Ministry of Food Processing Industries
Government of India

सत्यमेव जयते

NIFTEM
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Reading Manual for Puff corn

Under PMFME Scheme

National Institute of Food Technology Entrepreneurship and Management

Ministry of Food Processing Industries

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Abbreviations & Acronyms

Sr:No.	Abbreviations &Acronyms	Full Forms
1.	PM FME	Prime Minister's Formalisation of Micro Food Processing Enterprises Scheme
2.	OPP	Oriented Polypropylene
3.	OD	Optical Density
4.	OTR	Oxygen Transmission Rate
5.	LP	Laminated Pouches
6.	WVTR	Water Vapour Transmission Rate
7.	HACCP	Hazard Analysis and Critical Control Point
8.	GAP	Good Agricultural Practices
9.	GMP	Good Manufacturing Practice
10.	SOP	Standard operating procedure
11.	FSSAI	Food Safety and Standards Authority of India
12.	FoSCos	Food Safety Compliance System
13.	FBO	Food Business Operator
14.	FLRS	Food Licensing and Registration System
15.	FSS	Food Set and Sound Nutrition
16.	PFA	Prevention of Food Adulteration
17.	GST	Goods and Services Tax
18.	MoFPI	Ministry of Food Processing Industries
19.	FPOs	Farmer Producer Organizations
20.	SHGs	Self Help Groups

CHAPTER-1

INTRODUCTION

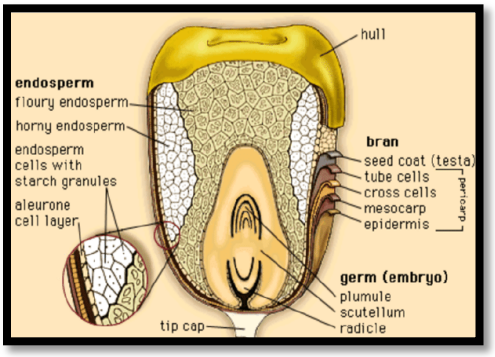
1.1 Overview

Agriculture is one of the strongholds of the Indian economy and accounts for 18.5 % of the country's gross domestic product. .Maize, alsoknown as corn,is a coarse grain and it is now being recognized as staple diet and its demand is increasing year by year. In India, maize is the third important cereal crop after rice and wheat in terms of area. Maize output is used as poultry feed, animal feed as food, starch and other industries, and as seed. Andhra Pradesh, Karnataka and Maharashtra are the major maize producing states. The products from maize are value added products which include maize starch, liquid glucose, dextrose monohydrate, anhydrous dextrose, sorbitol, puffed corn, corn gluten to name a few.In India, the prime source of starch is maize and the textile industry is for long the largest buyer of maize starch in India.

Structure and Physiology

The maize plant generally grows up to 2.5 m in height, some natural strains can grow up to 12m height. The maize plant stem looks like bamboo cane in appearance and commonly composed of 20 internodes of 18cm length. A leaf grows from each node, which is generally 9cm in width and 120cm in length.

Ears, grain bearing tip part of the stem of a cereal plant, develop above a few of leaves in mid-section of the plant, between the stem and leaf sheath. They are female inflorescences tightly enveloped by several layers of ear leaves commonly called husks. Certain verities of maize have been bred to produce many additional developed ears. These are the source of baby corn used as vegetable mainly in Asian cuisine.



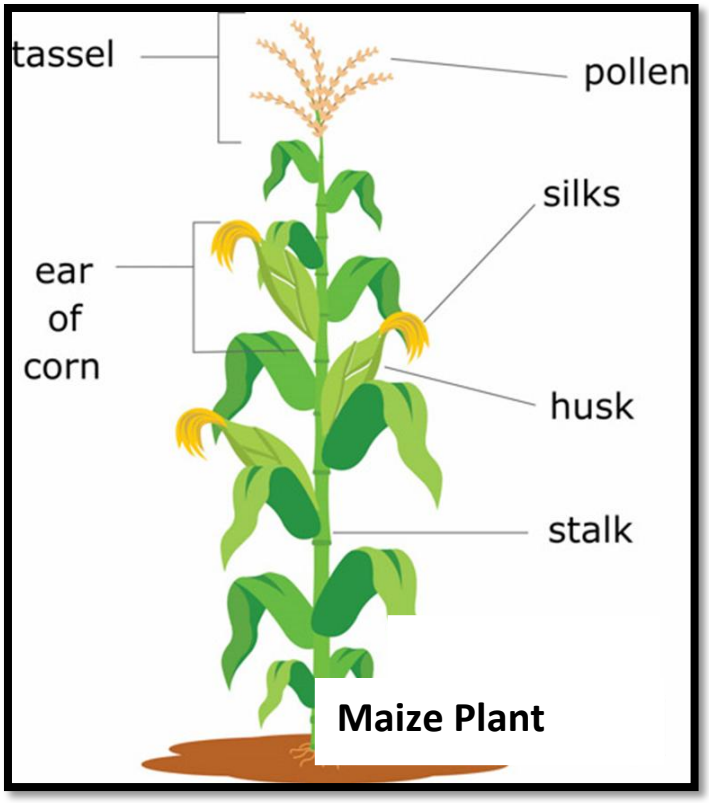


Fig. 1: Maize Structure and Maize plant

Varieties

Many forms of maize are used for food.Some are classified based on amount of starch each variety.

1. Flour corn
2. Pop corn
3. Dent corn
4. Flint corn
5. Sweet corn
6. Waxy corn
7. Amylomaize
8. Pod corn

Maize Production

Among the maize growing countries India rank 4th in area and 7th in production, demonstrating around 4% of world maize area and 2% of total production. In India the maize production area has reached to 9.2 million ha during 2018-19, (DACNET, 2020). India used to produce 1.73 million MT maize during 1950-51, which has enlarged to 27.8 million MT by the end of 2018-19, representing around 16 times increase in production. The average productivity during the period has increased by 5.42 times from 547 kg/ha to 2965 kg/ha, while area increased nearly by three times.

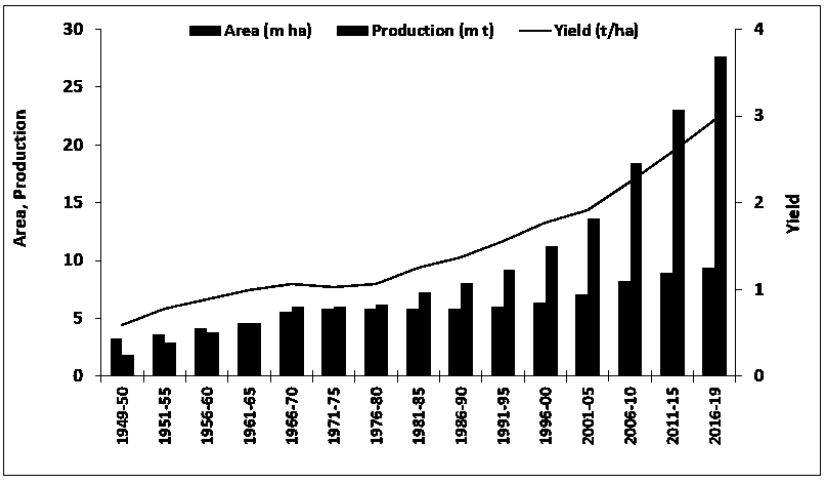


Fig. 2: Maize Production

Among all cereals, maize has highest growth rate in terms of area and productivity. In India, maize is predominantly grown in two seasons, rainy (kharif) and winter (rabi) season. Kharif maize represents around 83% of maize area in India, while rabi maize correspond to 17% maize area.

Over 70% of kharif maize area is grown under rainfed condition with occurrence of many biotic and abiotic stresses. The stress prone ecology contributes towards lower productivity of kharif maize (2706 kg/ha) as compared to rabi maize (4436 kg/ha), which is principally grown under assured ecosystem.

In recent years maize area is also growing quite fast in north western parts of the country, in the states of Punjab, Haryana and Western Uttar Pradesh. Among Indian states Madhya Pradesh and Karnataka has highest area

under maize (15% each) followed by Maharashtra (10%), Rajasthan (9%), Uttar Pradesh (8%) and others. After Karnataka and Madhya Pradesh Bihar is the highest maize producer. Andhra Pradesh is having highest state productivity. Some districts like Krishna, West Godavari etc. records as high as 12 t/ha productivity.

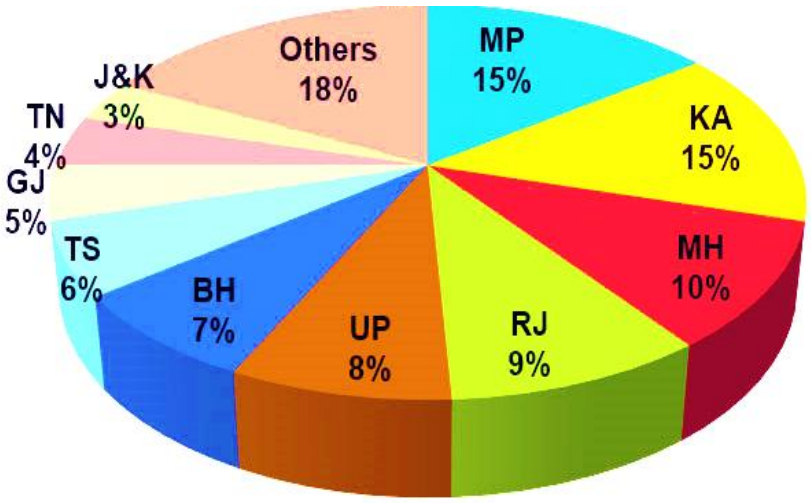


Fig. 3: Bulk production of maize in India

Approximately 47% bulk production of maize in India, is used as poultry feed, 13% is used as livestock feed and 13 % for food purpose, remaining for industrial purposes like in starch industry, processed food and export.

Popcorn Variety of Maize

Site selection/Soil type: Popcorn variety is very sensitive to water-logging and considerable yield losses occurs, if the crop faces water-stagnation for more than two days. Hence, it is better to plant the crop on well-drained sandy-loam to silty-loam soil types.

Time of planting: As the plant type of the popcorn is weak and affected more by diseases and pest and thus should be preferably to be grown in mild climate i.e. winter season/hilly areas for better yield and quality.

Land preparation: Popcorn needs well pulverized, fine and smooth field for seed emergence and root growth. Hence, deep tillage operation using mould board plough followed by two harrowing and one planking is needed for good

field preparation and early season weed management. Popcorn variety can also be successfully produced under zero-till conditions using happy seeder or zero till multi-crop planter.

Seed rate: About 4-5kg of seed per acre should be used for plantation.

Seed treatment: Untreated seeds should be treated with fungicides and insecticides before sowing to protect it from seed and soil borne diseases and some insect-pests.

Method of sowing/Spacing: Southern side planting is advised on East-West oriented ridges. Optimum plant density (33,724/acre) should be maintained to tap full potentials of hybrids. For proper germination and early vigour, seed should be sown at 3.5-5 cm depth.

Weed management: Weeds damage significantly to Popcorn variety production and the critical period for crop-weed completion is 15-45 days after sowing.

Cultural control: Inter-cropping of one or two rows of higher canopy producing legume crops in between maize rows reduces weed problem considerably.

Mechanical control: Mechanical weed control in Popcorn variety is possible through tractor drawn cultivator and rotary weeder; Self-propelled power weeder; and animal drawn blade harrow. Mechanical weed control using tractor mounted implements can only be done during the early crop stages because limited tractor and cultivator ground clearance damage the crop foliage at later growth stages. Working depth of weeding implements should be shallow to prevent plant roots damage.

Chemical control: Recommended dose of atrazine at pre-emergence followed by either of the post-emergence herbicide for effective weed control (mentioned below) is also equally effective.

Integrated weed management: Pre-emergence Atrazine application followed by one hand weeding at 35-40 days gives good weed control.

Nutrient management: It can be grown both organically or by integrated nutrient management involving organic and inorganic nutrient supplementation.

Organic nutrient management: Following options for nutrient management in organic pop corn production to be used based on availability in suitable combination.

Maize is sensitive to Zinc deficiency. Zinc deficient crop shows stunted growth and develop short inter-nodes. A white (or pale-yellowish) tissue with reddish veins appears on leaf blade.

Water management: Four to six irrigations are needed during the rabi crop season. The irrigation should, however be changed suitably if adequate rains are received.

Harvesting and post-harvest handling: Maize can be harvested when the husk has dried and turned brown. Apart from hand-picking, combined harvester may also be used for quick harvesting. After manual harvesting, depending upon the cultivated area, manual shellers or maize dehusker-cum-sheller or maize thresher may be used for separating grains from cobs.

The optimum moisture in grain for long-term storage should be below 14%. Portable Maize Dryer can also be used for reducing the moisture content of the cobs. Sun drying of the cobs and seeds is required in absence of other drying options prior to marketing as moisture above optimum level reduces market prices and increases chance of aflatoxin contamination.

1.2 Product Description

Snack products

The snack food is one of the most important areas of the food industry. Designing snack foods today can be a complex process to meet changing consumers taste and expectations and elusive search for something unique that also appeals to a wide variety of people. Most snack manufacturers use some form of existing technology as the basis for creating snack products and incorporate variations that increase the resulting snacks' health image. Therefore, puffing and popping using advance technologies are processes, which can accomplish all these targets. As a simplest, inexpensive and quickest traditional method of dry heat application for preparation of

weaning food formulations and ready-to-eat snacks products, popping and puffing have been practiced since hundreds of years. Explosion puffing by sudden release and expansion of water vapour is a relatively well known and widely used process.

Examples of the use of the puffing process are the manufacture of expanded rice or parboiled rice flour. Convenient snack foods like popcorn, popped and puffed rice, popped sorghum, popped wheat roasted and puffed soybean and other legumes are very popular not only in Indian subcontinent, but also worldwide.

Value added products from Maize

There are various value added products from Maize are available in market. Some of them are noted in the Figure.

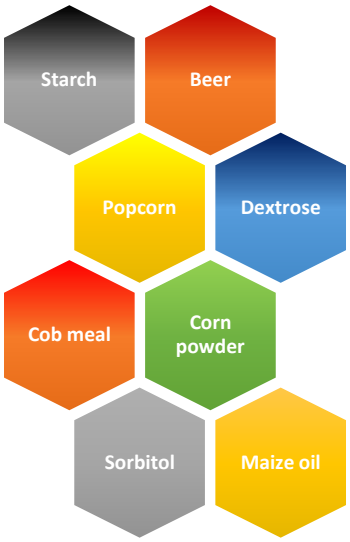


Fig. 4: Value added products from Maize

A) Product Description : Puff corn

- Puffcorn or corn puffs are puffed or extruded corn snacks made with corn meal and baked.
- Puffcorn is an extruded puffed corn snack which belongs in the snack group products made with corn grits, rice, wheat, or other cereals. Puff corn is often flavoured with cheese, oil, chili, onion, or garlic powder, and many other spices.
- Types of puffcorn can vary between a lower specific length, higher bulk density, lower lightness, higher redness, lower yellowness, higher hardness, and lower springiness, gumminess, and chewiness when using different percentages of oat flour.

- Puffcorn is commonly known as a ready-to-eat functional breakfast cereal or an extruded functional snack
- Extrusion is one of the most important process new process this user in the morning for technology it is application has increased in the past 2 decades.
- Extraction is done at use an advantages cleaner and more effective technology needs can eat after up with the same or even better quality than a traditional technology products. The process has been using the production of many varieties of food including snack products breakfast cereals and ready to eat exclude texturized foods.
- Health concerns cause many consumers border got up because many of these products contain 25% of oil which contains saturated fatty acids and also high content of trans fatty acids.

Materials:

Corn grit and white were cleaned by hand picking and windowing to remove powder in matter before they were Milled do a fine powder using moullinex mill grinder.

Formulation:

Corn flour 63.5% vegetable oil 26% sunset yellow colored cheese powder 6.85 % milk powder 2.15 % and salt 1.5 % at the level of 0% 5% 10% and 15% of total content of ingredients and word processor using and extrusion process.

Fatty Acid Composition:

Fatty acid methyl ester were prepared using the AOAC methods of analyzed by gas chromatography. Sesame seed powder is used because it remains in cake form and there are some bio active nutritional components are rich in fatty acids.

Phenolic Compounds:

Phenolic compounds were determined using the method described by AOAC methods.

Peroxide and Acid Values:

Peroxide and acid values of puffed corn snack oils were measured using the AOAC methods. Acidity value is the important parameter which is related to the hydrolysis of tryglycerols and free fatty acids in oil.

Market Potential:

Corn puffed snacks food prepared from maize. However the rapid industrialization in the snacks food sector has led to significant consumption of puffed corn.The consumption of puffed, which earlier was limited mostly to the the west has now started to soar in East Asian and Indian societies as well.

The increasing consumption of puffed cereals among school going children as snacks owning to their high protein content has augmented the demand of puffed corn flakes in India and other developing countries in recent times. Moreover, the rising consumer demand for snack options with low calorie count has fuelled the consumption of corn puffs and other puffed cereals among weight watcher.

In India, we do not have many snack food items that are common in developed countries. Generally available items in this category are popcorn, potato wafer, banana wafer, topioca wafer, homemade items murukku, dalmot, salted groundnuts etc., and are very few of these items are made on an organized industrial scale. With the growth of industrialisation in the country and more purchasing power of people, there is a potential demand for these snack foods throughout India.

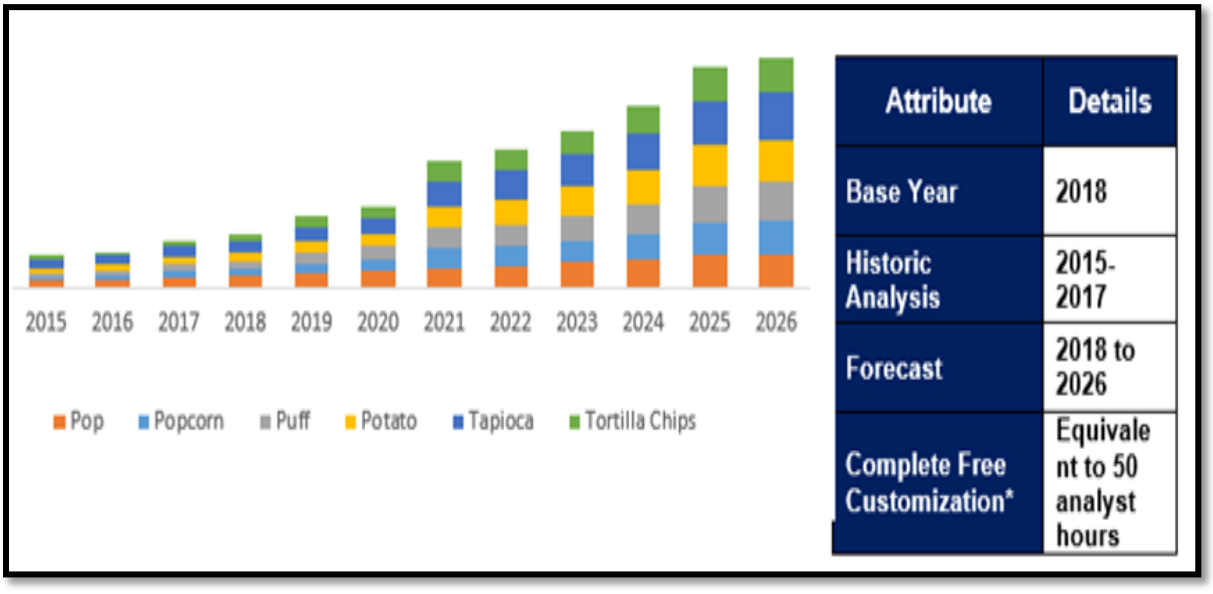


Fig. 5: Global Healthy Snack market according to raw material year 2018-2026 (in million USD)

1.4 Raw Material Selection

Selection of raw material

Corn kernels of variety VL Amber popcorn can select for processing. The typical composition of corn includes endosperm 82.3%, germ 11.5%, bran 5.3% and tip cap 0.8%. The typical analysis of corn contains moisture 9-15, starch 61%, protein content 8.5%, fiber 9.5%, oil 4 % and ash 1.6% dry basis.

Other raw materials are:

- Sugar- 6.25%
- Salt – 1.25%
- Vegetable oil- 0.63%
- Monoglycerides- 0.38%
- Malt- 0.20%

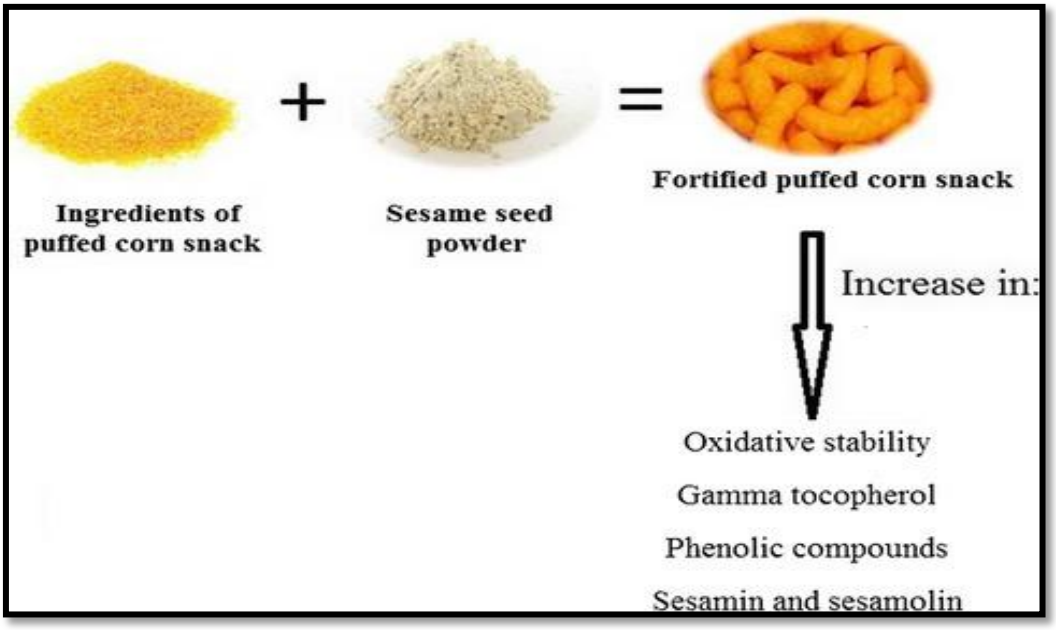


Fig. 6: Pop Corn Process

Effectof Moisture Content

The effect of moisture content during extrusion cooking is important as it greatly affects the extrudate texture. The extrudatessignificantly presents more structural ruptures and less mechanical resistance when the moisture content in extrusion cooking decreases.

It is well known that the decrease of moisture content in extrusion cooking tends to increase the specific mechanical energy, and consequently to favor the macromolecular

degradation of the starch through dextrinization.The resulting melt then gives more fragile structures leading to low resistant cell walls and more structural fractures.

Puffing percentage

Puffing percentage is taken as percentage of puffed product (Np) out of total product in feed sample (Nt).

Puffing percent =Np/Nt × 100 (5)

Np = Number of puffed grains observed in sample,

Nt =Total number of grains in the sample

Expansion ratio

Expansion ratio is the ratio of volume of final product after puffing to the volume of raw product before puffing

Hardness

Hardness is defined as the maximum peak force during the first compression cycle (first bite).

The hardness value depicts the texture perception of the consumer at first bite. It was measured using a Texture Analyzer.

Crispness

Crispness is related to the mechanical properties of the crust. Factors that determine these properties like the solid matrix i.e. starch properties, water content, crust structure, oil content.

Sensory evaluation

Puffing process

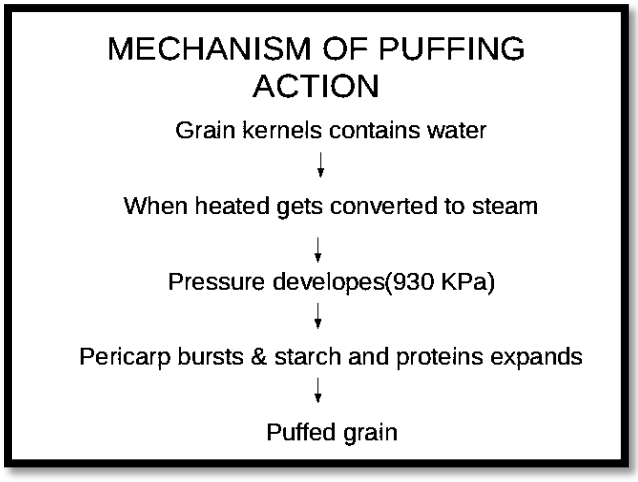


Fig. 7: Flowchart of Puffed grain

2.1 Equipments in puffing

Hot air puffing system

Performance evaluation of the developed hot air puffing system. The experimentation on hot air puffing of corn need to be conducted at required terminal velocity and by varying puffing air temperatures and feed rates.

The hot air puffing system for corn works on centrifugal air blower and electric heaters arranged typically in chamber. The air blower supplies air at atmospheric temperature (30°C), at the rate of 0.0912 to 0.136 m3/s. This air passes over series of electric heaters for heating from atmospheric temperature (30°C) to puffing temperature (180 to 260°C). It takes about 20 minutes for initial heating of air, to reach temperature of 180-200°C. This hot air can be used for puffing in the puffing chamber. Once air is used, then recycles through re-circulating pipe for further heating.

The puffing chamber is vertical cylinder of diameter 76.2 mm, from the bottom of which hot air comes in typical manner. The product to be puffed was fed through the feed gate that works on positive feeding mechanism. The typical arrangement made to take, the puffed final product, out of the puffing chamber, carried the puffed material towards cyclone separator. The final product is taken out of the process from this cyclone separator and waste air again re-circulated for its reuse. Experimentation for selection of appropriate process parameters.

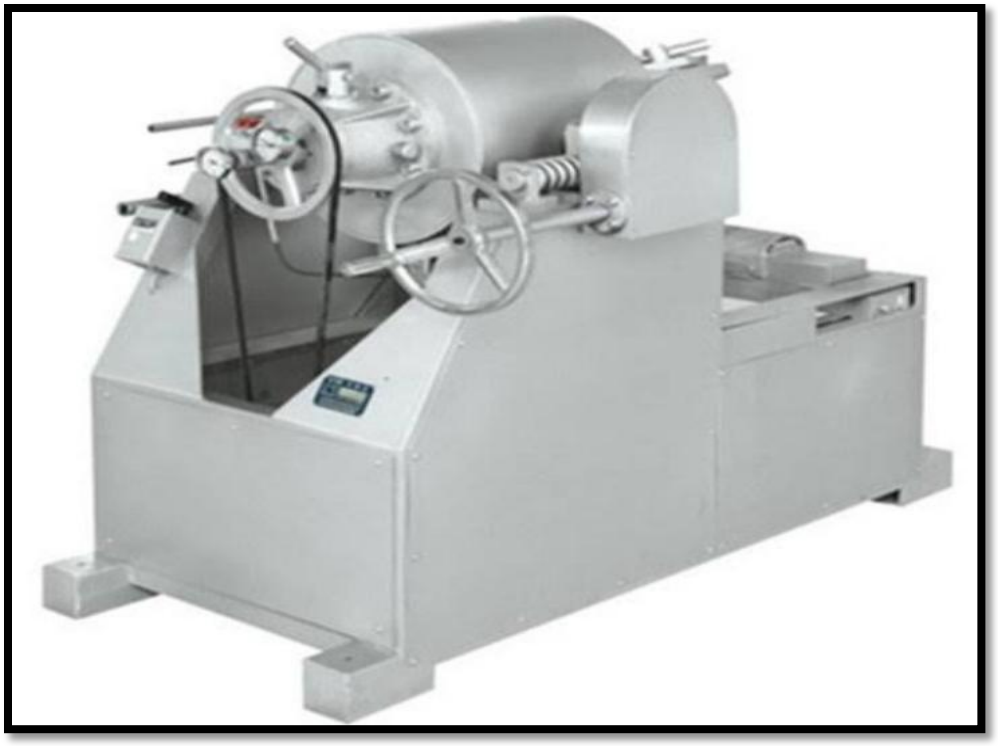


Fig. 8: Extruder

Puncture testing simulates closely the tooth action in food masticating and for cellular food products such as extrudates, it provides local, cell wall-based mechanical properties which are pertinent to correlate with sensory criteria**.**

Extrude Samples Two kinds of extrudates

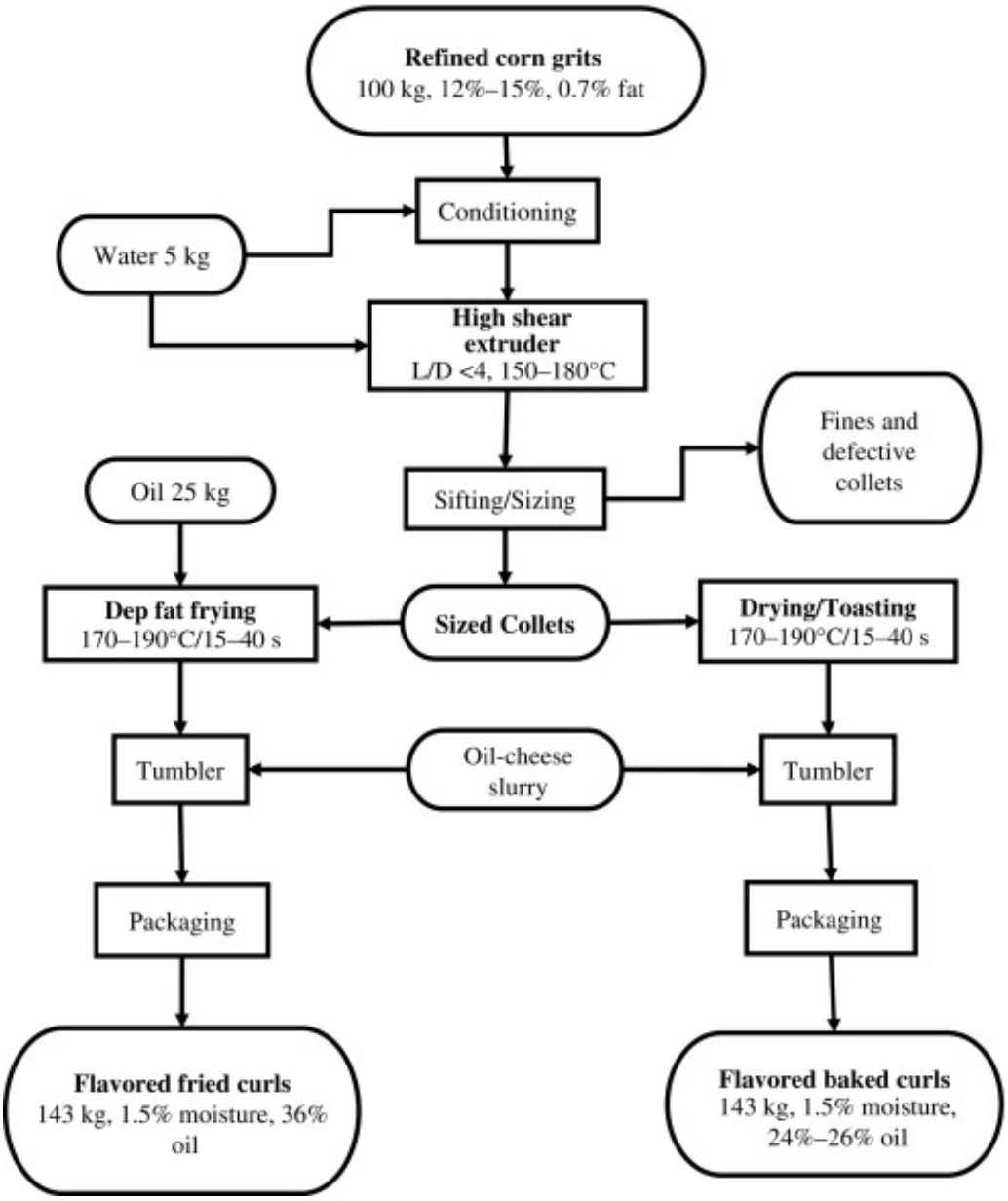
(1) Commercial, corn-based snacks samples purchased at a local supermarket. The commercial snacks stored in desiccators containing saturated solutions of various salts corresponding to a large range of relative humidities (0-100%).

(2) Laboratory-made snacks samples: Extrusion-cooking experiments generally carried out in twin-screw co-rotating extruder equipped with a 500 mm length barrel and an automatic startup system. The screw profile (feed section, compression section and metering section), the heating characteristics and the feeding equipment of the extruder-cooker need to be identical. The front die plate should contain two 3 mm diameter holes. The distance between the ends of the screws and the front die plate need to be adjusted to 1.5 mm.

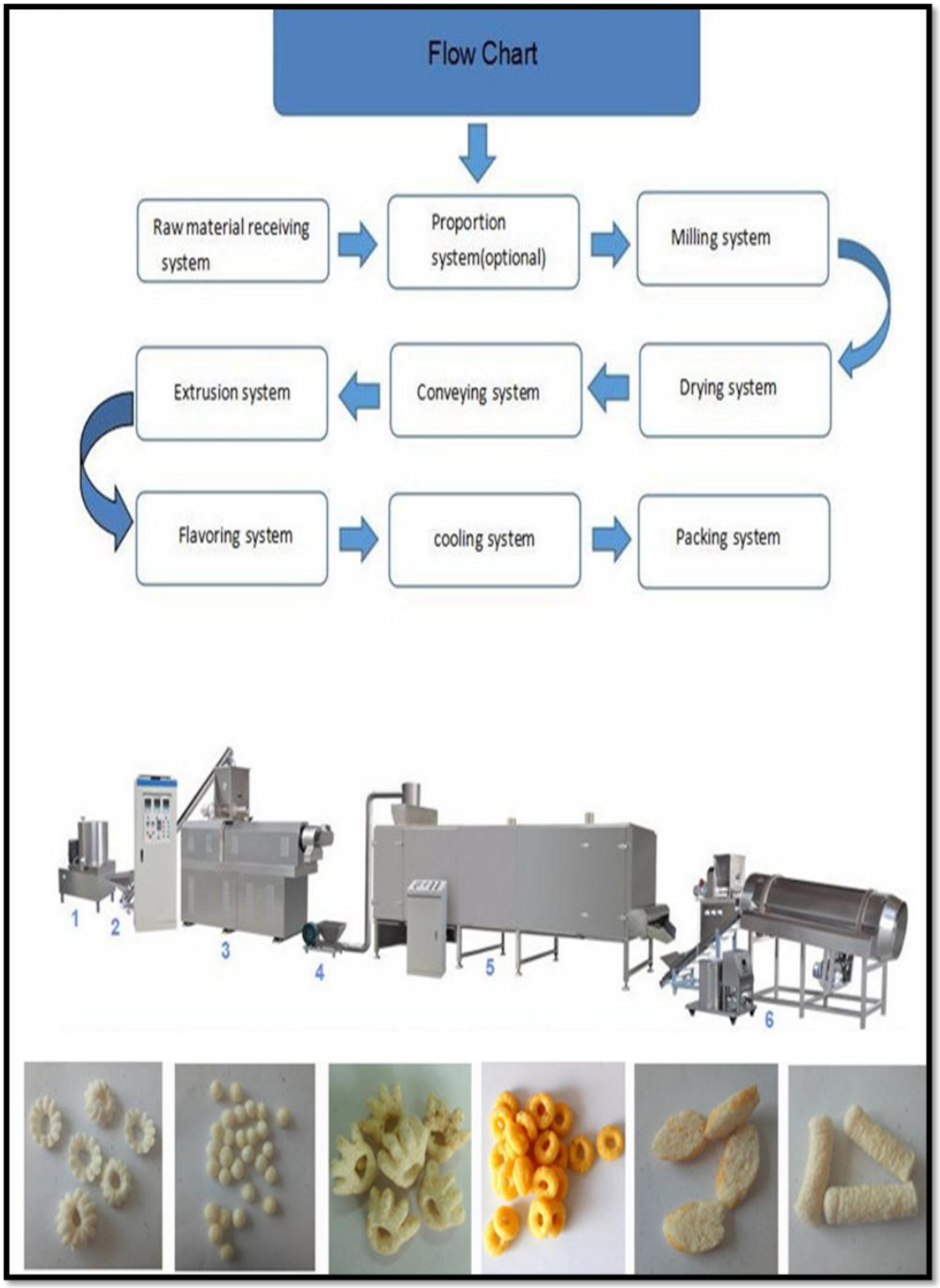
Manufacturing Process and Equipment's:

Mixer	Screw conveyor	Twin-screw extruder	Air conveyor
			
Dryer	**Hoister**	**Flavoring machine**	**Cooling conveyor**
			

2.2 POP Corn Manufacturing Process



2.3 Extrusion Process and Equipment



2.4 General Failures

- Poor quality raw materials.
- Irregular shape of the extrudates due the lack or excess water for mixing.
- High temperature of the conventional oven or longer residence time of puffed corn in oven.
- Failure of extrusion equipment due to over loading, lack of water, poor current supply, etc.
- Poor quality of packaging material.

2.5 Nutritional Information of Some Market available Popcorn packets:

	% Daily Value*
Total Fat 1.3g	**2%**
Saturated Fat 0.3g	**1%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 211.5mg	**9%**
Potassium 62.1mg	**2%**
Total Carbohydrate 26.7g	**9%**
Dietary Fiber 1.3g	**5%**
Sugars 12.5g	
Protein 2.7g	**5%**

Vitamin A 15%	•	Vitamin C 0%
Calcium 1%	•	Iron 15%
Thiamin 25%	•	Riboflavin 25%
Vitamin B6 25%	•	Vitamin B12 25%
Folic Acid 23%	•	Niacin 25%
Magnesium 6%	•	Phosphorus 7%
Zinc 10%	•	Copper 5%
Pantothenic Acid 2%	•	Vitamin D 10%

Corn Puffs Calories

Nutritian Facts

Trader's Joe sweetened Corn Puffs(1cup)

Calories	115
Carbohydrate	9%
Sodium	6%
Sugar	10.9g

Corn Puffs Poppers Kroger(2 ½ cups)

Calories	160
From Total Fat	17%
From Saturated Fat	7%
Sodium	11%
Carbohydrates	5%
Dietary Fiber	8%

Martin's Ditto Corn Puffs(1 oz)

Calories	130
Total Fat	7%
From Sodium	8%
From Carbohydrates	7%
Dietary Fiber	4%

2.6 Export Potential of Puffed corn:

- The increasing consumption of puffed cereals among school-going children as snacks owing to their high protein content has augmented the demand for puffed corn in recent times.
- The "Global Puffed Food Market Analysis to 2027" is a specialized and in-depth study of the food and beverage industry with a special focus on the global market trend analysis.

- Overview of the puffed food market with detailed market segmentation by type, application, and geography.
- The global puffed food market is expected to witness high growth during the forecast period. The key statistics on the market status of the leading puffed food market players and offers key trends and opportunities in the market.
- India is exporting puffed corn product to many countries. Among them some countries are – USA, Bangladesh, Australia, etc.

CHAPTER- 3

PACKAGING

Factors that are considered to determine the packaging material of extruded snacks like puffcorn are -

- Water vapour transmission rate(WVTR)
- Oxygen transmission rate (OTR)
- Optical density (OD)and
- Flavour/odor barrier property

The packaging of choice ultimately compromises between protective properties, the shelf life of the product, aesthetic appeal, and cost. Given that deterioration of Puffcorn products is primarily attributed to loss of crispness, it is crucial that the packaging provides a barrier against water vapour. Oxygen barrier requirements for the packaging of puffcorn may be less stringent as extruded and puffed snacks can be less sensitive to oxygen in comparison with fried snack foods. A variety of materials can be used in packaging of puffcorn, examples of which include Low Density Polyethylene (LDPE), Laminated Pouches (LP), and Oriented Polypropylene (OPP). In an investigation, extruded snacks were found to be more stable in LP in comparison to LDPE.

3.1 Packaging materials:

Pouches

Flexible containers or pouches can be formed of plastic films, foil or paper, but they usually consist of a composite structure in which two or more films are combined. A strip of this laminated web is mechanically formed into a tube filled with the product, and heat sealed.

The relatively low cost of the packaging materials, the high speeds attainable in the filling process, and the protective features afforded by the container have combined to make pouches the most favoured package for snack products.

Low Density Polyethylene (LDPE)

LDPE is a tough, slightly translucent material. It has excellent chemical resistance, particularly to acids, alkalis and inorganics solutions. It is used as a rigid packaging material and can be easily blow moulded into bottles where its flexibility enables the contents be squeezed out.

Oriented Polypropylene (OPP)

OPP is very shiny plastic, often perfectly clear or brightly colored and not stretchy at all. It is suitable for packaging of snacks products.

Paper board

These boards can be calendared or coated to provide smooth white finishes.Box boards contain sufficient long cellulosic fibres on both sides of sheet to prevent splitting.Solid chemical pulp boards are usually used made of 100% craft fibre bleached,semi bleached or natural.They can be laminated to white paper to improve appearance and printing qualities.

Fig.11 : Market available POP Corn Products

Factors influencing quality

- Thequality of extruded puffed corn is influenced byfat content humidity, temperature and light during storage.
- Lipid oxidation and moisture gain in products lead to developmentof off odor and off flavor and poor texture, respectively, andrejection of the product by consumers.

- Quality parameters of extruded corn snacks can therefore be described in terms of moisture gain, water activity (aw<0.3) and lipid oxidation.

3.2 Shelf life of puffed corn:

Shelf life is the time during which product remain safe; will be certain to retain the desired sensory, chemical, physical and microbial characteristics and finally will comply with any label declaration of nutritional data when stored under the recommended conditions.Oxidation and off odors and flavorscan increase after 5-6 months storage but attributes describing puffed corn snack odor and flavormay not change during storage of the products.

CHAPTER- 4

FOOD SAFETY STANDARD AUTHORITY OF INDIA REGULATIONS

4.1 FSSAI Registration and Licensing processing

State FSSAI Licensing

The Food Standards and Safety Authority of India (FSSAI) is the supreme authority which is responsible for regulating and supervising the food safety. So it is mandatory to take FSSAI Food safety License Registration as per the law.

Businesses having annual turnover between Rs.12 lakhs to 20 crore can apply for FSSAI state license. Food business operators like small to medium-sized manufacturers, storage units, Transporters, Retailers, Restaurants Marketers, distributors etc. are however required to obtain the FSSAI State License Registration.

Document required:

1. Rental Agreement of Business Premises.
2. ID Proof of the Concerned Person (Aadhaar Card / Driving License / Passport / Voter ID)
3. If any Government Registration Certificates (Company Incorporation Certificate / Firm Registration / Partnership Deed / Pan card / GST / Shop & Establishment / Trade License)
4. If the applicant is private limited company or partnership firm then they should provide MOA & AOA or Partnership deed copy
5. For applying State License any One of the following certificate is compulsory (Trade license, Shop & Establishment, Panchayath License, Corporation License , Municipality License)
6. Nature of Business.
7. FSSAI declaration form

Central FSSAI Licensing:

The Food Standards and Safety Authority of India (FSSAI) is the supreme authority which is responsible for regulating and supervising the food safety. So it is mandatory to take FSSAI Food safety License as per the law. Here we discuss about FSSAI central license. Businesses having annual turnover above 20 crore can apply for FSSAI central license. Eligible food Business Operators like Importers, Manufacturers, operators in central government,

Railways, airports, seaports, etc. need to take a Central FSSAI license from Food Standards and Safety Authority of India.

Documents required:

1. Rental Agreement of Business Premises.
2. ID Proof of the Concerned Person (Aadhaar Card / Driving License / Passport / Voter ID)
3. If any Government Registration Certificates (Company Incorporation Certificate / Firm Registration / Partnership Deed / Pan card / GST / Shop & Establishment / Trade License)
4. If the applicant is private limited company or partnership firm then they should provide MOA & AOA or Partnership deed copy.
5. IE Code (Import Export Code) Certificate.(for the category of export and import IE code is compulsory)
6. Authority letter from the company letterhead to the concerned person stating that he is authorized to file FSSAI application.
7. List of food category desired to be manufactured (In case of manufacturers).

Food Safety Compliance System (FoSCos)

A new system launched by FSSAI –which is effective from 01.06.2020. This the best initiative taken by our Government for the best utilisation of the services provided by FSSAI in regulated manner.

- This new system has replaced the existing **Food Licensing and Registration System (FLRS).**
- **FLRS** has been used since 2011.
- Earlier application for getting Food License has been made on
- Till date, **FLRS** has issued 70 lakh licenses/registrations.

Features of FoSCos:-

- It is a cloud based, upgraded new food safety compliance online platform.
- It is a single window system where all facilities are available at one point of time.
- It has been integrated with **FoSCos Mobile App**.
- It saves lot of times while doing compliances regarding Food Safety.
- It will enable the GPS location tagging facility.
- It will also capture the picture in near future.

- RFID will also be utilised to ensure transparent and accountable extension field services such as inspections and sampling.
- It increases the Transparency & Accountability which is most important now days to boost the confidence among people.
- It will also integrated with other GOI's platforms such as GST,PAN,MCA etc., to ensure a 360 degree profiling.
- It will smooth the whole procedure of licensing, registration and compliance without taking so much time and in easiest way.
- Initially, following services will be offered by this new system:
    - Licensing
    - Registration
    - Inspection, &
    - Annual Return.
- Helpdesk facility is also available to clear the doubts and redress the grievance which is called **"Licensing Help Desk".**

Labelling standards

General requirements

1.Every pre-packaged food shall carry a label containing information as required here under unless otherwise provided.

2. The particulars of declaration required under these Regulations to be specified on the label shall be in English or Hindi in Devnagri script: Provided that nothing herein contained shall prevent the use of any other language in addition to the language required under this regulation.

3. Pre-packaged food shall not be described or presented on any label or in any labelling manner that is false, misleading or deceptive or is likely to create an erroneous impression regarding its character in any respect;

4. Label in pre-packaged foods shall be applied in such a manner that they will not become separated from the container;

5. Contents on the label shall be clear, prominent, indelible and readily legible by the consumer under normal conditions of purchase and use; 6. Where the container is covered by a wrapper, the wrapper shall carry the necessary information or the label on the container shall be readily legible through the outer wrapper.

7. License number shall be displayed on the principal display panel in the following format-

4.2 Labelling:

In addition to the General Labelling requirements specified in above every package of food shall carry the following information on the label, namely-

1. The Name of Food: The name of the food shall include trade name or description of food contained in the package.

2. List of Ingredients: Except for single ingredient foods, a list of ingredients shall be declared on the label in the following manner

(a) The list of ingredients shall contain an appropriate title, such as the term "Ingredients"

(b) The name of Ingredients used in the product shall be listed in descending order of their composition by weight or volume, as the case may be, at the time of its manufacture

(c) A specific name shall be used for ingredients in the list of Ingredients

CHAPTER- 5

Opportunities for Micro/Unorganized structure

- Strong domestic demand: Changing lifestyle and food habits due to increased disposable income.
- Supply side advantages: High level of agricultural production. Good quality yields of corn for puffed snacks products.
- Export opportunities: Proximity to key export destinations, greater integration with the global economy.
- Proactive government policy and support

PM-FME SCHEME:

- Launched under the Aatmanirbhar Bharat Abhiyan, the Pradhan Mantri Formalisation of Micro food processing Enterprises (PM-FME) Scheme is a centrally sponsored scheme aims to enhance the competitiveness of existing individual micro-enterprises in the unorganized segment of the food processing industry.
- Promote formalization of the sector and provide support to Farmer Producer Organizations, Self Help Groups, and Producers Cooperatives along their entire value chain.
- With an outlay of Rs. 10,000 crore over a period of five years from 2020-21 to 2024-25, the scheme envisions to directly assist the 2,00,000 micro food processing units for providing financial, technical, and business support for upgradation of existing micro food processing enterprises.

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