

Institutions/ Organisations and Selected Technologies in Rural Development in NE Region

List of Institutions / Organizations helping Agro & Food Processing Industry

Within the NE Region

1. Directorate of Industries & Commerce, in all the respective states of NER (See below also for Nodal Officer / Agency on Food Processing Industry)
2. Agriculture and Processed Food Products Export Development Authority (APEDA), 3rd floor, Jain Complex, G.S. road Guwahati – 781005 Telephone No. (0361) 2599010/2340485, E Mail: apeda@onlysmart.com
3. North Eastern Regional Agriculture Marketing Corporation Ltd. (NERAMAC), R.G. Baruah Road, Guwahati – 781005 Tel – (0361)2205400/2206424 Fax – 2204838 E .Mail : neramac@satyam.net.in & neramac@asm.net.in
4. Horticultural Research Station, Kahikuchi, Guwahati – 781017
5. Citrus Research Station, Tinsukia P.O., Pin:786125
6. Central Potato Research Station, Shillong – 792103, Phone:2570179
7. Food Product Order (FPO) Sixth mile, Panjabari Road, Guwahati – 781005. Telephone No. –(0361) 2332466
8. National Horticulture Board, NER Office G. S.Road, Christan Basti, Guwahati – 781005. Telephone : (0361)2599141 E Mail: nhbghy-mic@yahoo.com
9. Regional Research Laboratory, Jorhat – 785006 Phone (0376) 2370011 E.Mail : inform@csir.res.in
10. Assam State Medicinal Plants Board, Hengerabari (Directorate of Health Service campus),Guwahati – 781005
11. NEDFi, Basundhara Enclave Dr. B.K.Kakati Road, Ulubari, Guwahati – 781007
12. Deputy Director, Marketing & Inspection, Ministry of Agriculture, K.C. Road, Bharalumuck, Guwahati – 781009 Telephone (0361) 2485256 (For ‘AGMARK’) (Head Office: Directorate of Marketing & Inspection, New C.G.O. Building NHHV , Faridabad – 121001 (Haryana)

13. Tea Board, Silpukhuri, U.N. Bezbaruah Road, Guwahati – 781003
14. Coffee Board, R.G. Baruah Road, Guwahati- 781024 Telephone (0361)2543235
15. Spices Board, Rajgarh Road, Guwahati – 791003, Telephone (0361)2664228 /266425(o) (Head Office at Kerela)
16. Small Farmers Agri Business Consortium, Regional Office, Jain Complex (3rd floor), G.S. Road, Near Dispur Old Post Office , Guwahati – 781005, Telephone No. (0361)2340339, Fax (0361)2599113
17. Department of Food & Nutrition, Assam Agriculture University , Jorhat – 785013
18. Coconut Development Board , Housefed Complex, Dispur Last Gate, Guwahati – 781006
19. Tripura Horticultural Development Corporation, Paradise Choumuhini, Agartala – 799002 (Tripura)
20. National Bank for Agricultural & Rural Development (NABARD), Panbazar, Guwahati -781001
21. Directorate of Agriculture / Veterinary in all the respective states in NER
22. ICAR Research Complex for NE Region, Barapani Shillong – 793103 E Mail: root@icarneh.ren.nic.in
23. Food & Nutrition Extension Centre, Ulubari, Guwahati – 781007
24. Food Product Order, Sixth Mile, Panjabari Road , Guwahati – 781022 (For FPO Licence)
25. Central Plantation Crop Research Institute (ICAR), Kahikuchi, Guwahati – 781017, Phone:2841785
26. Jute Service Centre, Under National Centre for Jute Diversification (NCJD), Ministry of Textiles, Govt of India, B.K.Kakati Road (Opp. to DGP office), Guwahati – 781007 Telephone No. (0361)2457944
27. Ministry of Non – Conventional Energy Resources, Bharalumukh, Guwahati (Assam)
28. North Eastern Renewable Development Initiative, Rajgarh By Lane 11, Guwahati – 781003 (Assam)

29. Indian Institute of Entrepreneurship (IIE), Guwahati –781029 (ASSAM), Telephone – 2300840, 2300994, 2300123, Fax (0361) 2300325, E. Mail: iiindia1@sancharet.in
30. Regional Testing Centre, Bamunimaidan, Guwahati – 781021 (for ssi units)
31. Bureau of Indian Standard, R.G. Baruah Road, 5th Byelane, Guwahati – 781003 (for ISI certification)
32. National Test Centre, Kalapahar Industrial Estate, Guwahati – 781016 (Testing facilities for ssi units)

Outside North East

1. National Research Development Corporation (NDRC), 20-22, Zamrudhpur Community Centre, Kailash Colony Extension, New Delhi – 110048
2. National Dairy Research Institute (NDRI), Kalyan, Dist. Nadia (W.B.) or Adugudi Bangalore – 560030 or Karnal, - 132001(Haryana)
3. Council of Scientific & Industrial Research (CSIR), Rafi Marg, New Delhi – 110001
4. Central Food Technological Research Institute (CFTRI), Chaluvomba Mansion, Mysore – 570013
5. Central Institute of Medicinal and Aromatic Plants , Near Kukrail Picnic Spot, P.O. CIMAP, Lucknow – 226015, Phone (0522) 2359623 Fax ☎(0522) 2342666, E . Mail: director@cimap.Res.in
6. National Medicinal Plants Board, Chandralok Building, 36- Janpath, New Delhi- 110001. Phone: (011)23319360, Fax: 23319360, E. Mail : [nmpb22 @India times .com](mailto:nmpb22@India.times.com)
7. Indian Agricultural Research Institute , (IARI), Pusa, New Delhi- 110012, E Mail : [root @ iari. Ernet. In](mailto:root@iari.ernet.in)

8. Technology, Information, Forecasting and Assessment Council (TIFAC),
(Deptt. Of Science & Technology), New Mehrauli Road, New Delhi – 110016
(E. Mail: [tifac @ alpha.nic.in](mailto:tifac@alpha.nic.in)) (Website: <http://www.tifac.Org.in>) (Undertake
quality control study, popularization of new technology and promote private
research and testing laboratories in the country)
9. Central Drug Research Institute, Lucknow, (U.P.)
10. Indian Institute of Horticultural Research, Hessaraghatta Lake Post, Bangalore –
560089 (Karnataka)
11. National Institute for Research on Jute Allied Fibres, Technology, 12, Regent
Park, Kolkata, Phone No. (033)4712583, E Mail: [nirjaft @ wb.nic.in](mailto:nirjaft@wb.nic.in)
12. Central Research Institute for Jute & Allied Fibres, 24 Parganas, Barrackpore,
West Bengal, Pin: 743101, Phone No. (033) 5350415, E. Mail: cri@cal2.vsnl.net.in

List of Nodal Officers of State Governments in NER for Developing Food Processing Industries

Sl.No.	Nodal Agency
1.	Chief Secretary, Government of Arunachal Pradesh, Itanagar Tel. 0360 – 244252, 244252
2.	Secretary Department of Industries, Govt. of Assam, Guwahati Tel.- 0361-260400 Fax – 310550
3.	Director of Industries Industries Department, Secretariat, Govt. of Manipur, Imphal Tel. 0385 – 410481/310220 Fax - 310550
4.	Managing Director Meghalaya Industrial Dev. Corp. (MIDC) , Kismat, Upland Road, Govt. of Meghalaya, Shillong Tel.-0364 – 266893/226941 Fax- 224763

Sl.No.	Nodal Agency
5.	Managing Director Mizoram Food and Allied Industries Corporation Ltd. (MIFCO) Govt. of Mizoram, Aizawl Tel. 0389 – 323680 Fax – 323680
6.	Secretary Department of Industries, Govt. of Nagaland, Kohima, Nagaland Tel. 0370 – 22919
7.	Director of Industries Department of Industries, Govt. of Sikkim , Gangtok – 737101 Tel. 03592 – 22853
8.	Director Directorate of Industries and commerce, Govt. of Tripura, Agartala Tel. 0381 – 223826 Fax - 224432

FEW APPROPRIATE TECHNOLOGIES FOR THE RURAL SECTOR IN N.E. REGION

(1) BIOFERTILISERS

Product/Process: Process for manufacture of biofrilisers based on Rhizobium, Azospirillum, Azotobacter, phosphate solubilisers etc.

Application /Use: Eco – friendly fertilizer for enhancing the productivity of soil by fixing atmospheric nitrogen/ solubilising soil phosphorus/ stimulating plant growth through synthesis of growth promoting substances.

Salient Features of Process/ Technology: The manufacturing process consists of collection bacterial strains, preparation of mother culture, multiplication, blending of the bacterial broth culture into sterile carrier materials such as peat, lignite or charcoal and packing in plastic bags.

Status of Commercialization: Production and application of biofertilisers is rapidly growing.

Minimum Economic Unit Size: 100 tpa

Indicative investment: Rs. 20 lakh

Equipment and Machinery: Fermentor, autoclave, boiler, blender, packing machine, laboratory equipment.

Raw Materials: Vermiculite/ lignite/ peat, microorganisms, chemicals, packing materials etc.

For Further Information, Please contact: The Director, Regional Research Laboratory, Canal Road, Jammu Tawi – 180001, Phone: (0191) 2546368, Fax 2546363, E Mail: rrlj@nde.vsnl.net.in

(2) LOW COST GREENHOUSE

Product/Process: Construction of low cost polyhouse using bamboo as the structural material.

Application/ Use: Cultivation of high value flowers/ plants by small flowers.

Salient Features of Process/ Technology: For cultivation of Quality flowers and high value crops, green house conditions are ideal. In this case, Bamboo has been used as a structural material for construction of the green house. The flowering plants get the protection from rain, hails, excessive low temperature, disease and insect infestation.

Status of Commercialization: The technology has proven popular among the small flower grower in H. P.

Minimum Economic unit Size: 30m² (10mx3m)

Indicative investment: Rs. 200 m² of floor area.

Equipment and Machinery: Carpentry tools etc,

Raw Materials: Bamboo, UV stabilized polythene sheets of 150 – 200 micron thickness, HDPE pipes, nails, paint.

For further information , Please Contact: The Director, Institute of Himalayan Bioresource Technology, P.O.Box No.6 , Palamber – 176061, Phone (01894) 230411, E.Mail: director@csihbt.ren.nic.in

(3) ANIMAL FEED

Product/Process: Production of animal feed formulations.

Applications/Use: For feeding poultry (chick mash, growers mash, layers mash, broiler starter, broiler finisher) and cattle (calves, milch cows and draught animals).

Salient features: Such as jowar, ragi, broken wheat, maize, tapioca, rice bran (de-oiled), rice bran whole, gram husk, groundnut cake, sunflower cake, wheat bran/husk, fish meal, dried fish, etc. are cleaned, fumigated, pulverised, mixed and molassed. The feed increases the yield of milk. The broiler takes 7-9 weeks to attain weight upto 1.8 kg

Status of commercialization: Commercialised

Minimum economic unit size: 5 tpd

Indicative investment: Rs. 14 lakhs

Equipment and machinery: Screw conveyor, single deck vibroscreen, bucket elevator, hammer mill, suction blower, batch mixer, aspirator, bagging & conveying system.

Raw materials: As mentioned above

For Further Information: Please contact: The Director, Central Food Technological Research Institute, Mysore – 570013, Phone (0821) 2517760, E Mail: director@nicfos.ren.nic.in

(4) FLY ASH - CLAY BRICKS

Product/ Process: Process for making clay bricks through incorporation of flyash.

Application/ Use: Building industry

Salient Features of Process/ Technology: 10-40% flyash is incorporated with the clay. The process involves wire cutting of the plastic clay mass by manual process and subsequent firing in conventional bull's kiln or intermittent type kiln at a temp. 950-1050 C. The bulk density of such bricks is low resulting in better thermal insulation for the walls and reduced dead load on the masonry structure. These bricks can be used in all constructions in place of normal clays.

Status of Commercialization: Commercialised.

Minimum Economic Unit Size: 30,000 bricks/day.

Indicative investment: Rs 20 lakhs (manual process)
: Rs 60 lakhs(semi –mechanised)

Equipment and Machinery: Mixer, extruder, brick cutting table, pug mill.

Raw materials: Moderately plastic clay mass, flyash and coal.

For Further Information, Please contact: (i) Central Building Research Institute, Roorkee - 247667 , Phone (033) 24735829 E Mail [:mi@cscbriren.nic.in](mailto:mi@cscbriren.nic.in)

(ii)Central Glass & Ceramic Research Institute, 196, Raja S.C.Mullick Road, Kolkata- 700032,Phone(033)24735829 E.Mail: root@cscgcri.ren.nic.in

(iii)Regional Research Laboratory, Hoshanabad Road, Bhopal – 462026, Phone (0755)2585105, E.Mail: root@rlbpl.mp.nic.in

(5)SPICE POWDERS

Product/Process: Process for making ready spice/curry powders for sambar , rasam and pulao

Applications/Use: In various food and gravy preparations and also as flavouring agents.

Salient Features of Process/ Technology: In dried clean spices are powdered to 40-50 mesh size. The powder is cooled to room temperature and sifted. The spice powder is placed in airtight container and fumigated. The powder is packed in flexible pouches for marketing. For curry powder preparation, the cleaned dry spices are given a mild roasting (optional step), mixed as per recipe and ground to 40-50 mesh, cooled to room temp., sifted, fumigated and packed.

Status of Commercialization: Commercialised

Minimum economic unit size : 0.5 tpd.

Indicative investment : Rs. 5 lakh

Equipment and machinery: Roaster, hand – sifter, storage bins, balance, heat sealer

Raw Materials: Dry spices of good quality

For Further Information, Please Contact: The Director, Central Food Technological Research Institute, Mysore – 570013, Phone (0821) 2517760, E Mail: director@nicfos.ren.nic.in

(5) BENEFICIATION OF SUNFLOWER SEEDS

Product/ Process: Integrated process for making sunflower products viz. dehulled kernels, oils, meal, and oilcake

By Products: hull, wax.

Applications/Use: Dehulled kernels: as snack and in confectionery; oil from dehulled kernels: light in weight, low in FFA and wax; meal: edible, protein – rich flour; oil cake: for animal / poultry feed.

Salient Features of Process/ Technology: Integrated process involves precleaning , grading and dehulling of seeds through centrifugal sheller at the optimum moisture level. The seeds are separated into different fractions. Dehulled seeds are used for expelling oil.

Status of Commercialization: Technology in production

Minimum Economic Unit Size: 1 t/hr

Indicative investment: Rs. 20 lakh

Equipment and Machinery: Cleaner- cum-grader, centrifugal sheller, oil expeller, separator sieve, air classifier, storage bins, material handling equipment.

Raw Materials: Sunflower Seeds.

For Further Information, Please Contact: The Director, Central Food Technological Research Institute, Mysore- 570013, Phone (0821) 2517760, E.Mail: directors@nicfos.ren.nic.in

(6) EGG PRESERVATION

Product/Process: Process for production and application of egg washing powder and egg coating oil.

Application/ Use: Egg washing powder for surface cleaning of eggs and coating oil for spraying onto eggs to enhance the keeping quality to 4 weeks at 25⁰ C – 30⁰ C and 24 weeks at 7⁰ C.

Salient feature of Process/ Technology: The egg washing powder is prepared from chemicals having sanitizing and detergent properties. The chemical are ground and mixed homogeneously. The powder is dissolved in hot water and used for surface washing of eggs. The coating oil is prepared by mixing mineral oil with antifungal and bacteriostatic agents through continuous stirring. The coating oil is sprayed over the eggs for preservation.

Status of Commercialization: Commercialised

Minimum economic unit size: To wash and coat 1 lakh eggs/ day.

Indicative investment: Rs. 12 lakh

Equipment and Machinery: Pulveriser, SS vessels with heating facility, hanging baskets, electric heaters, agitator, sprayer.

Raw materials/ inputs: Detergent, teach, white oil.

For Further Information, Please Contact: The Director, Central Food Technological Research Institute, Mysore- 570013, Phone (0821) 2517760, E Mail: director@nicfos.ren.nic.in

(7) POULTRY DRESSING

Product/ Process: Production of dressed poultry/ cut-up portions

Applications/ Use: Clean and hygienic product in convenient form, utilization of waste.

Salient Feature of Process/ Technology: The process involves ante mortem inspection, slaughtering, scalding, defeathering, singeing, evisceration and post mortem inspection. The edible internal organs are separated, washed and packed separately. The carcasses are washed, packed and chilled in crushed ice for further storage. The marketing of dressed chicken is done in fresh, chilled or chicken, drumstick, thigh, back breast and wing.

Status of Commercialisation: Commercialised

Minimum Economic Unit Size: 50 birds/ day

Indicative investment: Rs. 4 lakh

Equipment and Machinery: Killing cones with bleeding trough, scalding, plucker, wash tank with overflow, chopping block, eviscerating table, chilling tanks, draining rack with speckles, packaging table, cutting knives, singer, balance, ice-crusher and deep freezer.

Raw Materials: Poultry birds.

For Further Information, Please contact: The Director, Central Food Technological Research Institute, Mysore – 570013, Phone (0821) 2517760, E. Mail: director@nicfos.ren.nic.in

(8) RABBIT FARMING

Product/Process: Process for rearing rabbits.

Application/ Use: For edible meat. The skin is used for making fur Garments and the wool for making shawls, blankets and woollen garments

Salient Features of Process/ Technology: Rabbits are prolific breeders. A doe produces 3 to 10 off springs after a gestation period of 29-31 days i.e. it yields 30-40 more rabbits in a year. These animals can be raised under fruit trees, house backyards, and cottage without much investment. New Zealand White, Gray Gaint, Soviet Chinchilla are fur and meat varieties while Angora is the wool variety.

Status of Commercialisation : Commercialised.

Minimum Economic Unit Size: 12 animals (10 females+ 2 males)to start with.

Indicative investment: Rs. 0.2 lakh.

Equipment and machinery: Wire mesh cages, feeding troughs, wooden nest boxes.

Raw materials: Rabbit litters

For Further Information, Please Contact: The Director, Regional Research Laboratory, Canal Road, Jammu Tawi- 180001, Phone: (0191) 2546368, Fax 2546383, E Mail: rrlj@nde.Vsnl.net.in

(9) BANANA FABRIC POLYMER COMPOSITE

Product/Process: Process for making banana fiber polymer composites.

Application/ Use: Cost effective substitute for glass fiber reinforced plastic to make variety of products e.g. simple trays, mirror casings to voltage stabilizer cover and electrical panels.

Salient Features of Process/ Technology: The process consists of preparing moulds of metal, wood or plaster of Paris; mixing the resin and dye in requisite Proportion ; shaping the banana fabric by laying it over the mould; reinforcing the polymer over banana fabric; curing the mould; demoulding; cutting, trimming and polishing.

Minimum Economic Unit Size: 10 tpa.

Indicative investment: Rs. 7 lakh

Equipment and machinery: Moulds, storage vessels.

Raw Materials: Banana fiber, cotton fabric, polyester resin, catalyst, mould release agents, dyes and pigments.

For Further Information: Please Contact: The Director, Regional Research Laboratory, Industrial Estate P.O., Thiruvananthapuram – 659019, E. Mail: root@csirltrd. Ren. Nic.in

(10) LEMONGRASS

Process/Product: Agro technology for Cymbopogon flexuosus, C. pendulus and hybrids.

Varieties/ use: Krishna, Cauveri , Pragati, Praman, RRL – Cf – 100, Jor Lab L-2, OD-19, SD-68, (C.pendulus) and CKP-25 (hybrid of C. khasianus and C. pendulus). The oil, rich in citral, is used in perfumery and cosmetic industry and also in manufacture of Vitamin A. Variety RRL – Cf-100 is a selection for valuable a – bisabolol and other monoterpenes.

Suitable Regions in India: Tropical and sub – tropical plains. Variety CKP – 25 thrives well in Northern Plains.

Soil and Climate: Well drained sandy loam soil, laterite soil pH 5.5-9.0, and humid climate with sufficient sunshine. Var. Jor Lab L-2, OD – 19 and SD – 18 also suitable for alkaline soils, jhum, slopes and degraded soils in NE region.

Propagation: Through vegetative slips during Feb/ March, economic life: 4 – 5 yr.

Agripractices : Harvesting period May- Dec., 4 – 5 harvests/ yr., 6 – 8 irrigation; fertilizer: N150, P60, K60 kg, FYM 10t/ha.

Yield: In first year 100 – 130 kg oil, second year onwards 175 – 200 kg oil/ha. The variety CKP – 25 yields 250 – 300 kg oil in first year. And 380 -400 kg oil in subsequent yrs. The varieties for NE region yield 90 kg oil/ha under rainfed conditions.

For Further Information: Please contact: (1) Regional Research Laboratory, Jorhat – 785013, Phone (0376) 2370012, Fax: 2370011, E. Mail: drrljt@csir. res.in

(2) Regional Research Laboratory, Canal Road, Jammu Tawi – 180001, Phone: (0191) 2546368, Fax 2546368, E-Mail: rrlj@nde.vsnl.net.in

(3) Central Institute of Medicinal & Aromatic Plants, P.O. CIMAP, Lucknow – 226015, Phone (0522) 2359623, E-Mail: root@cimap.simetd.ernet.in

(11) PLANT TISSUE CULTURE

Product/ Process: Plant tissue culture technique for tumeric , pomegranate, cardamom, sugarcane, eucalyptus and teak.

Application/Use: Mass production and propagation of plants.

Salient Features of Process/ Technology: Allows production of disease free plants that are normally difficult to propagate. Plants can be propagated round the year notwithstanding climatic constraints.

Status of Commercialization: Commercialised

Minimum Economic Unit Size: 10 lakh plants/annum
Indicative Investment: Rs. 30 lakh.

Equipment and Machinery: Growth chamber, laminar flow cabinet, inoculation cabinet, rotary shakers, low speed centrifuge , autoclave, Millipore equipment, U.V. germicidal lamp, humidifier & dehumidifier, glass distillation unit, microscope, oven etc.

Raw Materials: Chemicals, fertilizers.

For Further Information: Please Contact: The Director, National Chemical Laboratory, Pune – 411008, Phone (020)25893030, Fax: 25893030, E Mail.: root@csncl.ren.nic.in

(12) HERBAL MOSQUITO REPELLENT COIL

Product/ Process: Manufacture of herbal coils.

Application /Use: To repel Mosquitoes.

Salient features of Process/Technology: The herbal raw materials e.g. binders, mouldering agent and adjuncts are ground into fine powder. The constituent powder is kneaded thoroughly with water base and then compacted and pouched. Coil are dried. The coil burns slowly, emanating fumes which drive away mosquitoes. A coil lasts for 6 – 8 hr. The fumes/smokes is not harmful.

Status of Commercialization: Commercialised.

Minimum Economic Unit Size: 1000 coils/day
Indicative investment: Rs.3 lakh

Equipment and machinery: Foot/hand press, coil press, hammer mill, sieves, and weighing machine.

Raw Materials: Herbal materials, binder, smouldering agent, adjuncts.

For Further Information: Please Contact: The Director, Central Food Technological research Institute, Mysore – 570013, Phone (0821) 2517760, E.Mail: director@nicfos.res.in

(13) BANANA FIBRE AND PRODUCTS

Product/ Process: Process of extraction of fibre from banana pseudo- stem and production of utility items.

Application/Use: Coarse woven fabrics e.g. Hessian, sacks, ropes, twines, sand bags, tent ,webbing ,canvas, and screens, kit bags, tool bags, luggage covers, banana fibre can also be blended with wool, cotton, and flak for making blankets, carpets and rags.

Status of Commercialization: Ready for commercialization

Minimum Economic Unit Size: Fibre 0.5 tpd.

Indicative Investment: Rs.5 lakh

Equipment and Machinery: Two rolls crusher, open vat, drying chamber, weighing balance, cutting and slitting equipment

Raw Materials: Banana pseudo stems, chemicals

For Further Information: Please contact: The Director, Regional Research Laboratory, Jorhat- 785013, Phone (0376) 2370012, Fax: 2370011, E.Mail: drrljt@csir.res.in

(14) DEHYDRATED FRUITS AND VEGETABLES

Product/process: Dehydration of grapes, banana, onion, potato and peas.

Application/ use: Year round availability of fruits and vegetables in hygienic condition at reasonable cost.

Salient Features of process and technology: The process consists of washing, peeling, shelling, slicing, blanching, chemical treatment (for peas), dehydration under controlled conditions and packaging of finished product in suitable conditioners.

Minimum Economic Unit Size: 0.1 tpd

Indicative investment: Rs.3 lakh.

Equipment and Machinery: Slicer, drier, washing, sulphiting and blanching tanks, broiler etc.

Raw Materials: Fruits, vegetables, salt, potassium metabisulphite.

For Further Information: Please contact: The Director, Central Food Technological Research Institute, Mysore- 5700013, Phone (0821) 2517760, E.Mail: director@nicfos.ren.nic.in

(15) HAND MADE PAPER

Product/Process: Manufacture of hand made paper/ sheet.3

Application/Use: Drawing paper, water marked paper, certificate paper, fancy and decorative papers, greeting and invitation cards, paper boards and carry bags.

Status of Commercialization: Commercialisation

Minimum Economic Unit Size: 200 kg/day

Indicative investment: Rs. 15 lakh

Equipment and Machinery: Hydropulper, beater, handsheet making vats, screw press, calendaring unit, cutting machine, storage vessels, weighing balance, water tank etc.

Raw Materials: Agro- cellulosic fibres e.g. jute, straw, banana stem, cannabis, cotton rags, hosiery waste, Tailor cutting , Hessian waste; waste paper , dyes, pigments and sizing chemicals.

For Further Information, Please Contact: (1) Regional Research Laboratory, Jorhat – 785013, Phone (0376) 2370012, Fax: 2370011, E.Mail: drrltj@csir.res.in
(2) Regional Research Laboratory, Canal Road, Jammu Tawi- 180001, Phone: (0191) 2546368, Fax 2546383, E. Mail: rrlj@nde.vsnl.net.in

(16) BIOPLATES AND LEAF CUP MACHINE

Product/Process: Leaf cup machine

Application/Use: For production of plates and cups from plant leaves

Salient Features of Process/ Technology: Leaf cups and plates are traditionally made by hand in Indian villages. These are commonly used for serving food at religion and social functions. The laborious craft can now be transformed through a machine operation to make these containers in elegant shapes and sizes. Such cups

and plates have good dimensional stability besides being inexpensive, hygienic and biodegradable. The plant leaves are cleaned, dipped in water and dried. The leaf is placed on the lower die pattern, which is pressed down and released after a few seconds. The folding, trimming and shaping are done in a single operation through the machine by pressing of the pedal.

Minimum Economic Unit Size: 2,000-2,500 cups/day: working – 300day / annum
Indicative cost/machine: Rs0.08 lakh

Equipment and Machinery: Leaf cup machine (available from CSIR licenses)

Raw Materials: Plant leaves like banana, beautia, bauhinia, arecanut sheath, pseudostem of banana.

For Further Information: Please Contact: The Director, Central Food Technological Research Institute, Mysore- 13

(17) GINGER PRESERVE AND CANDY

Product/ Process: Process to manufacture ginger preserve (with syrup) and candy (syrup free)

Application/Use: Confection, appetizer, a mouth freshener and as a health food; also used for top dressing and decoration of cake, puddings and as ingredient in fruit cocktails and salad

Salient features of Process/ Technology: The products are prepared from fresh ginger. The process involves cleaning, peeling and dicing of ginger and steeping/ curing in sugar syrup of increasing concentrations upto upto 70⁰ brix to get ginger preserve. The process is further followed by draining off the syrup, coating the cubes with powdered sugar and drying under controlled conditions. The product is suitably packed in pouches or tins.

Status of Commercialization: Commercialised.

Minimum Economic Unit Size: 0.2 tpd

Indicative investment: Rs. 12 lakh.

Equipment and machinery: Cooking and storing vessels, drier (optional), SS knives, batteries of chulhas, drying trays, etc.

Raw Material: Fresh ginger rhizomes.

For Further Information, Please Contact: The Director, Central Food Technological Research Institute, Mysore – 570013, Phone (0821) 2517760, E.Mail: director@nicfos.ren.nic.in

(18) FRUIT SQUASH AND SYRUP

Product/ Process: Process for manufacture of fruit squash, crush, cordial, syrup from orange, mango, lime, pineapple, grape and ginger – amla.

Applications/ Use: Fruit based refreshing beverages, consumed after dilution with water.

Salient Features of process/ Technology: Fully sound ripe fruits are washed, peeled and destined. The juice/ pulp is extracted and mixed with sugar syrup, citric acid, preservatives, colour and flavour. The product is bottled.

Status of Commercialization: Commercialised.

Minimum Economic Unit Size: 250 bottles/ day

Indicative Investment: Rs. 3.75 lakh

Equipment and Machinery: Fruit pulper / crusher/ extractor, SS vessels, bottle washing machine, handling vessels.

Raw Materials: Fruits, flavour, colour, sugar, boyyles and labels.

For Further Information, Please Contact: The Director, Central Food Technological Research Institute, Mysore – 570013, Phone (0821) 2517760, E-Mail: director@nicfos.ren.nic.in

(19) INSTANT PICKLE

Process/ Product: Process to manufacture instant pickles, which can be reconstituted with simple addition of water and oil.

Application/ Use: Food adjunct

Salient features of Process/ Technology: Packaging of traditional pickles involves a high cost due to presence of liquid like brine, oil and vinegar. Anew concept has been worked out to make out instant dry pickles packed in polythene bags along with spices. Fully matured fresh raw mangoes / limes are washed and cut into uniform size, salt- cured and dried. Ground spices are added along with cured dry fruit pieces and packed in polythene bags. For reconstitution the mix is soaked overnight in specified quantity of water to get the pickle ready to use. Oil can be added to taste.

Status of Commercialization: In commercial production.

Minimum Economic Unit Size: 0.25 tpd.

Indicative Investment: Rs. 15 lakh

Equipment and machinery: Electric dryer, spice grinder, weighing machine, heat sealing machine, frying pan, containers, knives.

Raw Materials: Raw mango, fresh lime, salt, spices, oil, polythene bags, cardboard packing boxes.

For Further Information, please contact: The Director, Central Food technological Research Institute, Mysore – 570013, Phone (0821) 2517760, E-Mail: director@nicfos.ren.nic.in

(20) TOMATO PRODUCTS

Product/ process: Process for production to tomato products: juice, puree, ketchup, chutney, sauces.

Application/ Use: Ready- to- eat products used as food adjunct.

Salient Features of Process/ Technology: The process consists of crushing the tomatoes, deseeding and extraction of juice, mixing with sugar, salt and spices and heating. The juice is bottled/ canned. The ketchup manufacture involves concentration of juice, addition of spice extract, salt, sugar and boiling to attain 28030% brix, addition of vinegar and preservatives. It is then bottled. Tomato chutney preparation consists of crushing of tomatoes, addition of sugar, spice extractives and boiling; vinegar and preservatives are added and bottled.

Status of Commercialization: Commercialised

Minimum Economic Unit Size: 250 kg/ day

Indicative Investment: Rs. 10 lakh

Equipment and machinery: Tomato pulper, SS vessels/ kettles, bottle washing machine, crown corking machine, boiler, etc.

Raw Materials: Tomatoes, spices and condiments.

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(21) PAPAIN

Product/Process: Production of papain from the latex of the green papaya fruits.

Application/ Use: The papain enzyme is widely used in food processing , e.g. chill proofing of beer, tenderizing meat and freezing of food proteins. The other applications are in leather tanning, de- gumming of silk, cheese manufacture, treatment of vegetable proteins, effluent treatment, pharmaceuticals etc.

Salient Features of Process/ technology: The latex is mixed with KMS immediately after collection and stored at cold temp. It is spread in trays and dried in vacuum shelf drier for about 4 hr. The dried papain is powdered in a hammer mill or roller mill. After testing its proteolytic activity and diluting with lactose powder, it can be graded as BP grade or IP grade.

Status of Commercialization: Commercialised.

Minimum Economic Unit Size: 20 kg/ day

Indicative Investment: Rs. 12 lakh

Equipment and machinery: Vacuum shelf drier, dehumidifier, hammer mill, blender, walk in cooler, sealing machine.

Raw Materials: Papaya latex, lactose powder, KMS etc.

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(22) VINEGAR

Product/ Process: Manufacture of natural or brewed vinegar from fruits, molasses, etc.

Application/ Use: Pickles, sauces, various dishes and in all types of Chinese food preparation.

Salient Features of Process/ Technology: Vinegar can be made from fruits e.g. pineapple, grape, orange, banana, apple, peach, apricot as well as from sugar cane juice, coconut water, malt, molasses. The juice/ aqueous extract are fermented with *Saccharomyces cerevisiae* yeast after adjusting the brix. The fermented alcoholic liquor is passed through vinegar generator for acetic acid fermentation using acetobactor culture. It takes nearly 15 days for completion of process. Vinegar contains about 4 % acetic acid.

Status of Commercialization: Commercialised.

Minimum Economic Unit Size: 100 L/ day, working 100day/annum.

Indicative Investment: Rs. 6 lakh

Equipment and machinery: Vinegar generator, wooden barrels, sterilization tank.

Raw Materials: Fruits/ malt/ molasses/ sugarcane/ coconut water, yeast culture, mother vinegar and chemicals.

For Further Information, Please Contact: The Director, Central Food Technological Research Institute, Mysore- 570013, Phone (0821) 2517760, E.Mail: director@nicfos.res.nic.in

Source: Indian Institute of Entrepreneurship (IIE), Guwahati-781029.