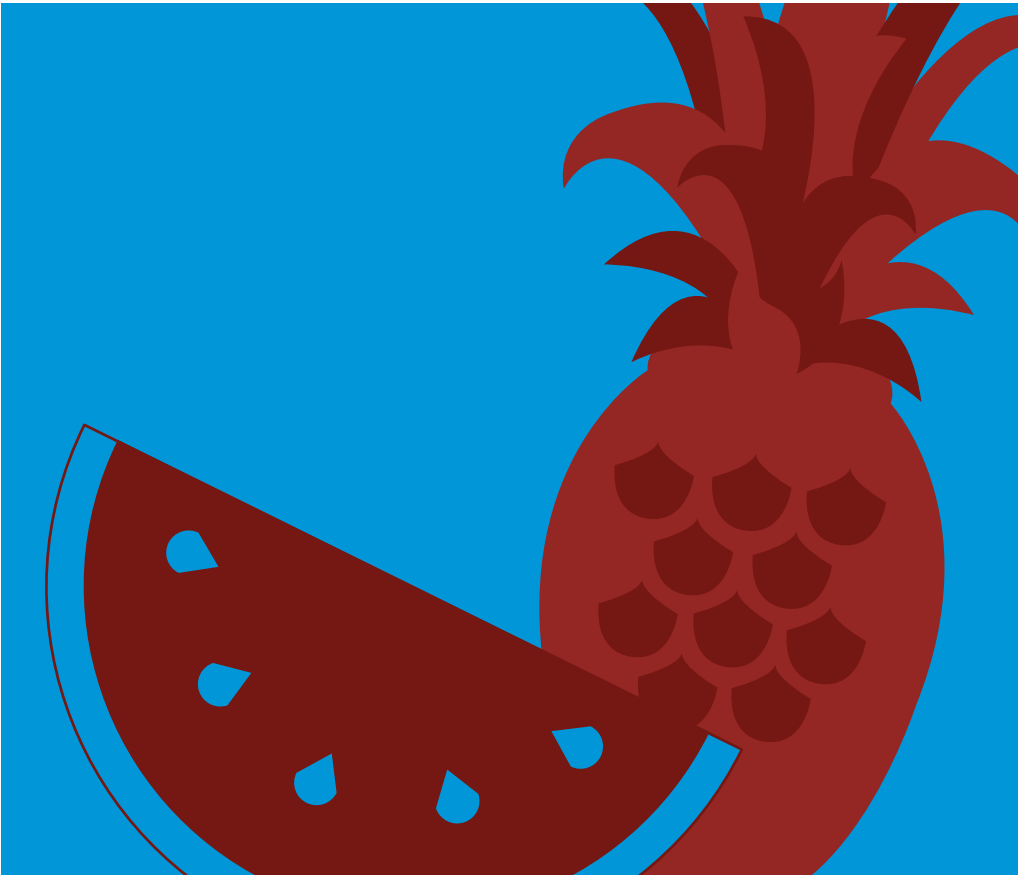


A Review of the Fruit and Vegetable Food Chain

Summary Document



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Acknowledgements

safefood would like to thank the following individuals for their participation in the External Advisory Group during the course of this review:

Prof David McDowell, Professor of Food Studies, University of Ulster at Jordanstown. Vice-Chair of the Scientific Advisory Committee of **safefood**.

Mr Michael Maloney, Director Quality Assurance and Horticulture, Bord Bia.

Dr Laurence Swan, MD for R&D, Fyffes plc.

Ms Patricia Erwin, Officer for Ulster Farmers' Union Fruit (Apples), Vegetable and Potato Committees.

Dr Ronan Gormley, Head Prepared Foods Department, Ashtown Food Research Centre.

Mr Robin McKee, Chairman of the Ulster Farmers' Union Vegetable Committee.

Mr Mervyn Briggs, Senior Executive Officer, Food Safety Enforcement and Consumer Choice, FSA NI.

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Amárach

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Background, Purpose and Scope

During 2006, **safefood** undertook a review of how fruit and vegetables are grown, imported, sold and consumed on the island of Ireland. This review focuses on ready-to-eat fresh fruit and vegetables, whether whole or prepared, which are eaten raw.

For the purpose of this review, potatoes are excluded as they are classed in the 'Breads, Cereals and Potatoes' food group due to their high starch content and are not consumed raw.

The aim of this review is to address issues of consumer concern and provide consumers with relevant information to help them make informed choices about the food they eat. The resulting summary report is one in a series of food chain reviews that **safefood** is carrying out over a three-year period.

The review outlines the nutritional and health benefits of eating fruit and vegetables as well as the basic processes by which fruit and vegetables enter the consumer food chain; the controls in place to protect consumers from potential risks; and the food hygiene practices that consumers should follow when buying, storing and eating fruit and vegetables.

As part of the review process, **safefood** conducted research into consumer

awareness and perception of nutrition and food safety issues regarding fruit and vegetables. The findings highlighted that most people are well-informed about the health benefits of a diet rich in fruit and vegetables and the 'five-a-day' recommendation. However, consumers expressed misunderstandings on what constitutes a portion and overall consumption of fruit and vegetables on the island of Ireland remains low.

The research also highlighted a number of barriers to the buying and consumption of fruit and vegetables including preparation and cooking difficulties, concerns over freshness and shelf life, and access to, and cost of, fresh produce. Among the focus groups, there were very few concerns about the potential health risks from the chemical and microbiological contamination of fruit and vegetables.

This summary document gives a brief overview of the findings of the review. A full report is available on **safefood's** website at www.safefood.eu.

The Supply Chain

In a European context, the horticultural industry on the island of Ireland is small. However, it plays a significant economic role as an important, indigenous industry providing employment. Regulatory bodies monitor and control the industry to very high food safety standards.

Widespread domestic production of certain fruit and vegetables such as mushrooms and strawberries exists. However, the island's climate limits the range of fruit and vegetables that can be grown and imports are therefore necessary to supply the all-year round demand for fruit and vegetables, as well as meeting demands for tropical fruit varieties.

Production

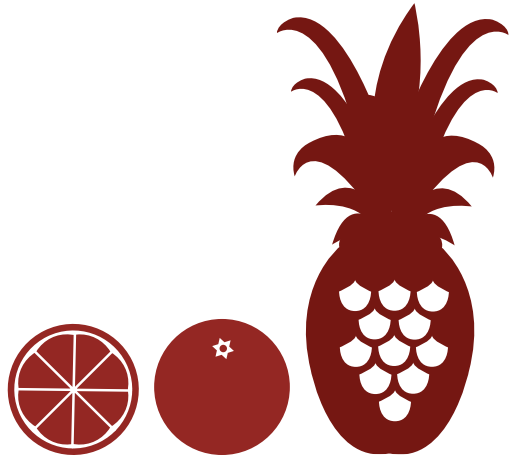
In 2004 there were approximately 1,733 fruit and vegetable producers on the island and the farm gate value of their produce was approximately €300 million (£186 million). Farm gate value is the price paid to the grower as it leaves the farm.

There are the equivalent of 4,500 full-time workers employed in the fruit and vegetable sector in the Republic of Ireland and 1,630 in Northern Ireland.

The location of growers is influenced by a range of factors including climate and soil type. However, market needs and demand from major supermarket multiples has led to a clustering of producers near the main centralised distribution centres, primarily Dublin, Belfast and Cork.

Imports

With climate naturally restricting the growth of certain fruits like citrus fruits, bananas, grapes, etc, fruit crops grown on the island are seasonal and include varieties such as strawberries and apples. In 2003, fruit and vegetable imports into the Republic of Ireland were valued at €344 million (£236.9 million). Figures for Northern Ireland are not separately available from total UK figures.



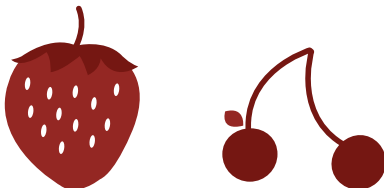
Exports

The production of fruit and vegetables is mainly for the domestic market. Exports from Northern Ireland were valued at £89.8 million (€130.4 million) in 2003. The only significant export from the Republic of Ireland is mushrooms which is estimated at €75m (£50.8) million and sold principally into the UK market.

Organic

There is very limited production of organic fruit and vegetables in Northern Ireland with approximately 19 producers. Organic vegetable retail sales in Northern Ireland are estimated to be worth £1.3 million (€2.5 million).

In 2003, there were 923 registered organic producers in the Republic of Ireland, with 45 percent of these involved in fruit and vegetable production. The current retail market value for organic fruit and vegetables is approximately €10.16 million (£6.8 million).



Farm to Fork – regulation of the industry

The safety of both domestically grown and imported fruit and vegetables is regulated by legislation enforced primarily by the Food Standards Agency Northern Ireland (FSANI) and the Food Safety Authority of Ireland (FSAI). The industry also has its own quality control schemes.

On 1 January 2006 new hygiene laws for EU member states, commonly referred to as ‘The Hygiene Package’, came into effect. These laws cover all aspects of the food chain from a food hygiene perspective, including extensive measures to ensure the safety of fruit and vegetables from farm to fork.

Enforcement

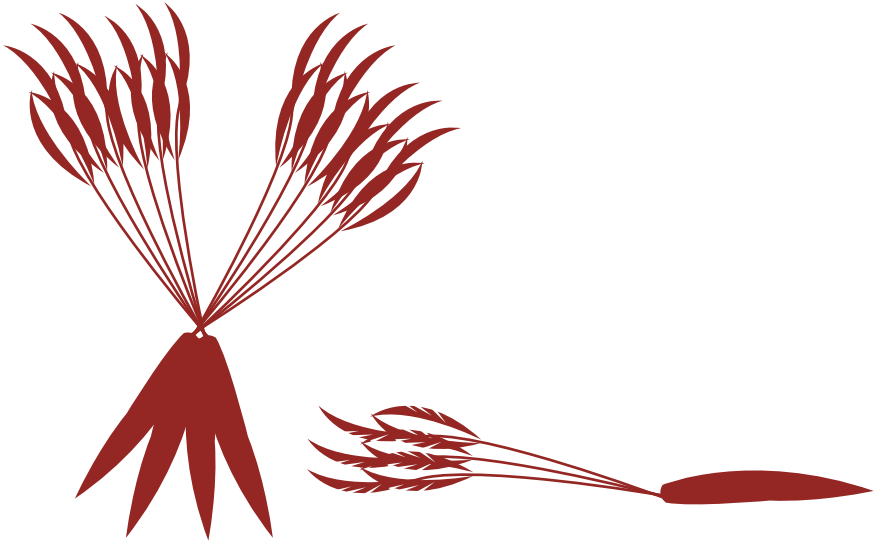
In the Republic of Ireland, the FSAI has service level contracts with the Health Service Executive and the Department of Agriculture and Food to oversee the enforcement of the Hygiene Package. The Department is responsible for the control of all fruit and vegetable products from primary production through to the point of retail, while the Health Service Executive, through Environmental Health Officers, is responsible from farm gate through to retail and catering stages of the food chain.

Officers from the Department of Agriculture and Food also enforce EU quality standards through inspections at wholesale and retail level.

In Northern Ireland, the FSANI has similar service level agreements with local authorities, through Environmental Health Officers, in the enforcement of The Hygiene Package.

If a health risk is discovered during the testing and monitoring of fruit and vegetables, an investigation of this may lead to the issuing of a food alert by the respective food safety agencies.

The Hygiene Package also deals with imported fruit and vegetables. The regulation of suppliers and produce is the responsibility of the European Commission’s Food and Veterinary Office.



Codes of practice

In addition to enforcing EU legislation, the respective food safety agencies and agriculture departments have all produced guidelines for growers and producers to minimise the risk of foodborne illness resulting from the consumption of fruit and vegetables.

Quality assurance

Quality assurance schemes for horticultural produce have been developed in the Republic of Ireland by Bord Bia in conjunction with the FSAI, the Department of Agriculture and Food and industry representatives. In Northern Ireland, quality assurance schemes have been developed by Assured Food Standards. To ensure consumer confidence, the Bord Bia and Assured Produce Scheme quality symbols can only be used when producers meet ongoing safety and quality requirements in independent audits.

Nutrition and Health Benefits

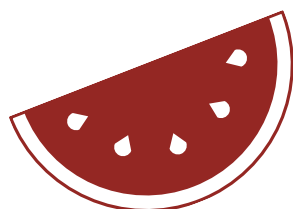
Fruit and vegetables are a rich source of many vitamins, minerals, fibre and phytochemicals, as well as being low in calories.

The health benefits of a diet rich in fruit and vegetables are well known and most consumers claim to try and meet dietary recommendations, particularly if there are young children in the family. There is extensive research to show that a high intake of fruit and vegetables can help decrease the risk of cardiovascular disease, cancer, diabetes and osteoporosis. The World Health Organization advocates a daily intake of 400g of fruit and vegetables - approximately five portions based on an average weight of 80g per portion. This recommendation lays the foundations for the 'five-a-day' message.

The nutritional benefits of fruit and vegetables can be compromised by the way fresh produce is prepared. It is important to always check the label when buying processed fruit and vegetable products and avoid those with added salt, sugar or fat. Steaming and boiling in minimal water

is a better cooking method than frying, and microwaving is also a good way of maintaining the nutritional qualities of fruit and vegetables.

Canned (in own juices rather than syrup or brine), frozen and dried fruit and vegetables can be just as nutritious as fresh, and count towards the 'five-a-day' target.



Consumption Levels

Despite the ‘five-a-day’ message being widely recognised by participants in *safeFood*’s research, fruit and vegetable consumption on the island of Ireland falls below World Health Organization recommendations.

The most detailed all-island study of fruit and vegetable intake among adults to date was the *North/South Ireland Food Consumption Survey (NSIFCS)* carried out from 1997 to 2000.

This survey showed that adults aged 18 to 64 years ate 276g of fruit and vegetables per day. This compares to Spain where adults eat a total of 605g per day; Italy, 479g per day and France, 467g per day. Based on the data from the *NSIFCS*, just 21 percent of men and 19 percent of women on the island of Ireland are meeting the current World Health Organization target of 400g of fruit and vegetables per day.

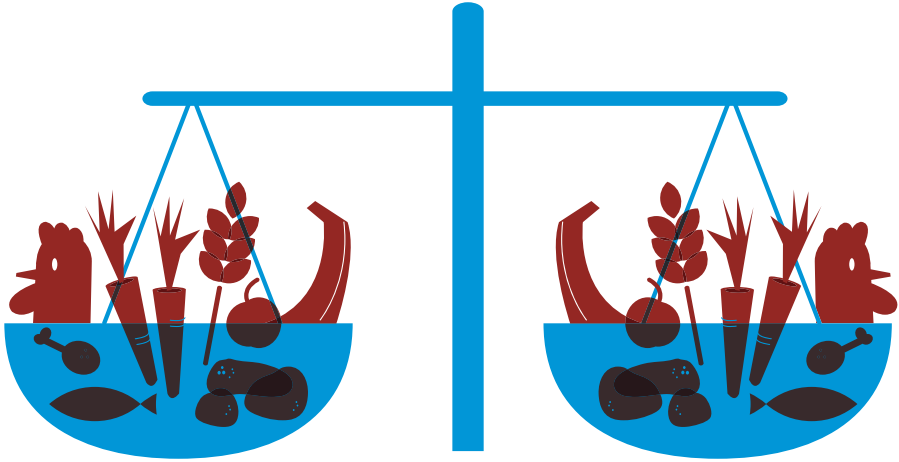
Tomatoes, carrots, apples, bananas and orange juice make the biggest contributions to the ‘five-a-day’ target. Composite meals, i.e. meals that include a mixture of vegetables such as stews or

casseroles, are an important contribution to total vegetable intakes.

Age has a significant effect on how much fruit and vegetables are eaten. Adults aged 18 to 45 years eat 128g of vegetables and 114g of fruit per day compared with 147g and 156g respectively, in the older age groups.

Children

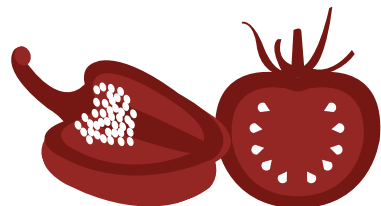
Young children are eating even less fruit and vegetables. The importance of introducing fruit and vegetables into children’s diets is widely recognised and repeated exposure to a variety of tastes, textures and flavours in childhood leads to a greater acceptance of foods later in life, including fruit and vegetables.



Initial results from the 2005 National Children's Survey of 5 to 12 year olds in the Republic of Ireland has indicated that children eat little more than half the average portion of vegetables per day. Fruit intake is nearly equivalent to two portions per day, but more than half of this fruit intake is made up of fruit juice.

The *Eating for Health Survey* carried out by the Health Promotion Agency reported in 2001 that one in five boys and one in eight girls in Northern Ireland aged 5 to 17 years did not eat any fruit and vegetables on a daily basis. This survey also demonstrated a lower consumption of fruit and vegetables among lower socio-economic groups.

The *Health Behaviour of School Children* survey of 10 to 17 year olds in the Republic of Ireland and the *Young Hearts Study* in Northern Ireland showed fruit intakes among young people at similarly low levels.



Consumer Attitudes

It is well recognised that many barriers exist to the consumption of fruit and vegetables. These can be broadly categorised into:

- Access to, and availability of, good quality, affordable fruit and vegetables locally.
- Attitudes and awareness – awareness of the fruit and vegetables message and consumer knowledge, and attitudes, motivation and skills in buying, preparing and eating fruit and vegetables.

There is a recognised lower consumption of fruit and vegetables among socially disadvantaged groups. There is a perception that fruit and vegetables are not 'filling' and can create a lot of wastage. This can lead to poorer households often opting for cheaper, energy-dense foods.

In addition to income, it has been demonstrated that area of residence, car ownership, public transport and shopping and storage facilities exist as barriers to eating enough fruit and vegetables.

Other barriers to consumption identified by **safefood**'s consumer research included the perceived short shelf life of certain fruit and vegetables, the inconvenience of preparation of some fruit and vegetables, and the quality (and ripeness) of produce was seen to be 'hit and miss'.

In general, organic fruit and vegetables were perceived to be a lifestyle choice. Where consumers choose organic products it is often in the belief that they are safer and more nutritious than conventionally grown produce. However, the balance of current scientific evidence shows that organic food is neither safer nor more nutritious than conventionally produced food.



Food Safety – contaminants and residues

Consumer concerns identified in *safe food*'s market research focused on the presence of chlorine in pre-packaged lettuce (57 per cent), genetically modified organisms (GMOs) (60 per cent) and the presence of pesticides (68 per cent).

The use of certain chemicals is permitted and strictly controlled in the production of fruit and vegetables in order to minimise the risk associated with infestations from insects, fungus, diseases and other organisms. The chemicals are also used to ensure good crop yields.

The industry is highly regulated on the island of Ireland, which has meant in recent years that any residues found on fruit and vegetables reaching consumers were well within the safe EU legislative limits. Monitoring programmes in 2005 for other chemicals, such as chlorine, recorded levels which were generally low and not considered to represent a safety concern.

Concerns about genetically modified (GM) crops include food safety, potential damage to the environment, disruption of ecosystems, and ethical and moral objections. The FSA in Northern Ireland and the FSAI in the Republic of Ireland are responsible for enforcing GM food regulations on the island, and to this end monitor the market to ensure only EU- authorised GM foods are on sale and that they are labelled appropriately.



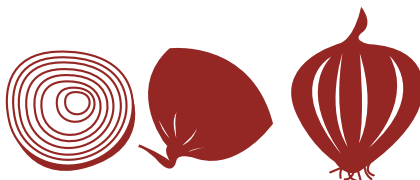
Food Safety – food hygiene

The risk of food poisoning associated with eating fresh fruit and vegetables is very low. However, it is possible for fruit and vegetables to be contaminated with microorganisms along the food chain and there are precautions that consumers should consider following in the home.

Most fruit and vegetables are grown and harvested in a relatively natural environment where they can be exposed to microbiological contamination from soil or water. Any contamination often occurs either early in the production process, for instance via animal manure or contaminated water used during growth or harvesting, or in the home or catering facility, such as from cross-contamination by raw meat or poultry products.

In **safeFood** research, consumers voiced very few concerns about any food safety risks associated with fruit and vegetables and considered them to be one of the healthiest and also the safest food categories.

Consumers are advised that all fresh produce should be rubbed or brushed clean under the cold running tap before cooking or eating. Fruit and vegetables should be stored away from other raw foods: not below meat in the fridge where juices may drip, for instance, and chopping boards and knives should be cleaned thoroughly between use.



Key Facts



Fruit and vegetables are highly nutritious and an essential part of the diet: to maximise the benefits choose a variety every day.



Fruit and vegetables can help maintain a healthy weight and are associated with decreased risk of chronic disease such as cardiovascular disease, cancer, osteoporosis and type II diabetes.



Just 21 percent of adult men and 19 percent of adult women on the island of Ireland are meeting the current World Health Organisation target of 400g of fruit and vegetables per day. It is recommended we all aim for at least five portions of fruit and vegetables per day.

A portion of fruit or vegetables is:

1 large piece of fruit, e.g. 1 apple, 1 orange, 1 banana

2 small pieces of fruit, e.g. 2 satsumas, 2 kiwis

100ml of unsweetened pure fruit juice (1 small carton = 200ml)

½ tin of fruit, in its own juice

2 tablespoons/3 dessertspoons vegetables, e.g. carrots - chopped or grated

1 small salad, e.g. lettuce, tomato, cucumber, celery sticks

(Source: Department of Health & Children)



Canned (in own juices rather than syrup or brine), frozen and dried fruit and vegetables count towards the 'five-a-day' target. Fruit juice also contributes towards the 'five-a-day' target but only represents one of those portions.



When cooking fruit and vegetables, try microwaving or steaming instead of boiling or frying and avoid the addition of salt, sugar, cream and sauces. Alternatives to salt during cooking include lemon juice, garlic, ginger, pepper, and herbs and spices.



The risks associated with eating fruit and vegetables are low. Nevertheless, some sensible steps should be taken when preparing and storing fresh produce:

- Wash fruit and vegetables before eating, by rubbing or brushing under the cold running tap
- Prepared fruit and vegetables, e.g. bags of salad leaves or cut fruit portions, should be kept in the fridge, away from raw meat or poultry that could cross-contaminate the produce. Although it is not necessary to store whole fruit and vegetables in the fridge, colder temperatures can help retain their nutritional value. Bananas and mangoes should not be stored in a refrigerator
- Thoroughly clean all utensils and cutting boards between uses.

safefood

7 Eastgate Avenue, Eastgate, Little Island, Co. Cork.

7 Ascaill an Gheata Thoir, An tOileán Beag, Co. Chorcaí.

7 Aistyett Avenue, Aistyett, Wee Isle, Co. Cork.

Tel: +353 (0)21 230 4100 **Fax:** +353 (0)21 230 4111

Email: info@safefood.eu **Web:** www.safefood.eu

HELPLINE
NI 0800 085 1683
ROI 1850 40 4567
www.safefood.eu