|
| <b>6</b> | <b>Desiccated coconut powder (2000 coconuts/day)</b>                             |            |       |   |
|          | 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  |   |
| <b>7</b> | <b>Kalpakrunch (Coconut milk residue and VCO cook based extrudate) (10 kg/h)</b> |            |       |   |
|          | 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  |   |
| <b>8</b> | <b>Bakery products from coconut milk residue and VCO cooker (100 kg/day)</b>     |            |       |   |
|          | 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  |   |



|           |  |             |       |   |
|-----------|--|-------------|-------|---|
| <b>9</b>  | <b>Tender coconut water bottling (5000 nuts / day)</b> |             |       |   |
|           | Mechanical washing system with conveyer                | 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  |   |
| <b>10</b> | <b>Auxillary Equipments if any</b>                     |             |       |   |
|           | 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 |
| <b>10</b> | <b>Fire Safety Measures</b>                            |             |       |   |
|           | 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 |
| <b>Primary processing</b>           |  |                                      |            |                 |          |
| 1                                   | <b>Primary Processing of Sugarcane</b> |                                      |            |                 |          |
|                                     |  | 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        |
| <b>Secondary processing</b>         |  |                                      |            |                 |          |

| 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 |
|                                       |  | <b>Accessories</b>                         |          | <b>10.00</b> |   |

|          |                                   |   |  |       |   |
|----------|-----------------------------------|---|--|-------|---|
|          |                                   | Gun thermometer   |  |       | 1 |
|          |                                   | Refractometer   |  |       | 1 |
|          |                                   | Induction stove   |  |       | 1 |
|          |                                   | Jaggery moulds, pump, transfer plates, pipes etc.       |  |       |   |
|          |                                   | colander, ladles, measuring spoons,                     |  |       |   |
|          |                                   | Moisture meter  |  |       |   |
|          |                                   | pH meter  |  |       |   |
| <b>5</b> | <b>Food testing facility</b>      |   |  |       |   |
|          |                                   | Estimation of protein, fat and other proximate analysis |  | 25.00 |   |
| <b>6</b> | <b>Fire Safety Measures</b>       |   |  |       |   |
|          |                                   | Fire extinguishers                                      |  | 1.00  |   |
|          |                                   | Fire hydrant  |  |       |   |
| <b>7</b> | <b>Pollution control measures</b> |   |  |       |   |
|          |                                   | 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 |
| <b>Primary processing</b>                         |   |  |                 |                 |          |
| <b>1.</b>   | <b>Primary Processing of Bamboo Shoot</b> |  |                 |                 |          |
|   | 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        |
| <b>Secondary Processing of Bamboo Shoot</b>       |   |  |                 |                 |          |
| <b>2.</b>   | <b>Bamboo Shoot Powder</b>                |  |                 |                 |          |
|   |   | 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        |
|   |   |  |                 |                 |          |
| <b>3.</b>   | <b>Bamboo Shoot Pickling</b>              |  |                 |                 |          |
|   |   | Fryer  | 40- 50 kg/batch | 2.00            | 2        |
|   |   | Storage (SS 304) containers/bins               | 200 kg/h        | 1.00            | 4        |
| <b>4.</b>   | <b>Bamboo Shoot Canning</b>               |  |                 |                 |          |
|   |   | 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        |
| <b>Tertiary Processing of Bamboo Shoot</b>        |   |  |                 |                 |          |

| 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 commissioning |                          | 10.00 |   |

|            |                              |   |  |       |  |
|------------|------------------------------|---|--|-------|--|
| <b>10.</b> | <b>Food testing facility</b> |   |  |       |  |
|            |                              | Estimation of protein, fat and other proximate analysis |  | 25.00 |  |
| <b>12.</b> | <b>Fire Safety Measures</b>  |   |  |       |  |
|            |                              | 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

| <b>Cost Norms for Integrated Mahua Processing</b> |  |  |                        |                 |          |
|---|--|--|------------------------|-----------------|----------|
| S. No.  | Mahua Processing Lines                                       | Machineries required for processing  | Capacity               | Cost (in Lakhs) | Quantity |
| <b>Primary processing</b>                         |  |  |                        |                 |          |
| <b>1.</b>   | <b>Primary Processing of Mahua</b>                           |  |                        |                 |          |
|   | 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)<br>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 |
| <b>Secondary Processing</b> |  |   |                 |      |   |
| <b>2.</b>                   | <b>Juice concentrates/ Squash/ RTS/ Puree/ sauce/ Jam/ Jelly/ Candied &amp; Glazed flowers/ Toffee beverages and Preserves</b> |   |                 |      |   |
|                             |  | 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/triblocks or corks & 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, 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. | 0.20  |       |
| <b>6.</b> | <b>Auxillary Equipments</b> |   |                                       |       |       |
|           |                             | 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     |
| <b>7.</b> | <b>Safety Measures</b>      |   |                                       |       |       |
|           |                             | 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 <i>Garcinia cambogia</i> | 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 |
| <b>Primary Processing</b>                     |   |   |                  |                 |          |
| 1.  | <b>Primary Processing of <i>Garcinia Cambogia</i></b> |   |                  |                 |          |
|   |   | Washing tank (SS 304)                   | 100-120 kg/Batch | 2.00            | 1        |
|   |   | Work tables (SS 304)                    | 9' x 4'          | 1.50            | 4        |
|   |   | Pulp removing (Manual operation)        | 100-120 kg/Batch | 0.05            |          |
|   |   | Drying                                  | 100-120 kg/Batch | 1.50            | 1        |
| <b>Secondary Processing</b>                   |   |   |                  |                 |          |
| 2.  | <b>Osmotic dehydration</b>                            |   |                  |                 |          |
|   |   | 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.  | <b>Chutney /Pickle</b>                                |   |                  |                 |          |
|   |   | Mincer/Pulper                           | 50 kg/Batch      | 1.50            | 1        |
|   |   | Steam kettle (SS 304)                   | 50 kg/Batch      | 2.00            | 1        |

|           |   |                             |       |   |
|-----------|---|-----------------------------|-------|---|
| <b>4.</b> | <b>Ready to serve</b>   |                             |       |   |
|           | Ready to serve  | 100-120 kg/Batch            | 1.00  |   |
|           | Ready to serve  | 500 bottle/Batch            | 1.50  |   |
| <b>5.</b> | <b>Auxillary Equipments if any</b>  |                             |       |   |
|           | 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 |   |
| <b>6.</b> | <b>Accessories</b>  |                             |       |   |
|           | 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 |
| <b>Primary Processing</b>                  |  |                                     |          |                 |          |
| 1.   | <b>Bee Keeping Apiary Unit for 1000 Bee Colonies</b> |                                     |          |                 |          |
|  |  | 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 |
| <b>Primary Processing</b>                     |  |  |                        |                 |          |
| 1.  | <b>Minimal processed mushroom (Milky mushrooms), marinated mushrooms (Porcini Mushrooms) and cured mushroom (Oyster Mushrooms)</b> |  |                        |                 |          |
|   |  | 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 |  |                    |       |   |  |
|----------------------|--|--------------------|-------|---|--|
| <b>4.</b>            | <b>Canned mushroom, pickled mushroom and RTE mushroom curry (Shiitake Mushrooms)</b>                               |                    |       |   |  |
|                      | 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 |  |
| <b>5.</b>            | <b>Nuggets, chips and soup powder (Shimeji Mushrooms)</b>  |                    |       |   |  |
|                      | 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 |  |
|                      | Three-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 corks & 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     |
| <b>8.</b> | <b>Auxillary Equipments</b>  |                                       |      |       |
|           | 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 |
| <b>9.</b> | <b>Safety Measures</b> |   |  |      |       |
|           |                        | 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.