



भा.कृ.अनु.प.-केन्द्रीय कृषि अभियांत्रिकी संस्थान ICAR-Central Institute of Agricultural Engineering

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NAIF-Agri Business Incubation

NAIF-Agri Business Incubation
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ICAR-Central Institute of Agricultural Engineering
NAIF-Agri Business Incubation Centre

Agri Business Incubation Units & Technologies
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Agri Business Incubation Units & Technologies Details

Process Technology for New Food Products

1. SOY-BUTTER

Technology & Facility:

A healthy, nutritionally rich, cholesterol free plant based soy-butter with high protein (39%) and low calorie has been developed making it ideal for people who are suffering from protein malnutrition obesity and hypercholesterolemia. It can also be a perfect choice for those who suffer from peanut allergy. It is a boon for growing children and vegetarians. It has no artificially added flavour and preservatives with a 3 months shelf-life under ambient conditions. We can use it as a spread in sandwiches, parathas, rotis, crackers or cookies. It can be part of the Mid-day meal scheme in Anganwadis or other health promoting schemes of the Government. Concisely high nutritional profile, savoury taste, tempting colour and low cost make soy-butter an easily accessible healthy food product for all age groups.



Pilot Scale Facility:

A small pilot scale unit consists of several equipment (roaster, drier, mill, colloidal mill) for use by incubates in which about 50kg/day of soy butter could be processed.

Business Opportunity:

The entrepreneurs can use the facility for hands-on training and for making limited scale production of soy butter to assess consumer preference, product modifications and market. Subsequently, a commercial unit could be set up by the entrepreneurs. CIAE would provide necessary guidance /support in their endeavors.

Technology License / Training Fee / Terms & Conditions for using ABI Facilities:

- **Charges for use of facility by incubates:** Rs. 7/- per kg of soy butter [Excluding raw material, labour and all other expenses]
- **Registration fee:** Rs. 2000/- [Non-refundable]
- **Security deposit:** Rs. 5000/- [Refundable subject to no-dues]
- **License fee:** Rs. 100000/- + 18% GST [For MSME only]
- **Pre requisite for incubates [Licensing/training cost]:** Depositing license fee is mandatory for all incubates.

Facility Incharge - Dr. Dipika A Murugkar, Principal Scientist, CESPU

Contact No. - 0755-2521070; Email: Dipika.murugkar@icar.gov.in

2. Soy Milk and Soy Panner (TOFU)

Technology & Facility:

Soy milk is a water extract of soybean that is used to make soy paneer, yogurt, and other dairy substitutes. One kilogram of dry soybean yields 6–8 liters of milk. Special features of soymilk are low cost, good nutrition and suitability for lactose-intolerant people. Soymilk contains about 90% water, 2.5% fat, 3.5% protein and other nutrients. Soy paneer, popularly known as TOFU, is a coagulated and pressed soy protein. At 72% moisture, it contains about 14% protein and 9% fat. Soy paneer can be used in various traditional food products like vegetable curry, paneer pakoda, paneer paratha etc. The byproduct okara can be used for the preparation of products like halwa, bur, gulab-jamun etc.



Business Opportunity:

It is a very novel product in India and is very similar to the dairy paneer most popularly used in Indian meals and snacks, with the cost being about one-fourth. It has good potential as a new business.

Technology License / Training Fee / Terms & Conditions for using ABI Facilities:

- **Charges for use of facility by incubates:** Rs.23.00/Kg of Soy Tofu produced [Excluding raw material, labour and all other expenses]
- **Registration fee:** Rs. 2000/- [Non-refundable]
- **Security deposit:** Rs. 5000/- [Refundable subject to no-dues]
- **License fee:** Training fee of Rs. 10,620/- Including GST would be paid to ICAR-CIAE, Bhopal.
- **Pre requisite for incubates [Licensing/training cost]:** No technology license fee but one week training is mandatory with a fee of Rs.10,620/-[including GST] but excluding lodging and boarding and travel charges.

Facility Incharge - Dr. Ajesh Kumar V., Scientist, CESPU

Contact No. 0755-2521072; Email: ajesh.v@icar.gov.in

3. Full Fat Soy Flour

Technology & Facility:

Full fat soy flour is one of the simplest soy-based food products to be used in combination with cereals and pulses. Ten per cent addition of soy flour is recommended to start with and can be increased upto 20%.

Preparation and use of recipes from soy-cereal/pulse blended our does not demand any change in the method of preparation and traditional food habits of the people.

It contains about 40% protein and 18% oil, besides carbohydrates, minerals and vitamins. All types of traditional and modern food products can be prepared utilizing full-fat soy flour. Full-fat soy flour has an adequate shelf life when packed properly.



Business Opportunity:

Full-fat soy our provides a great business opportunity as it can be sold as full fat soy our and blended with wheat and other cereal ours up to 10% to increase nutrition at an affordable cost for use at the domestic level for the whole family for better health and nutrition.

Technology License / Training Fee / Terms & Conditions for using ABI Facilities:

- **Charges for use of facility by incubates:** Rs.18.50/Kg of FFSF produced [Excluding raw material, labour and all other expenses]
- **Registration fee:** Rs. 2000/- [Non-refundable]
- **Security deposit:** Rs. 5000/- [Refundable subject to no-dues]
- **License fee:** Training fee of Rs. 10,620/- Including GST would be paid to ICAR-CIAE, Bhopal.
- **Pre requisite for incubates [Licensing/training cost]:** No technology license fee but one week training is mandatory with a fee of Rs.10,620/- [including GST] but excluding lodging and boarding and travel charges.

Facility Incharge - Dr. Ajesh Kumar V., Scientist, CESPU

Contact No. 0755-2521072; Email: ajesh.v@icar.gov.in

4. Fried/Roasted Soy Nuts

Technology & Facility:

Soybean use in snack foods can enhance their nutritional value. Deep fat frying and roasting are widely used to prepare snack foods throughout our country. The unique features of soy nuts are that they provide a nutritious snack with double the protein content compared to snack food prepared from other pulses/legumes.

It is a low-cost source of plant protein and affordable for the weaker sections of society. Such snack foods can help in mitigating the problems of protein-calorie malnutrition. These nuts contain about 29.5% good quality protein and 31.7% fat, providing over 540 kcal of energy per 100g of nuts.



Business Opportunity:

The product is a light snack and similar to roasted gram, popular in India as a quick snack. Therefore, it offers very good entrepreneurship potential for upcoming entrepreneurs to earn a livelihood & provide employment to needy individuals.

Technology License / Training Fee / Terms & Conditions for using ABI Facilities:

- **Charges for use of facility by incubates:** Rs.16.00/Kg of Soy nuts produced [Excluding raw material, labour and all other expenses]
- **Registration fee:** Rs. 2000/- [Non-refundable]
- **Security deposit:** Rs. 5000/- [Refundable subject to no-dues]
- **License fee:** Training fee of Rs.10,620/- Including GST would be paid to ICAR-CIAE, Bhopal.
- **Pre requisite for incubates [Licensing/training cost]:** No technology license fee but one week training is mandatory with a fee of Rs.10,620/- [including GST] but excluding lodging and boarding and travel charges.

Facility Incharge - Dr. Ajesh Kumar V., Scientist, CESPU

Contact No. 0755-2521072; Email: ajesh.v@icar.gov.in

5. Post harvest mechanization package for minimally processed banana central core

Technology & Facility:

Banana central core is an abundant natural resource in tropical and subtropical regions, which is a good source of nutrition. About 5-7 tonnes of central cores can be extracted from one hectare. Currently, products like diced banana central core, banana central core pickle, candy, soup mix, etc., are available in the market. Banana central core juice is in huge demand as it is very good treatment against kidney stone, diabetics etc. ICAR – Central Institute of Agricultural Engineering Regional Station, Coimbatore, Tamil Nadu has developed a package of equipment for minimal processing of banana central core in collaboration with ICAR-NRC Banana, Tiruchirappalli, Tamil Nadu.

Pilot Scale Facility:

A small pilot scale unit consists of several equipment (banana central core slicer, dicer, fibre removing equipment, surface water removing equipment, juicer/grinder and juice squeezer) for use by incubates in which about 30-40kg/h of minimally processed Banana Central Core can be processed.



Business Opportunity:

The entrepreneurs can use the facility for hands-on training and for making limited scale production of minimally processed banana central core. Subsequently, a commercial unit could be set up by the entrepreneurs. ICAR CIAE would provide necessary guidance/support in their endeavours.

Technology License / Training Fee / Terms & Conditions for using ABI Facilities:

- **Charges for use of facility by incubates:** Rs.0.85 per kg of diced banana central core or litre of Banana central core juice production
[Amount to be paid upon completion of every batch/monthly production on invoice raised by ABI unit]
- **Registration fee:** Rs. 2000/- [Non-refundable]
- **Security deposit:** Rs. 1200/- (charges of 2 batches (days) run on full capacity)

Facility Incharge - Dr Ravindra Naik, Head & PS, Regional Station,
ICAR-CIAE Coimbatore - 641 007, Tamil Nadu

Contact No. 91-422-2472623, Email id: Ravindra.Naik@icar.gov.in

6. Bakery Unit for variety of multi-nutrient bakery Products

6.1 Multi-Nutrient Biscuit

Technology & Facility:

Multi-nutrient biscuit patented technology produces nutritionally enriched baked products developed using cereals, millets, pulses, oilseeds, dairy ingredients and tropical fruits. They are rich in nutrients like protein, fiber, minerals, vitamins and anti-oxidants and have high satiety value, appealing taste and are cost effective. These biscuits are a nutritionally rich and healthy snack for both young and old. Its unique feature that it is totally free from maida (refined flour), artificial colours, flavours and preservatives and enriched with malted and sprouted ingredients and fruits thus providing a healthy substitute to commercially available biscuits.



6.2 Multi –Nutrient Bar

Technology & Facility:

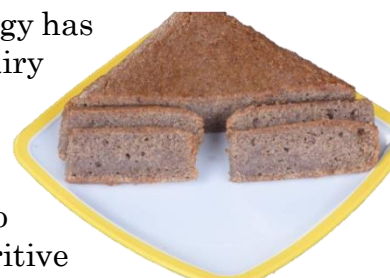
Multi-Nutrient Bars are high nutrient baked products which provide an easy way out of the dilemma of choosing between health and taste. The snack contains ingredients from almost every food group and is sweetened with healthy natural sweetener jaggery. It substantially contributes to our daily requirement of energy, protein and minerals and also provides added advantages of phenolics and antioxidants. Apart from this, the combination of fresh and dry fruits leaves a pleasant taste on the tongue. This snack can be used to satisfy “between the meals” hunger and also act as “quick bite” during travel.



6.3 Gluten Free Eggless Cake

Technology & Facility:

Eggless, gluten free multi-nutrient cake patented technology has been made using cereals, millets, pulses, fruits and dairy ingredients which makes it rich in proteins, minerals, vitamins, and antioxidants. People who avoid eggs and those who have gluten allergy can celebrate their happy moment with this nutritious eggless gluten free cake. No addition of artificial colour or preservatives and high nutritive value provide it a special place among conventional or commercial cakes.



6.4 Calcium Enriched Biscuits and Breads

Technology & Facility:

Calcium is required for building and maintaining bones and teeth, blood clotting, transmission of nerve impulses, and regulation of the heart's rhythm. Since dietary calcium intake of Indians is less than 400 mg a day, incorporation of naturally fortified calcium enriched biscuits and bread in the diet can be a great approach to deal with dietary calcium deficiencies. Biscuits and breads are enriched with high calcium natural ingredients like soy-butter, sesame, moringa, cumin, coconut etc.



Business Opportunity:

All these bakery products can be made in a common bakery and thus providing the entrepreneur an opportunity to produce and market variety of products and choice of production as per market demand. Hence, entrepreneur can use a common bakery commercial unit to produce and market these products and thus increasing income and business sustainability. Also new modified products can be developed with variety of flavor and taste and CIAE can assist the entrepreneur in such product development. In addition, new bakery products in future can be added.

Technology License / Training Fee / Terms & Conditions for using ABI Facilities:

Product process & technology:

- (i) Multi-Nutrient Biscuit
- (ii) CIAE Multi-Nutrient Bar
- (iii) Gluten Free Eggless Cake
- (iv) Calcium Enriched Biscuits
- (v) Calcium Enriched Breads

- **Charges for use of facility by incubates:** Rs. 11/- per kg [Excluding raw material, labour and all other expenses]
- **Registration fee:** Rs. 2000/- [Non-refundable]
- **Security deposit:** Rs. 5000/- [Refundable subject to no-dues]
- **License fee:**
 - (i) Rs. 44000/- + 18% GST [For MSME only]
 - (ii) Rs. 35000/- + 18% GST [For MSME only]
 - (iii) Rs. 35000/- + 18% GST [For MSME only]
 - (iv) Rs. 25000/- + 18% GST [For MSME only]
 - (v) Rs. 25000/- + 18% GST [For MSME only]

Facility Incharge - **Dr. Dipika A Murugkar**, Principal Scientist, CESPU

Contact No. - 0755-2521070; Email: Dipika.murugkar@icar.gov.in

Pilot Plants

7. Multi-Feed Plant (Animal/Aqua/Poultry)

Technology & Facility:

A multi-feed production pilot plant, suitable to process livestock- poultry-aqua feed ingredients is available ICAR-CIAE, Bhopal. The feed plant can produce aqua, poultry and cattle pellet feed with a capacity of about @100, 120 and 150kg /h respectively. Feed can be formulated to achieve the targeted end product mix with balanced nutritional requirements and physical characteristics. This can be done through selection of raw ingredients, their processing parameters and setting of equipment for bovine, ovine, avian and aqua feed. Nutritional requirements with desired nutritional balance can be produced in the form of pellets/ crumbles/ granules of pellets.



Business Opportunity:

The entrepreneurs can use the facility for hands-on training and for making limited scale production of feed to assess consumer preference, product modifications and market. Subsequently, a commercial unit could be set up by the entrepreneurs. CIAE would provide necessary guidance /support in their endeavors.

Technology License / Training Fee / Terms & Conditions for using ABI Facilities:

- **Charges for use of facility by incubates:** Rs. 16/kwh [Excluding raw material, labour and all other expenses]
- **Registration fee:** Rs. 2000/- [Non-refundable]
- **Security deposit:** Rs. 5000/- [Refundable subject to no-dues]
- **License fee:** None
- **Pre requisite for incubates [Licensing/training cost]:** None

Facility Incharge - Dr. P.P. Ambalkar, CTO, TTD
Contact no.- 0755-2521139; Email: Prakash.ambalkar@icar.gov.in

8. Briquetting & Pelleting Plant for Agro-Residues

Technology & Facility:

The ICAR-CIAE, Bhopal has a biomass briquetting & pelleting plant for production of 300-350 kg briquettes per hour. It consists of a hammer mill for grinding of biomass, a screw conveyor for feeding the grinded biomass ram and die type briquetting press, a roller die type pelleting machine and pellets. The produced briquettes are used in boilers in agro-industries, brick kiln etc. This activity permits farmers of nearby villages to gain additional income from biomass, which otherwise is burnt in the eld adding pollution to environment.



Business Opportunity:

A commercial profitable unit may be started by entrepreneurs for a profitable business by developing forward and backward linkages. Many industries refer to purchase these briquettes for use as fuel. Technology for power generation from biomass may also available for interested entrepreneurs.

Technology License / Training Fee / Terms & Conditions for using ABI Facilities:

- **Charges for use of facility by incubates:** Rs. 1.40/kg of briquettes [Excluding raw material, labour and all other expenses]
- **Registration fee:** Rs. 2000/- [Non-refundable] compulsory
- **Security deposit:** Rs. 5000/- [Refundable subject to no-dues]
- **License fee:** None
- **Pre requisite for incubates** [Licensing/training cost]: Registration in must.

Facility Incharge - **Dr. Sandip Mandal, Sr. Scientist, AEP**
Contact no.- 0755-2521128; Email: sandip.mandal@icar.gov.in

9. Biochar Making Unit for Agro-Residues

Technology & Facility:

The ICAR-CIAE, Bhopal has a char making unit of 100 kg of agro-residues per batch with a recovery of 30-35 kg of char. The char produced in this unit is without the temperature control. The produced char can be used to reclaim acidic soil and also for making briquettes. The activity permits farmers of nearby villages to gain additional income from surplus crop residues, which otherwise is burnt in the field or adding pollution to environment.



Business Opportunity:

A commercial profitable unit may be started by entrepreneur for a profitable business by developing forward and backward linkages. The produced biochar has application in agriculture sector as it acts as a soil conditioner.

Technology License / Training Fee / Terms & Conditions for using ABI Facilities:

- **Charges for use of facility by incubates:** Rs. 10,000/- per month [Excluding raw material, labour and other expenses]
- **Registration Fee:** Rs. 2000/- [Non-refundable] compulsory
- **Security Deposit:** Rs. 5000/- [Refundable subject to no-dues]
- **License Fee:** None
- **Pre requisite for incubates [Licensing/training cost]:** None

Facility Incharge - **Dr. Harsha Wakudkar, Scientist, AEP**
Contact No. 0755-2521121; Email: harsha.wakudkar@icar.gov.in

Other Technology/ Facilities

10. Covered Cultivation Based Nursery Raising Unit

Technology & Facility:

For raising nursery as business incubation, a poly house of 200 sq.m is available for incubates, which could accommodate about 3.00 lakh seedlings per batch.



Business Opportunity:

Farmers / entrepreneurs can use this facility for hands-on training and learning the skill for raising nursery under covered cultivation and sell their plants in the market. It is good opportunity for marginal size farm to generate income through nursery raised horticultural crops.

Technology License / Training Fee / Terms & Conditions for using ABI Facilities:

- Charges for use of facility by incubates: Rs. 0.50/- per seedling
- Registration fee: Rs. 2000/- [Non-refundable]
- Security deposit: Rs. 3500/- [Refundable subject to no-dues]
- License fee: None
- Pre requisite for incubates [Licensing/training cost]: None

Facility Incharge - Dr. Yogesh Rajwade, Scientist (SS), IDED

Contact no.- 0755-2521004; Email: yogesh.rajwade@icar.gov.in

11. Mechanization Package for Rope Making from Outer Sheath of Banana Pseudostem

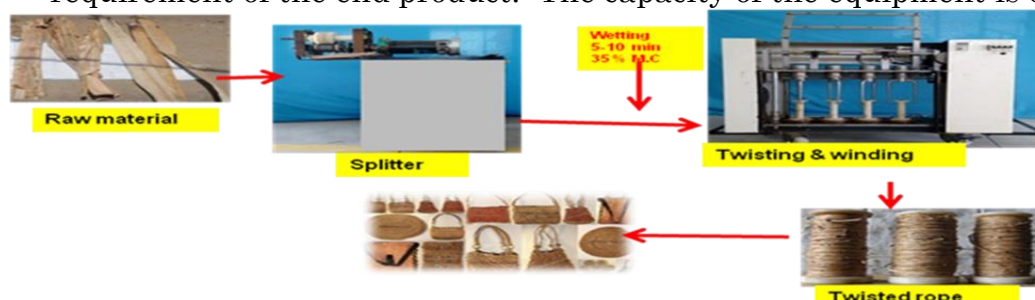
Technology & Facility:

Out of the 14-18 sheaths available in a pseudostem of banana, the outermost 6-8 sheaths yield coarse fibre which is used for rope making. Ropes from outer sheath of banana pseudostem is in high demand for different applications but is traditionally produced from labour intensive hand spinning or by ratt machines. ICAR – Central Institute of Agricultural Engineering Regional Station, Coimbatore, Tamil Nadu has developed a package of equipment to mechanize the rope making process in collaboration with ICAR-NRC Banana, Tiruchirapalli, Tamil Nadu.

Pilot Scale Facility:

A small pilot scale unit consists of –

- Equipment of splitting of outer sheath of banana pseudostem: It contains a pair of rotating nylon rollers with embedded cutting blades to split the banana pseudostem outersheath into strands of different sizes. The capacity of the unit is 3-3.5m/min.
- Equipment for twisting and winding of splitted strands from outer sheath of banana pseudostem: The equipment contains a mechanism for twisting and another mechanism for winding the twisted strands on four bobbins through a bobbin building mechanism. Provision is made to vary the number of twists with the help of speed control mechanism, based on the requirement of the end product. The capacity of the equipment is 800 m/h.



Business Opportunity:

The entrepreneurs can use the facility for hands-on training and for making limited rope quantity of rope from outer sheath of Banana pseudostem. The developed equipment has got advantages over manual method of twisting and winding in terms of more uniform twist, lower space requirement, less dependency on skilled labour, cheaper than manual labour and higher output. Subsequently, a commercial unit could be set up by the entrepreneurs. ICAR CIAE would provide necessary guidance/support in their endeavours.

Technology License / Training Fee / Terms & Conditions for using ABI Facilities:

- **Charges for use of facility by incubates:** Rs.25/h (Amount to be paid upon completion of every batch/monthly production on invoice raised by ABI unit)
- **Registration fee:** Rs. 2000/- [Non-refundable]
- **Security deposit:** Rs. 5000/- [Refundable subject to no-dues]

Facility Incharge - Dr Ravindra Naik, Head & PS, Regional Station,
ICAR-CIAE Coimbatore - 641 007, Tamil Nadu

Contact No. 91-422-2472623, Email id: Ravindra.Naik@icar.gov.in