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RAFTAAR Agribusiness Incubator
Department of Agricultural Engineering
College of Horticulture

MECHANIZATION

A Tool for Enhancing Food Processing Sector

Kerala Agricultural University
Thrissur, Kerala- 680 656

Mechanization a Tool for Enhancing Food Processing Sector

Food processing sector is considered to be the most important sector for value addition of fresh commodities. Current scenario lacks efficient technologies and machinery support from post-harvest to processing.It leads to post harvest losses and reduce the capacity of plants as well as income of farmers. Use of upgraded machines, technologies, protocols, can reduce the post harvest losses and boost the capacity of processing plants.

The present is a time of rapid change in the field of food technologies and the pace of change is increasing. Major motivations determining trends of development of new technologies are those which signify responses of food industry to demands of consumers due to their changing lifestyles and expectations for high quality and safe foods. Some of the machineries used in food industries, mainly in fruits and vegetable processing industries are briefed.

Fruit and vegetable graders

Grading and sorting operation helps to increase the market value of the commodity. Fruit and vegetable graders grade the commodity according to the size, shape, colour etc. Different vibrating planes and sensors are the key components of commercially available graders.

Wax applicator

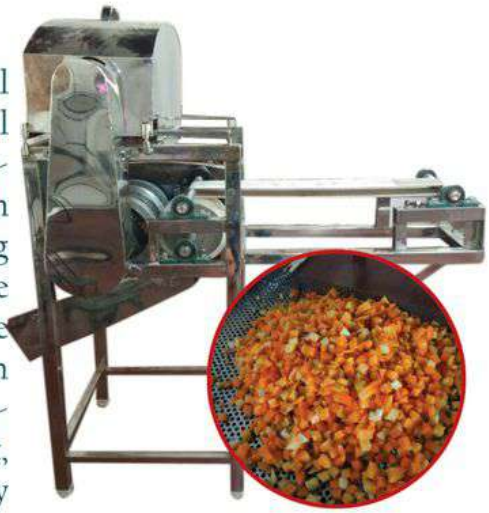
Waxing of fruit and vegetables is practiced mainly for cosmetic reasons, because it improves appearance of the commodity. Coatings also reduce water loss and affect long-term colour changes. Paraffin based inorganic waxes are the common wax formulations widely applied in fruits and vegetables. In this circumstance safe and healthy edible wax formulation from honey bee wax and rice bran oil was developed by Centre of Excellence under Kerala agricultural university. Apart from wax formulation an efficient wax applicator also developed for efficient coating of this wax in fruits and vegetables. Waxing is achieved by passing the fruit under wax-solution sprayers, combined with rotation on expanded plastic foam rollers which is already soaked by the spray. The approximate cost of this machine is thirty thousand and it will be an efficient machine for safe coating of healthy edible wax in fruits and vegetables to increase the shelf life.

Wax Coated Oranges

Food processing and value addition through Mechanization

Food processing is the transformation of fresh commodity, by physical or chemical means into food, or of food into other forms. During value addition the available commodity is sliced or minimally processed to convert it into different forms such as chips, juices, puddings, salads etc. An efficient slicing machineries are required for these operations. Some of the simple and efficient slicing machineries for fruits and vegetables are described below.

Mechanical slicers



Manual cutting of vegetables is still prevalent in hostels of educational institutions, marriage catering services and even in restaurants,which can cater to a whole set of varying customer tastes and preferences. The amount of vegetables tobe cut for the dishes always remains higher than actually what's consumed. The associated difficulties like time constraint, contamination, etc. make it pretty difficult for any person handling the job. Therein, arose a need to mechanize the process of vegetable cutting. Different slicers are developed under Kerala Agricultural University for different fruits and vegetables.

Banana slicer

Banana chips are a flagship product of south India. To reduce the drudgery in banana slicing a women friendly mechanical banana slicer was developed under Centre of Excellence in Post-harvest Technology at Kerala Agricultural University. The new slicer can be efficiently used in both small and large scale industries for slicing banana with minimum loss of material (3.4%) and trouble free-slicing at higher quality and efficiency (ie., two to three times higher than manual slicing. This machine can slice banana into uniform sized slicing). The economically viable machine requires only one person to operate and having a capacity of 100 kg/hr.

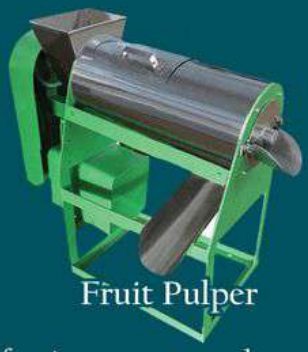
Jackfruit bulb slicer

The traditional method of slicing of jackfruit bulb is done by using a knife, which is a time-consuming process and causes drudgery. The tedium in manual processing is a major reason for the underutilization of the fruit. A women friendly mechanical jackfruit slicer was developed under Centre of Excellence in Post-harvest Technology at Kerala Agricultural University to reduce the wastage of major quantity of jackfruit and also helps in preparation of primary processed products that can be used for production of other products. This gender friendly machine have an overall capacity of 50 kg/hr and it cost Rs.50,000/-.

Multi fruit slicer cum dicer

Multi fruit slicer cum dicer is a combo cutting machine which can be used for both slicing and dicing of fruits for salad purposes. This is one of an efficient machine for dicing papayas to make tooti-frooti.

Fruit Pulper



Fruit Pulper

Sliced fruits and vegetables can be utilized for the preparation of juices and jams so that we can add value to the commodity.Industrial mixers/pulpers and fruit concentrators can be utilized for the preparation of tasty juices and jams. Bulk quantity of fruits can be crushed and can be mix in industrial mixers to make bottled drinks. Fruit pulp is a major constituents for ice creams, cakes jams etc. Pulping can be done with pulper and using concentrators we can convert this pulp into tasty jams.

Driers for fruits and vegetables

Drying is the most widespread and oldest method of preservation adopted throughout the world. Besides preserving commodities by the reduction in water activity, drying also saves storage space and reduces transportation costs. Different types of driers such as cabinet drier freeze drier, vacuum drier etc. are available for drying of fruits and vegetables.

Blanching is considered to be the most important process prior to drying. It will help in arresting the enzymatic activity and thus maintain the colour of the commodity even after drying. At present blanching and drying operations are carrying out in separate machines which are very tedious and time consuming. The blancher cum drier developed by Centre of Excellence in Post-harvest Technology is an efficient machine to solve these difficulties in drying process. Blancher cum drier is a combo drier consist of a steam blanching unit and drying unit in one machine. 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 will be a boon to micro and small scale units for producing safe dried products with minimum cost. Intermediate moisture foods (IMF) are one of the major attraction in current food market that can be dried after osmotic dehydration by blancher cum drier.

Coconut scraper

Scraped coconut having wide application in curries, puddings, etc. Scraping of coconut is a tedious method. The coconut scraping machine developed by Kerala Agricultural University is a motorized machine which helps in easy coconut scraping.

Retort machine

Retort machine is used for the production of retorted food products. Retort processing is an innovative technology to preserve food commodities to a prolonged period. It is a sterilisation method adopted for exporting foods. Seasonal fruits such as jack fruit (tender/matured/ripened) could be preserved by this method and could be made available in off seasons to consumers. Traditional foods such as Ramaseri idli, fish curries, fruit pulps etc could also be preserved by this method. This is a blooming technology in food industry and a promising technology that accepted by the consumers.

Vacuum frying system for healthy low fat snacks

Vacuum frying technology is an innovative technology for the production of healthy fried snack products. Currently the problem associated with the snack foods is its oil content that leading to the immediate rancidity and the health problems due to the carcinogen produced during frying. Vacuum fryer is the associated machine for the production fried chips. The important advantage of vacuum frying is that the oil quality gets maintained and the oil can be reused more than 60 times. It is an innovative technology to conserve the oil degradation, reduce the oil absorption and retain the nutritional quality of the fried product. Ripened banana, jack fruit etc can be fried using this machine without changing the colour and taste.

Pasta Making Machine

Pasta maker is an efficient machine for the production Ready-To-Cook pastas and noodles. Different healthy nutrient rich components such as medicinal rice like rakthasali, njavara, tubers like yarms, millets etc can be utilized for the preparation of nutraceutical pasta.

Twin Screw Extruder for RTE Products

Presently, several RTE products are available in the market. RTE snacks becoming popular day by day due to change in the food habits and their convenience in use. Extrusion technology has a pivotal role in the snack and ready to eat breakfast food industry. The development of new value added products like expanded products would enhance their food, and economic value. An industrial twin screw extruder is required for large scale production of extruded products. Incorporation of underutilised fruits and vegetables in RTE products will enhance the nutritional value as well as resource utilisation.

For more details about the above detailed machineries and technologies please contact Centre of Excellence in Post-harvest Technology

Prepared by

Prof. K P Sudheer
Er. Saranya S
Dr. Sankalpa K.B.
Er. Greeshma K

Contact Details

Dr. K. P. Sudheer
Professor & Head,
RAFTAAR Agri Business Incubator
College of Horticulture, Department of Agricultural Engineering,
Kerala Agricultural University, Vellanikkara, Thrissur – 680 656
Phone: 0487 243 83 32
e-mail: rabi@kau.in , cohagengg@kau.in

Director of Extension
Kerala Agricultural University, Mannuthy, Thrissur – 680 651
Phone: 0487-2370150, e-mail: de@kau.in

Adya Flex Mall: 9645960001

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