



## Report on

## **Incubation Centre on Fruits and Vegetable based Products**

### **Introduction**

The Green Revolution and subsequent efforts through the application of science and technology or increasing food production in India have brought self-reliance in food. The impetus given by the Government, State Agricultural Universities, State Departments of Agriculture and other organizations through the evolution and introduction of numerous hybrid varieties of fruits and vegetables and improved management practices have resulted in increased food production. Fruits and vegetables are among the perishable commodities. They are important ingredients in the human dietaries. Fruits and vegetables provide health benefits and are important for the prevention of illnesses. Fruits and vegetables contain a variety of nutrients including vitamins, minerals and antioxidants etc.,. Due to their high nutritive value, they make significant nutritional contribution to human well-being. Fruits and vegetables are the cheapest and better source for human nutrition and comes under the category of protective foods. In developing countries like India, agriculture is the mainstay of the economy and fruits and vegetables processing is the most important among all. Processing of these perishable commodity increase their market value as well as storage life and facilitates the transportation also. Therefore, fruit and vegetable processing has been engaging the attention of industrialists, processors, planners and policy makers as it can contribute greatly to the economic development. This also helps in the utilization of resources both material and human, therefore one of best ways of improving the economic status of rural as well as of economically weaker section.

Enhancing fruits and vegetables profitability implies cultivation of standardized high-quality produce, implementation of advanced processing technologies for competitive production of value-added products and optimization of process and resources. Small stakeholder farms require innovative strategies to enter new markets and extend the impact of local and niche productions, while achieving sustainability.



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**Lack of awareness:** Most of farmers doesn't have enough knowledge about further processing of fruits and vegetables and new technologies for the development of value-added products to earn more profit.

**Lack of equipments:** For the processing of fruits and vegetables, various equipments are required which are not available easily and costly.

## Market Analysis

Based on type, the market has been segmented into fruits, vegetables, and their processed products (squashes, drinks, juices, jelly, jams, pickles, preserved, and value-added herbal produce). The vegetables segments dominated the global processed fruits & vegetables market, in terms of both, value and volume. The increase in health consciousness among consumers and growing vegetarian population is expected to drive the demand for the fruit and vegetables segment.

The global fruit & vegetable processing market is estimated to reach USD 245.97 Billion in 2017 and is projected to reach USD 346.05 Billion by 2022, at a CAGR of 7.1% from 2017. The global market comprises the global fruit and vegetable processing equipment market and processed fruits & vegetables market. The fruit and vegetable processing market has been largely driven by the growing demand for convenience foods, the growing food service industry, the increased presence of modern retail outlets, and growing awareness about the benefits of fruits and vegetables.

## Objectives of incubation center for fruits and vegetable based processed products:

- ✚ To minimize the spoilage of fruits and vegetables by various preservation and processing techniques.
- ✚ To provide the quality testing and parameters for the processing of fruit and vegetables. ✚
- To provide the seasonal fruits and vegetables throughout the year.
- ✚ To prepare various traditional and value-added products based on fruits and vegetables for long time storage, availability in off season and higher profitability.
- ✚ To develop the links between farmers and food business operators. ✚
- To increase the income of farmers and generate self-employment.



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## **Facilities available at incubation Centre**

### **Equipments**

Various types of equipments like hot air oven, fruits and vegetable cutters, knives, pulverizer, Juicer, peeler, pulper, centrifuge, water bath incubator, mixer grinder, muffle furnace, BOD incubator, digital and manual refractometer, laminar air flow, weighing balance and other required chemicals and glass wares are available for processing, development and quality analysis of fruits and vegetables based products.

### **Lab and facilities:**

Horticulture and food technology lab, Microbiological testing facility, quality and chemical testing facilities are available in incubation Centre of food processing department. Various types of glassware and chemicals are also available for the testing of fruits and vegetable products.

## **Products prepared under fruits and vegetable products processing incubation centre**

### **RTS and Squash (Amla and Orange based)**

Amla and orange is a rich source of natural antioxidants and Vitamin C. Vitamin C rich orange and amla squash and their ready to serve drink was prepared in incubation Centre. The shelf-life of squash was 6 months at 5 – or below.

How to use: 50 ml of Squash and 150 ml of water will make 200 ml of ready to drink squash. No need to add sugar.

Ingredients: Amla/orange pulp, Sugar, citric acid, water.

### **Beet root and amla based herbal product**

Beet root and amla based herbal product is an Ayurvedic health supplement which is made up of a super-concentrated blend of nutrient-rich herbs and minerals. It is meant to restore drained reserves of life force (*ojas*) and to preserve strength, stamina, and vitality, while stalling the course of aging. It is a Chyawanprash like product and is formulated by processing around 50 medicinal herbs and their



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extracts, including the prime ingredient, *Amla* (Indian gooseberry), which is the world's richest source of vitamin C. The second major ingredient used in this formulation is beetroot which is rich in antioxidants and other nutrients. This preparation involves preparing decoction of herbs, followed by dried extract preparation, subsequent mixture with honey, and addition of aromatic herb powders (namely clove, cardamom, and cinnamon).

## **Amla/ beetroot Candy and preserve**

Candy and preserve based on amla and beetroot are being prepared in incubation Centre. Amla and beetroot are natural antioxidants and blood purifiers. Beetroot contains nitrates, meaning they boost our body's levels of nitric oxide. Nitric oxide - a gas already naturally occurring in the body - tells our blood vessels to expand, increasing blood flow and lowering blood pressure. A study showed that drinking Just one glass of beet Juice (or eating the equivalent amount) could reduce systolic blood pressure by a significant 4-5 mmHg.

The availability of these fruits and vegetables is lacking through out the year and also these are perishable in nature. So, processing and preservation of these for value added products with higher shelf life increase the profitability and cost which in turn can be good source of income generation.

## **List of Activities:**

**ACTIVITY:** Training sessions on processing of different fruits at incubation Centre.

**Need of the Activity:** To develop the knowledge about the preservation techniques of fruits and vegetables to ensure their availability in off-season, and for skill development and to generate self-employment.

**Description:** Training sessions were organized to aware about different preservation techniques for long time storage of fruits and vegetables. The participants learned about processing and preservation techniques of fruits and vegetables and the machinery used.



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