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RAFTAAR Agribusiness Incubator
Department of Agricultural Engineering
College of Horticulture



Value addition of
JACKFRUIT
Opportunities for
Emerging Entrepreneurs

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Value addition of Jackfruit

Opportunities for emerging entrepreneurs

Jackfruit, the official fruit of Kerala, is grown in homesteads without any management practices. Jackfruit is known as largest edible tree borne fruit in the world and weighs up to 50 kg and is 60-90 cm in length. The jackfruit is a seasonal fruit mainly available in the summers. It is found in almost all the humid regions of the world. Jackfruit is rich in several nutrients and it can act as source of complete nutrition to the consumers. The jackfruit is rich in dietary fiber, carbohydrates, calcium, iron and vitamin A, B and C. Jackfruit has a low glycemic index and provides fiber, protein and antioxidants, which may promote better blood sugar control.

The fruit has a delicious taste, flavour, colour and excellent nutritional quality, which make jackfruit more appropriate for processing and value addition. Annual production of jackfruit in Kerala is 190.14 thousand tonnes. In the same time, annual wastage of the state amounts to 35 crore jackfruits approximately. During the harvesting season jackfruit available in plenty at nominal prices. Suitable value addition will make jackfruit available in the off season and also provide the additional income to farmers and processors.

Raw and ripe fruit and seeds can be processed to make a varieties products. Various value added products of jackfruits are pickles, dried jackfruit, chips, ice cream, jam, squash, juice, cake, candy, retorted jackfruit, cutlet, pappad, ada etc. Different value added jackfruit products and suitable technologies had been developed at RAFTAAR Agri Business Incubator and has huge market potential. The new technologies and jackfruit products are outlined which can be commercialized and give profit to emerging entrepreneurs:

Vacuum fried jackfruit chips

Jackfruit chips are a very popular snack in Kerala prepared by deep frying from fully mature and unripe jackfruit. It has a shelf life of more than a month. These chips are made with coconut oil commonly. In conventional frying,



higher frying temperature causes browning of the fruit. The high oil absorption and darkening of colour during deep fat frying could be reduced significantly in Vacuum frying technology. Vacuum frying is carried out at pressures well below atmospheric level. It serves to reduce oil content, discolouration, losses of vitamins and other compounds, which is normally associated with oxidation during high temperature processing. Vacuum frying can be done with both matured and ripe jackfruit to produce a bright yellow and crunchy product. Oil retains its properties without change since low temperature and pressure are involved in the process thus the oil can be reused for more than 60 times for vacuum frying through this technique. Nearly 90 % of oil use could be reduced compared to convention frying.

Jackfruit slicer

The traditional method of jackfruit bulb slicing is a time-consuming process and causes drudgery. At present the chips are made by cutting and slicing raw jackfruit by knife and then deep frying in edible oil. The method does not produce chips of uniform thickness and may cause injury to the persons while slicing. To fulfill these requirements a women friendly mechanical jackfruit slicer was



developed under Centre of Excellence in Post-harvest Technology at Kerala Agricultural University.

This machine can slice jackfruit bulbs into uniform sized slices. The machine requires only one person to operate. This economically viable machine has a capacity of 50 kg/h and the approximate cost is Rs 50,000/-. The new slicer can be efficiently used in both small and large scale industries for slicing jackfruits with minimum loss of material and can do trouble free slicing with high quality and efficiency. Apart from jackfruit slicer, slicer cum dicer was also developed under this scheme which can be used to make jackfruit bulb dices to prepare fruit salads.



Blancher cum drier

Mechanically sliced jackfruits can be dried by means of an efficient blancher-cum-drier. Mechanical blanchers are usually available for blanching operations. Separate blanching and drying procedure is a time consuming and tedious process. It will also lead to increased production cost. Efficient drying with reduced time and operation cost is the



main attraction of the newly developed blancher cum drier. The capacity of the blancher cum dryer unit is 18-28 kg/ batch. Efficient drying and quality dried product can be produced by this combo machine. Approximate cost of the machine is Rs. 2,00,000/-. This machine is highly useful to micro and small scale jackfruit processing units for producing safe dried jackfruit flakes with minimum cost.

Jackfruit flour

Flour prepared by milling of dried jackfruit bulbs. Flour from matured bulbs has a yellowish white colour. This can be used as an ingredient in many of the dishes like puttu, idly, chapati, kumbilappam, upma, pappad etc. Jackfruit flour as it is diabetic friendly and gluten free, it can be used along with wheat flour for making soft chapattis and as a fortifier in every dish. Moreover, the nutritious fibre content in this flour can have several health benefits.



Ready to cook mature jackfruit

Mature jackfruit bulbs can be stored for long time by proper drying method. The packed RTC jackfruit extends the shelf life of jackfruit. It can be rehydrated and used for preparation of dishes in offseason too. RTC jackfruit also gives the additional income for farmers and processors.

Retorted tender Jackfruit

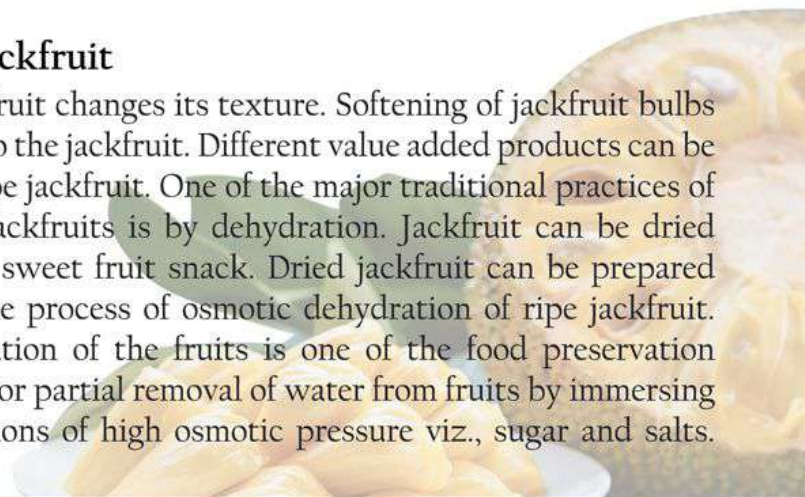
(Technology for tender jackfruit in cans/retort pouches)

Processing of tender jackfruit as vegetable can give quality product that fetch better price in the market and thus help to improve the financial status of the jackfruit growers in the state. Processed jack fruit products have excellent market in the domestic and export front. The tender jack fruit from both 'varikka' and 'koozha' varieties were minimally processed and canned. The tender jackfruit is cleaned and cut into pieces, blanched and sealed in cans/retort pouches along with preservatives. These are subjected to retort processing. The retort processed tender jack fruit is shelf stable for one year without any changes in its nutritive value. The canned tender jack resemble fresh jack fruit and is made available to the consumers in ready to eat form throughout the year. For preserving the tender jackfruit, canning process protocol was developed under Centre of Excellence in Post-harvest Technology at Kerala Agricultural University. This is a blooming technology in food industry and a promising technology that is accepted by the consumers.



Osmo-dried jackfruit

Ripening of jackfruit changes its texture. Softening of jackfruit bulbs adds more taste to the jackfruit. Different value added products can be prepared from ripe jackfruit. One of the major traditional practices of preserving ripe jackfruits is by dehydration. Jackfruit can be dried successfully to a sweet fruit snack. Dried jackfruit can be prepared easily through the process of osmotic dehydration of ripe jackfruit. Osmotic dehydration of the fruits is one of the food preservation techniques used for partial removal of water from fruits by immersing in aqueous solutions of high osmotic pressure viz., sugar and salts.



Intermediate moisture foods (IMF) are one of the major attraction in current food market as this technology could preserve seasonally available fruits for a long period. This could be prepared by a two stage drying process ie; osmotic dehydration followed by any other secondary drying.

Osmo-dried jackfruit is an intermediate moisture food product, and is not only delicious but also conserves attractive colour and nutritional elements. This processed product has six month shelf life, which could reduce wastage of surplus ripened jackfruit. The ripe jackfruit bulbs are deseeded and soaked in sugar syrup for osmotic dehydration and further dried using cabinet dryer. The processing conditions like soaking time and temperature of drying were also standardized under Centre of excellence in post-harvest Technology. The second stage of drying could be done either by traditional drying, solar drying, cabinet drying, vacuum drying or any other modern drying methods viz; fluidized drying, microwave drying, freeze drying, etc.

Vacuum dried ripe jackfruit bulbs

Vacuum dryer is an effective dryer for the production of intermediate moisture foods. Retention of colour and uniform drying are the major advantages of vacuum dryers. It is a time consuming process and can add value to the locally available fruits and vegetables. Ripe jackfruit bulbs are steam blanched followed by vacuum drying to get dried ripe jackfruit. Vacuum dried jackfruit bulbs can be stored up to one year without losing its colour.

Jackfruit 'varatty'/'halwa'

The 'varatty'/'halwa' can be prepared from ripe jackfruit pulp. Fruit pulper and concentrator can be utilised for preparation of 'varatty' or 'halwa' with minimum time and efficiently. 'Varatty' can be preserved for three months by retort processing. 'Varatty' prepared from jackfruit is filled in to retort pouches and then thermally treated for extension of shelf life.



Jackfruit seed powder

Jackfruit seeds are rich in nutrients and can be supplement for wheat flour to some extent. Replacement of the wheat flour with jackfruit seed flour will give gluten free products. So, jackfruit seed powder is used to prepare cookies along with rice bran. The combination of wheat, jackfruit seed powder and rice bran will give better



acceptability. It is one of the best tastemakers for a healthy life. It can be fortified with flours of ragi, maize, rice and banana which can be used for the preparation of pasta.

Agri Business Incubator & Entrepreneurship development in jackfruit processing

New innovations/technologies in value addition of jackfruit have enabled entrepreneurs to gain powerful economy and customer attraction and satisfaction. RAFTAAR Agri Business Incubator (RABI), Kerala Agricultural University will enable the entrepreneur by mentoring at each stage from product development to market pitching. KAU RABI promotes growth through innovation and application of technology, and support economic development strategies for small business development. KAU RABI supports agribusiness incubation by tapping innovations and technologies for venture creation in agriculture.

KAU Agri Business Incubator (ABI) provide facilities for enterprise support services component and other agribusiness information resources on value added products from jackfruit, their process protocols, and related machineries. The hands-on training on jackfruit processing, value added products, project report preparation on jackfruit processing units and other related professional assistance makes the enterprise successful and achieve higher growth.



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