ICE-CREAM & FROZEN DESSERTS

Module 1. History, development and status of ice cream industry

Lesson 2
STATUS OF ICE CREAM INDUSTRY IN INDIA AND ABROAD

2.0 Introduction

Continuous freezers did not win wide acceptance until the ‘Vogt Instant’ freezer was introduced in 1929. This was followed by the Creamery Package continuous freezer in 1934. Continuous freezers remained quite similar for many years until air injection methods for the introduction of sterile air brought about major changes in design. Modern continuous freezers can process volumes of 3000–4000 l/h, equipped with filtered air, exact control of overrun and dosing of particulate ingredients. Production rates of freezers can be synchronized with those of filling machines. Next emerged developments in low temperature extrusion freezers capable of taking ice cream at -5°C from conventional scraped surface freezers and reducing its temperature through a single- or twin-screw extruder to -15°C. Now there are sophisticated machinery for the production of novelty or impulse products.

2.1 Novelties

The idea of merchandising ice cream and other frozen confections in novel forms holds considerable appeal to ice cream manufacturers with an aggressive sales policy. Such items, in addition to their direct contribution to sales volume, are thought to have publicity value, serving to attract consumer interest and creating the impression of alertness and progressiveness. Few examples of novelties are: chocolate-coated ice cream bars, popsicles or frozen suckers, ice cream sandwiches and ice cream cake rolls.

For many years, novelties were limited to molded products, cups, cones and sandwiches. Now, sophisticated and novel processing technology for manufacture of hand-held impulse products is readily available, giving rise to a myriad of new introductions around the world. Equipment for extruded novelty production was introduced in the 1980s. Today, extrusion processing has enabled production of avast array of shapes and sizes. Fluting, layering and other fancy molding is widely seen in both single serving products and in ice cream cakes. High quality production of 3D molded products with high definition details is possible with new molding processes. Extruded and molded products can be shaped in post-extrusion or molding processes with deep cooled, non-stick tools with high definition.

2.1.1 Mellorine type products

It is similar to ice cream in which milk fat is replaced by a suitable vegetable or animal fat. The minimum fat standards rage from 6.0 to 10.0%, weight per gallon, minimum milk solids and food solids similar to those for ice cream but maximum stabilizer allowed ranges up to 1.0%.

2.1.2 Diabetic ice cream

It is made with lower sweetening agent content. The sugars are replaced by an artificial sweetener such as aspartame, sucralose, stevioside, etc.

2.1.3 Dietetic frozen dessert

It is formulated to reduce the calorie content. It differs from diabetic ice cream in that, besides the use of low calorie sweetener, the fat content is also reduced.

2.1.4 Probiotic ice cream

Ice cream mix formulated as per PFA but containing added probiotic microorganisms such as *L.acidophilus*, *L. rhamnosus*, *B. bifidum*, etc and frozen in a manner such that viable probiotic count to the tune of 10^6 to 10^8 per gram of product is made available. Such product improves the gut health, may reduce triglyceride and cholesterol levels in human subjects.

2.2 Production Statistics of Ice Cream and Related Products in India and Abroad

2.2.1 Ice cream market in India

The liberalization process gave way to organized ice cream sector. The total domestic market is estimated at Rs. 1000 crore out of which organized sector accounts for ~ 65%. The major national brands for ice cream are Amul, Quality Walls and Vadilal. The regional players are Mother Dairy, Arun, Joy, Nandini, Naturals, Dinshaw, etc. The per cent market share of various ice cream brands in India is furnished in Table 2.1. The branded market is worth 100 million litre per annum, valued at Rs. 600 crores.

Table 2.1 Percent market share of few brands of ice cream in India

Company	Per cent market share
Amul	32.0
Kwality Walls (HLL)	8.0
Vadilal	7.0
Mother Dairy, Delhi	7.0
Dinshaw	4.0
Arun	4.0
Metro	3.0
Others	35.0

Source: HLL (2004)

The branded ice cream market is expected to grow at the rate of 10.0% annually. The consumption of ice cream in India is one of the lowest in the world, at 0.1 litre per person per annum compared to 22.0 litre in US, 5.0 litre in UK, 1.0 litre in Thailand and 0.41litre in Pakistan. The global average is 2.0 litre per annum.

Since the consumers are becoming health conscious, the demand for dietetic/health foods is increasing.

2.2.2 Global trends

The global ice cream key players are Unilever, Nestle, Mc Donalds, Dreyer's and Lotte Group.

In the United States in 2004, 6056 million lit of regular, light and low-fat ice cream were manufactured. The US frozen dairy desserts industry utilized 10% of total milk production and 16% of manufactured milk production. Exports of ice cream from the US accounted for 41 million lit in 2004, worth $50 million (USDA). In Canada, frozen dairy dessert production in 2004 was 330.2 million litre Canada imported 0.55 million litres and exported 5.8 million litre of ice cream in2004 (Statistics Canada). In 2006,total US sales of ice cream and frozen desserts reached nearly $23 billion. Of that,$8.9 billion was spent on products for 'at home' consumption, while $13.9billion was spent on 'away from home' frozen dessert purchases (scoop shops,food service and other retail sales outlets. (2007 Dairy Facts/International Ice Cream Association).

Consolidation has allowed for modern improvements in mechanization and automation as well as plant sanitation and hygiene.

The total per capita consumption of all ice cream in the US in 2004 was 18.7 litre This has not changed in the last 25 years. Total US production of ice cream and related frozen desserts in 2006amounted to about 5.86 billion liters, an increase of 0.7% over 2005 (USDA,2006).

In Canada, per capita consumption in 2004 was 9.3 lit of hard and soft ice cream.

Within the ice cream category, there has not been the same trend toward consumption of low-fat products as has been seen in the consumption of fluid milk. On the contrary, the last 20 years has seen the development of a range of premium (range of 12–4% fat) and super-premium (~ 16% fat) products.

In US, regular ice cream accounted for the largest share (63.8%) of the frozen dessert market. Reduced-fat, light, low-fat and non-fat ice cream accounted for 23.5% of the market, followed by frozen yogurt (4.3%), water ice (4.3%), sherbet (3.6%) and others (0.5%) (USDA,2006). Of today's consumption of ice cream in the US, 70% is standard product (10% fat), 28% is low fat and 2% is non-fat.

In US, vanilla topped the flavor for novelties, with more than 27% of the volume share. Fudge was the next highest stand-alone flavor share, with nearly 8% (IRI, 2001). In 2001 supermarket sales, ice cream bars (25%) were the largest dollar market share of the frozen novelty market, followed by yogurt novelties (20%) frozen ice (14.1%) ice cream sandwiches (13.5%), and ice cream cones (10%).

In US, ~ 86% of packaged ice cream retail sales happened in supermarkets in 2003. Next in sale stood at 11.4% at Convenience store sales, drug stores were third at nearly 2%, with 0.6% occurring at other locations.

Table 2.2 Production of hard and soft frozen desserts in US (millions of gallons) in 1979

Ice cream	Ice milk*	Sherbet	Water Ices	Mellorine type	Others
811	297	45	32	15	120

* Includes freezer made milkshake.

Source: International Association of Ice Cream Manufacturers, USA.

Americans ate an average of 21.5 liters of ice cream per person in 2004.

2.3 Quality Segments

While the majority of ice cream sales have long been regular-fat products, processors continue to diversify their lines of frozen desserts in order to fit into various lifestyles – ‘better for you’ products. Consumers can find an array of frozen desserts to fit specific dietary needs or wants, such as reduced-fat, fat-free, low-carb, ‘no sugar added’, added calcium or other nutrients, or lactose-free ice cream. Novelty/single-serving products are also an important part of this trend, as some consumers prefer the pre-packaged portion when counting calories, carbs or fat grams. Ice cream is generally considered to be costly and luxurious item in India. Amul has recently launched low-fat dietetic ice cream, diabetic ice cream and even probiotic ice cream. Health conscious consumers are always on the lookout for ways to improve nutritional traits, without sacrificing psychological satisfaction.

However, most consumers are looking for an indulgence when eating ice cream. Therefore, ice cream manufacturers make sure to offer a full selection of premium and super-premium products in innovative flavors and with such mix-ins as cookies, brownies, candies and cake.