

# The British Frozen Food Federation

– A Case for Frozen Food



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# Introduction



Welcome to *A Case for Frozen Food* the booklet from the British Frozen Food Federation which demonstrates how we are working to promote the benefits of frozen food to consumers and food service operators in the UK.

Over the past five years we've strived to challenge misconceptions about frozen food and have amassed a bank of evidence to promote its nutritional, cost, quality and sustainability benefits.

As more and more people realise the benefits of frozen, our industry is going from strength-to-strength but there is still work to do. This booklet will give you information on all of our promotional work to date, all of which you can use as BFFF members in your own communications.

BFFF aims to promote and protect the interests of the frozen food industry on your behalf. One way we achieve this is through a wide ranging campaign targeting both foodservice and retail audiences.

I hope that you find this information of interest. Should you wish to access any of the publications or reports mentioned please do get in touch email: [brianyoung@bfff.co.uk](mailto:brianyoung@bfff.co.uk).

**Brian Young**  
 Director General  
 British Frozen Food Federation



## Antioxidant Research

### Why?

In recent years it has been widely reported that antioxidants can help to keep the immune system healthy.

Found in fruits and vegetables, immune-boosting antioxidants are vitamins, minerals and other nutrients which protect and repair cells from damage caused by free radicals.

Based on the locked in goodness of frozen fruit and vegetables, BFFF wanted to examine the difference in antioxidant levels between frozen and fresh/chilled.

### What?

BFFF contracted the scientific team at Leatherhead Food Research to test a selection of widely consumed fruit and vegetables including broccoli, Brussels sprouts, spinach, carrots and blueberries.

In both frozen and fresh/chilled format, multiple produce samples were purchased from four major supermarkets for the research.

Assessment of deterioration of nutritional parameters was then conducted including Vitamin C, carotene, lutein, total polyphenols, total anthocyanins and moisture content tests.



### Results

Results revealed that:

- Polyphenol antioxidants were higher in frozen carrots than in fresh carrots
- Vitamin C antioxidants were higher in frozen Brussels sprouts and Broccoli compared to fresh.

## Schools and Hospitals Nutrition

### Why?

Nutrition is a major issue for cost sector foodservice providers, particularly in the case of hospital and school meal provision.

Minimal per capita budgets make achieving nutrition targets a key challenge for caterers.

Frozen food is a cost effective solution but a common misconception existed that frozen food is nutritionally inferior to other options.

### What?

In 2009, BFFF commissioned two pieces of research in partnership with the Local Authority Caterers Association and the Hospital Caterers Association to tackle this misconception.

Independently conducted by the Centre for Food Innovation at Sheffield Hallam University, the research compared the levels of 37 key nutrients in meals on cost sector menus. Research involved:

- Scientists compared nutritional content of menus at four UK schools and a rotational menu at one hospital using statistical analysis
- Independent sample t-tests were carried out to determine differences between the average nutritional value of fresh and frozen food
- Results were compared and evaluated to establish the nutritional impact of frozen.



### Results

Researchers concluded:

- There is no significant nutritional difference between fresh and frozen food
- Frozen food is an effective method of providing nutritious meals to hospital patients and school pupils.



## Consumer Nutrition

### Why?

There is still widespread misconception amongst consumers that frozen is nutritionally inferior to so called 'fresh'. This opinion had the potential to impact on frozen food's ability to attract new consumers and could discourage retailers stocking wider frozen ranges.

### What?

In 2011, BFFF commissioned the Centre for Food Innovation at Sheffield Hallam University to compare the nutritional value of 37 key nutrients in frozen and fresh food. Research involved:

- One month's grocery shopping receipts were compared from twenty people who were the main household shopper for a family of four
- All items purchased that are readily available in both fresh and frozen formats were identified
- Dietary analysis software and techniques were used to establish the energy, macronutrient and micronutrient content of each purchase.



### Results

Researchers concluded:

- There is no significant nutritional difference between frozen and fresh food in providing a month's worth of family meals
- Frozen food is an effective way of providing nutritious family meals.



## Consumer Cost Comparison

### Why?

In the UK's economic climate, tax increases and food inflation have led to a reduction in household disposable income and smaller grocery budgets.

Frozen can be significantly better value than other foods, especially when taking into account the reduction in waste. However, a lack of independent evidence existed to prove this claim.

### What?

In 2011, BFFF commissioned the Centre for Food Innovation at Sheffield Hallam to compare the costs of an average shopping basket when purchasing frozen versus fresh product. The research involved:

- One month's grocery shopping receipts were compared from twenty main household shoppers for a family of four
- The 10 most commonly purchased items available in both a fresh and frozen format were identified as:
  - Pizza
  - Prawns
  - Broccoli
  - Salmon
  - Carrots
  - Meat sausages
  - Garlic bread
  - Spinach
  - Whole chicken
  - Parsnips
- Costs were sourced from four major super markets for each item in fresh and frozen forms (value, regular, organic and categories where available)
- Average costs were compared for chilled versus frozen and the average amount of money saved was calculated.



### Results

Researchers concluded:

- A family of four can save 34% (£7.80) per weekly basket on the top 10 items when purchasing frozen
- Individual savings when choosing frozen ranged from 21% (whole chicken) to 78% (spinach).



## Foodservice Cost Comparison

### Why?

In a climate where foodservice operators are struggling to cope with consumers' reduced budgets, the profit sector is being challenged to offer more for less.

By using frozen food many operators could save significantly. To demonstrate this, BFFF commissioned independent research to determine how much could be saved.

### What?

In 2009, BFFF contracted Manchester Food Research Centre to look into the cost effectiveness of using frozen versus fresh ingredients when creating six popular pub and restaurant dishes. Research included:

- The overall cost of producing six dishes were compared. These were:
  - Starters: Breaded Camembert and Canapés
  - Main courses: Lamb Shank and Salmon En Croûte
  - Desserts: Strawberry Cheesecake and Profiteroles
- Two identical dishes were created to the same recipe and specification to calculate the difference between fresh and frozen ingredients looking at:
  - Cost of raw materials
  - Energy used
  - Waste costs generated
  - Washing and cleaning costs
  - Staffing costs.



### Results

Researchers concluded:

- Making a duplicate recipe from scratch cost on average 24% more than using frozen
- In the case of canapés and profiteroles, caterers can save up to 66% and 65% respectively
- It is more cost effective for pubs and restaurants to create dishes from frozen, because frozen:
  - Is less labour intensive
  - Has significantly faster cooking times, requiring less energy
  - Generates significantly lower waste costs.

## Pub Business Case

### Why?

Nearly 20 pubs close down every week - a 50% rise on the previous year - as publicans battle to cope with rising energy and food costs whilst appealing to consumers' ever-tightening budgets.

Frozen food can give pubs the opportunity to reduce their overall costs, whilst still offering customers high quality food at great value for money.

### What?

Researchers from the University of Salford Business and Hospitality Schools, examined the equivalent costs for using fresh/chilled and frozen ingredients and ready-made meals for the 10 most popular dishes sold in a 'real life' pub over the course of one week.

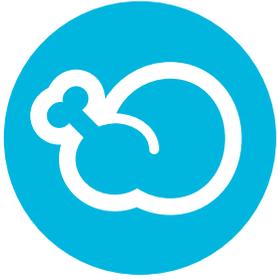
All cost centres were examined, including the purchase of ingredients, the food preparation cost for different grades of kitchen staff, the total cost of utilities – including gas, electricity and water needed to store, prepare, cook, wash and clean up after each dish. The cost of food waste was also measured and analysed.



### Results

Researchers concluded that a total saving of £50,000 could be achieved per year if the pub opted for frozen ingredients. This increased to £115,000 if using ready-made frozen meals.

For the sample of 10 dishes, the results suggested that, taking into account all cost centres, the pub could expect to save 21.5% by using frozen in comparison to fresh/chilled ingredients, and 49% by using frozen ready-made meals in comparison to fresh/chilled ingredients.



## How Green Is A Typical Frozen Sunday Roast?

### Why?

A long held misconception existed that frozen food was more energy intensive and therefore more detrimental to the environment than fresh or chilled alternatives.

As green issues are increasingly prominent, it has become important to debunk this myth in order to prevent frozen food from gaining an unfounded reputation as environmentally unsound.

### What?

In 2012, BFFF commissioned Refrigeration Developments and Testing Ltd. to calculate the fresh and chilled versus frozen carbon dioxide [CO<sub>2</sub>] equivalent for a UK Sunday roast for a family of four. Research included:

- Data was compared from over 40 academic papers on whole chicken, peas, carrots and roast potatoes. The CO<sub>2</sub> production from fresh and chilled versus frozen was compared across the whole 'cold chain', inclusive of:
  - Primary food processing
  - Transport – to supermarkets and to consumers home
  - Storage – including warehouse, retail and in home
  - Refrigerant loss through the cold chain
  - Processing and consumer food waste.



### Results

Researchers concluded:

- Emissions across the cold chain were calculated as:
  - Chilled – 6.546kg CO<sub>2</sub>
  - Frozen – 6.329kg CO<sub>2</sub>
- Frozen food therefore represents a 5% reduction in CO<sub>2</sub> emissions
- Using frozen food could contribute to reducing the CO<sub>2</sub> output of the food industry in the future.



## Taste and Texture Research

### Why?

Many chefs have typically seen frozen products as a poor relation to fresh in terms of flavour, quality and texture.

Chefs may have a predisposition to shy away from making the most of frozen's benefits. Work was needed to acquire peer endorsement of the quality for frozen products.

### What?

In 2009, BFFF commissioned Manchester Food Research Centre to conduct sensory analysis research into the taste and texture of fresh versus frozen products. Research involved:

- Eight commonly used fresh and frozen foods were identified
- 32 chefs were selected from across a range of foodservice outlets to achieve a balanced result
- Blind taste tests were conducted for the chefs to judge each fresh and frozen product according to a variety of descriptors including:
  - Appearance
  - Colour
  - Mouthfeel
  - Consistency
  - Texture
  - Flavour
  - Density
- Responses were then analysed to obtain an overall rating for the taste and texture of each product.



### Results

Researchers concluded:

- There is no significant statistical difference between the taste and texture of fresh or frozen alternatives
- All products were considered to be 'acceptable' and in many cases the frozen option achieved a higher overall rating than the fresh
- Researchers concluded that there is little difference between fresh and frozen in terms of taste and texture.



## A Food Vision

### Why?

By the end of 2010, a huge amount of evidence had been amassed both by BFFF, its partners and other research bodies.

There was a need to bring all evidence together into one document to present the case for frozen food in helping to deliver value, quality, nutrition, safe food and a more environmentally sustainable food chain.



### What?

BFFF produced The British Frozen Food Industry - A Food Vision report in 2010 in association with the Centre for Food Innovation at Sheffield Hallam University and Refrigeration Development and Testing Ltd.

The report brought together the latest research on the frozen consumer and food service markets, freezing technology and frozen quality, the sustainability opportunity posed by frozen and the nutritional benefits of frozen.

It highlighted that frozen can strongly contribute towards Defra's vision of a 'sustainable, secure and healthy food supply' in the UK.

The report was launched at a House of Commons event attended by 18 MPs and Lords along with 50 industry leaders and journalists.

Austin Mitchell, MP for Great Grimsby said: "It is clear from the evidence presented that frozen has a key role to play.

"I hope that it will help consumers, retailers and the foodservice industry to recognise the importance of frozen in UK food provision over future decades."

## N-Ice Restaurant



### Why?

The next stage of the work to prove the case for frozen was to demonstrate the quality of frozen in a 'live' setting through creating aspirational dishes to 'wow' any diner.

### What?

In August 2011, BFFF launched the world's first gourmet restaurant serving frozen food.

Open for one week only in partnership with Westminster Kingsway College, N-Ice served the finest gourmet dishes using frozen food. The menu featured dishes from some of the UK's most acclaimed chefs, including:

- Atul Kochar's Crisp Fried John Dory with Gokha Chutney
- Smoked Duck with Quail Scotch Egg, Apple Chilli and Mustard Seed Chutney
- Simon Rimmer's Italian Bean Casserole with Arancini
- Pan Fried Snapper, Crab Dumpling, Coconut and Lemongrass Broth and Chicken and Crispy Shallots
- Blackberry and Elderflower Summer Pudding with Crème Chantilly
- Galton Blackiston's secret recipe Petis Pois Ice Cream

## Results

Researchers concluded:

- Over 600 diners were served across the week
- Diners included representatives of Defra, WRAP, Schools Food Trust, National Farmers Union, Processed Vegetable Growers Association, Craft Guild of Chefs and English Institute of Sport
- The restaurant appeared in Time Out magazine's 'Critical Guide to the Arts, Culture and Going Out in the Capital'. High profile journalists from BBC Good Food, Channel 4, The Grocer and Publican's Morning Advertiser were also among diners
- Researchers conducted a diner questionnaire and concluded that:
  - Dining out at the restaurant had altered their perceptions of frozen food
  - They agreed strongly that the quality and nutritional value of frozen food was good
  - They agreed strongly that frozen food offered good quality and should be more widely used.

In 2010, BFFF commissioned the Manchester Food Research Centre to highlight the waste reduction and financial benefit of frozen food for families. Research involved:

## Consumer Costs, Waste Taste Research

- Nine 'average' families were chosen to create food diaries detailing:
  - Evening meal cost per meal component
  - Quantity of food uneaten or disposed of at the end of each day and week
  - The name of the food prepared for evening meals including each ingredient
  - Place of purchase / brand name
  - Comments on the taste of each meal
- Families prepared the same meals over a period of two weeks, using fresh ingredients meals for week one and frozen for week two



Researchers concluded:

- Frozen meals created on average 36.77% less waste
- There was an average cost reduction of 33.12% using frozen

To highlight the findings the average annual saving of £1,515.68 was frozen into a wall of ice to demonstrate in an eye catching way that using frozen can help consumers to save on their grocery shopping.

## Consumer Preference Research

In December 2011, BFFF commissioned a live study asking diners to compare fresh and frozen versions of the same dish to dispel the myths that frozen food is of inferior quality.

Pub diners tried chilled and frozen versions of four popular pub dishes:

- Hunter's Chicken with Mashed Potatoes
- Burger and Chips
- Gammon and Jacket Potato
- Fish and Chips.

Pub diners agreed that meals made using frozen food looked good, tasted good and smelled good. They concluded that there was no obvious difference between the dishes.

A video was produced of the event which is available from the BFFF website – <http://www.bfff.co.uk/about-us/publications/consumer-preference-research>

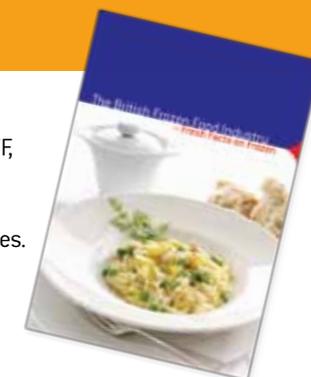
## Fresh Facts on Frozen

- This series of pamphlets was produced to demonstrate the specific benefits of buying frozen fish, fruit, vegetables, bakery and bread products
- They bring together facts on frozen nutrition, quality, increased shelf life, waste reduction and price stability
- They also focus on the reduction in preservatives and the locked-in goodness of frozen
- BFFF circulated 55,000 copies.



## Why Buy Frozen

- This booklet collates global scientific research and market information on frozen in one easy to understand format
- All facts were evidenced using research from BFFF, WRAP and academic research papers
- BFFF distributed 330 copies.
- Facts on quality, money saving and nutrition are included:
  - Cost effectiveness
  - Portion control
  - Reducing food waste
  - Flexibility and convenience
  - 'Freshness'
  - Food security and sustainability



For further information or to download a copy  
of this booklet, please visit [www.bfff.co.uk](http://www.bfff.co.uk).



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