

# Production of Ice Cream

## Introduction

Ice cream is a frozen dairy desert, manufactured by freezing and aerating a pasteurised mixture of ingredients including milk products, sugars, emulsifiers, stabilisers, flavouring compounds and water. Since the turn of the century and the development of the ice cream cone, the growth in consumption has been phenomenal with over 12bn. litres of ice cream consumed world-wide each year. Composition of ice cream varies from product to product with an average composition of 12% milk fat, 11% non fat milk solids, 15% sugar and 0.3% stabiliser/emulsifier.

## The Market

The market for speciality ice creams is essentially at home. However there are only a couple of farmhouse type producers in Ireland at present. Traditionally it was seen as a luxury treat but is now a common food item throughout the country. Ice cream can be classed as economy, market, premium or super premium. The premium or luxury end of the market has seen considerable growth with a 36% increase in consumption from 1995-96 and this trend does seem set to continue with a more discerning consumer looking for premium-speciality ice creams.

*Ice Cream Consumption in Selected Countries (litres/capita)*

Country	Litres/Capita
United States	24
Australia	18
Ireland	13
United Kingdom	8
Spain	5

Source: Leatherhead Food RA

## Production Method

The commercial manufacture of ice cream is highly automated. The basic ingredients are combined in batches where each of the ingredients are carefully measured. The liquid materials are usually added first in a mixing vat and the dry ingredients such as sugar are added using a high speed mixer. The mix is pasteurised, which not only kills bacteria but helps to blend the ingredients and improve flavour. The mixture is homogenised which gives it a smooth texture and helps to disperse the fat so that it does not turn to butter during the freezing process. The mix is finally cooled to less than 4 °C and is allowed to stand or age for up to 12 hours. Flavourings are added prior to the freezing process which is done as quickly as possible to avoid the formation of large ice crystals. Air is incorporated at this stage



## Fact Sheet No. 28 June 2006

*This is one of a series of fact sheets on potential income generating activities.*

*All fact sheets are available in the Advisory Section of the Teagasc Website  
<http://www.teagasc.ie/>*

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and normally 1 litre of mix will double (100% overrun) in volume to give 2 litres of ice cream (depending on the mix and the method of freezing). The frozen mix (-5C) is drawn from the freezer and mixed with nuts, fruit etc. The ice cream is packaged and placed in a freezer room to harden.

### Costs

Like all food products, a premises is required that conforms to the hygiene legislation in the EU Directive 92/46/EEC.

For ice cream production, one needs a processing area, a coldroom and a freezer room, an area to store dry ingredients and an area to store packaging. Equipment for processing is very specific and quite expensive. A mixing vat, freezer and fruit blender would cost approx. €50,000. This would have a production capacity of 60-80 litres of ice cream per hour.

Cost of 1 litre of dairy ice cream mix (38% T.S. & 12% Fat) = €1.40

Overrun 100%

Cost of 1 litre of dairy ice cream      €0.70

Cost of packaging      €0.19

Distribution & Retail Margin      €1.27

Total Retail Price      €4.38

Product Margin      €2.22

One has to however establish new markets or take over a small percentage of current market share.

Direct sale to the consumer through retail outlets etc would increase product margin.

Product range (flavours) and size 250ml, 500ml & 750ml would also help to increase overall margins.

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