# What should supermarkets do about seasonal food?

A discussion paper for The Co-operative

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FOOD ETHICS COUNCIL

# In brief

Government, campaigners and celebrity chefs are encouraging people to eat with the seasons. In the words of Eat Seasonably – a government-backed initiative – this means "better value, better taste and a better deal for the planet".

But does in-season food from a supermarket – where most people buy most of their food – live up to the promises that are made for it? Is it really better for the planet? And how should a responsible retailer respond to the calls for them to act on this issue?

In this short discussion paper we examine the evidence and make recommendations. We propose that supermarkets should consider greater seasonal variation in their product ranges as one possible outcome – not a goal in itself – of a concerted strategy to improve the environmental and social footprints of their supply chains. Seasonal marketing should be seen as one of a package of ways that retailers can help match demand to variability in supply, and should be carefully monitored for its effectiveness in promoting wider objectives of campaigns on seasonal food, including green citizenship and healthy eating.

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# 1. Introduction

Government, campaigners and celebrity chefs are encouraging people to eat with the seasons. In the words of Eat Seasonably – a government-backed initiative – this means "better value, better taste and a better deal for the planet", whether you grow your own or you buy it.

Since the majority of food is bought in multiples, buying seasonal food, for most people, means buying it from a supermarket. Indeed, Tesco, Sainsbury, Waitrose and M&S all back Eating Seasonably.

But does in-season food from a supermarket live up to the promises that are made for it? Is it really better for the planet? And how should a responsible retailer respond to the clamour for them to act on this issue?

This paper offers a brief analysis and recommendations. It draws on work commissioned by The Co-operative from the Food Ethics Council, a charity which provides independent advice on ethical issues in food and farming.

# 2. Who says we should eat seasonal food?

Eat Seasonably gives a concerted boost to a variety of recent efforts to promote seasonal food. Of course, the amount we eat of all sorts of foods – from salad to chocolate – varies through the year anyway according to the weather, festivities and marketing: food retailers already have seasons much the same way that fashion retailers do. Campaigns like Eat Seasonably are about bringing our consumption patterns into line with seasonal changes in food production. They argue that there is a public interest in doing so.

Thus, government has picked out eating seasonally as one of five 'environmental behaviour goals' relating to food. A bevy of TV chefs, from Hugh Fearnley-Whittingstall to Gordon Ramsay, have spoken up for seasonal food. The National Trust, the RSPB and the Women's Institute are among the charities supporting Eat Seasonably.

Sustain, the alliance for better food and farming, argues that eating seasonal fresh produce is one of the best ways we could cut our greenhouse gas emissions – and has therefore attacked retailers for hijacking the term 'seasonal' to sell cake, washing powder or out-of-season fruit.[1]

Supermarkets have responded by celebrating and promoting seasonal food with recipe ideas, in-store sign posting, magazine features and price promotions. Waitrose, for instance, began offering discounted bags of British seasonal vegetables in the autumn of 2008. Tesco's Greener Living website advises customers that cutting food miles is one of the best ways to reduce their carbon emissions, "and one of the best ways of minimising your food miles is to look for British-grown produce that is in season".[2]

# 3. Why eat seasonal food?

Common sense suggests that foods consumed during their traditional growing seasons should be lighter on the environment, needing less heating, chemical fertiliser and plastic sheeting to flourish. In-season fruit and vegetables can be at their freshest and, being abundant, they should also be cheaper. So, it seems, we all win.

At least as important, though, is that there appear to be few losers. Research for Defra has found that, unlike many of its other 'environmental behaviour goals', the idea of eating seasonally chimes with consumer aspirations.[3] The IGD reports that two-thirds of consumers aspire to buy food in season.[4]

In short, then, the logic of public campaigns to promote seasonal food is that:

- Encouraging people to consume more in-season fresh produce – particularly fruit and vegetables – can directly yield sustainability, health and cultural benefits.
- That this consumer demand will support more sustainable supply chains and production systems.

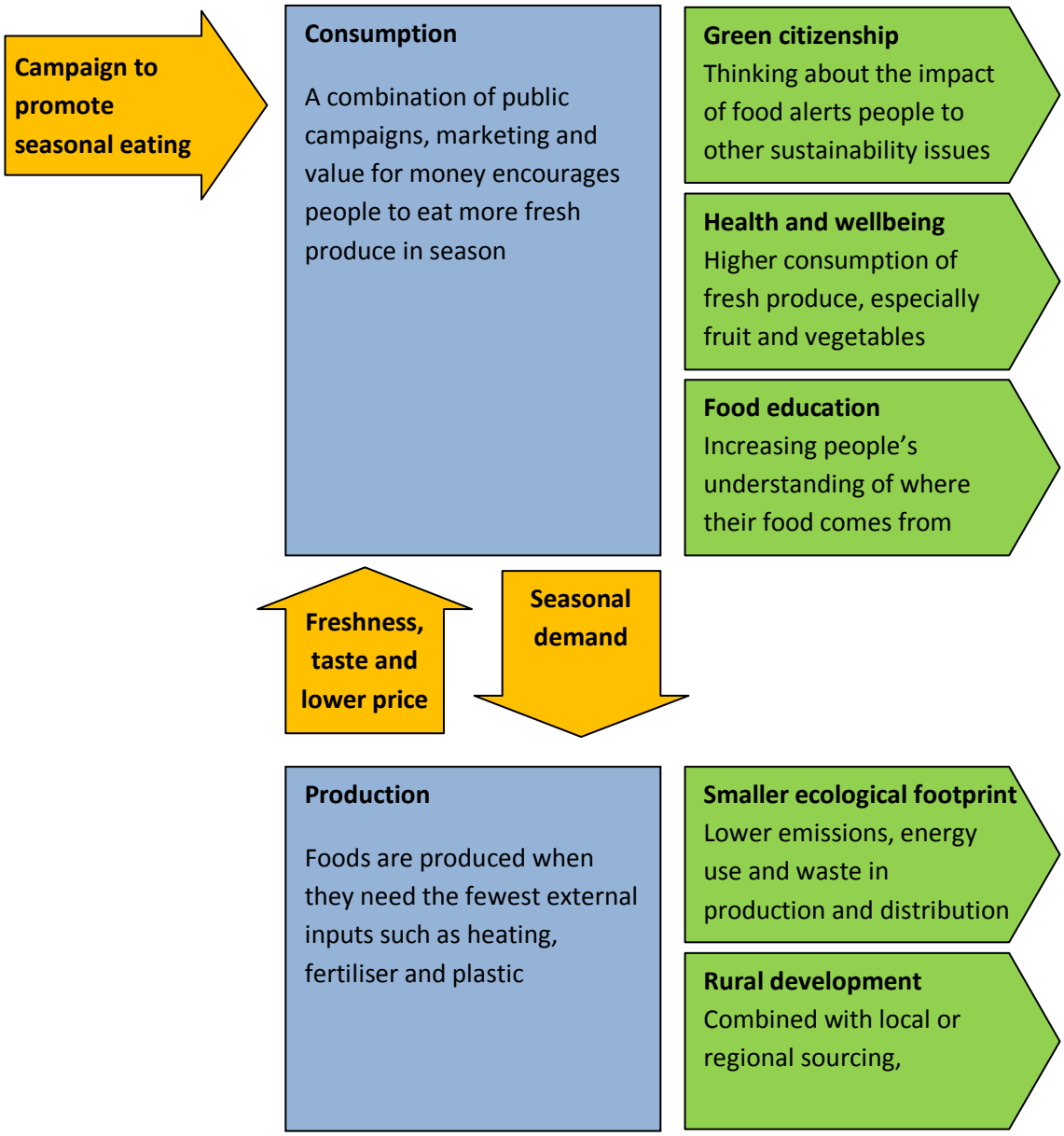
Figure 1 outlines this argument in greater detail. The campaigns seek to unlock a virtuous circle in which lower prices and high quality bring consumer demand more closely into line with seasonal variations in the fresh produce offered by low-input production and distribution systems. The main public benefits expected to spill out of this are:

- **Smaller ecological footprint**. In-season food is expected to use fewer non-renewable resources and, in particular, result in lower greenhouse gas emissions. Defra says "a simple but significant step towards a more sustainable diet is to eat more fruit and vegetables when they are seasonally available, as they generally require less energy to produce and tend to cost less".[5] The focus is on food produced close enough to the point of consumption that any savings in production are not undone by energy-intensive transport and refrigeration, which is variously taken to mean local, regional or British produce.
- **Green citizenship**. Eating seasonal food is seen as a stepping stone to other changes towards more sustainable lifestyles. Eat Seasonably is the first of five campaigns by We Will if You Will, a project commissioned by Gordon Brown and led by the heads of the National Trust and B&Q, which aims to "encourage the mass mobilisation of individuals towards more sustainable lifestyles".[6]
- **Food education**. Eat Seasonably campaigners have lamented the "shocking state of ignorance amongst the 'convenience food' generation about what is in season when".[7] Defra says the initiative will "reconnect [people] with the food they are eating and the seasons in which it's grown".[8]
- **Health and wellbeing**. Since seasonal campaigns focus on promoting high quality, lower priced, seasonal fruit and vegetables, they are expected to complement public health efforts to encourage people to eat '5 a day'. It has also been suggested that seasonal eating may encourage a more varied diet.[9] Eating with the seasons is also associated with emotional capital and wider

quality of life benefits – as Nigel Slater puts it, "There is something deeply, unshakeably right about eating food in season".[10]

- **Rural development**. Inasmuch as in-season also means local, regional or national produce, the campaigns also complement efforts to promote rural development by 'buying local', 'buying British' and celebrating regional specialities.

**Figure 1: The benefits expected from seasonal eating.**



# 4. Does it live up to its promises?

What is the evidence that in-season food, bought from a supermarket, can make good on the public benefits it is expected to deliver?

**Smaller ecological footprint**

A handful of Life Cycle Analysis (LCA) studies have compared fresh fruit and vegetables produced at different times of the year and in different places

One study of apples consumed in Europe compares fruit produced in Europe and in the southern hemisphere.[11] It finds that it takes significantly more energy to produce and distribute apples that are produced outside the main EU growing season. In season, the European apples use much less energy than those that are imported, whereas out of season they use a little more.

Another study compares greenhouse gas (GHG) emissions from lettuce for the UK market grown in the UK and in Spain.[12] Supplying out-of-season lettuce from Spain produces much lower emissions than supplying out-of-season lettuce from the UK, but significantly higher emissions than supplying UK-grown lettuce in-season. The study concludes "Whilst recognising the small sample size, the comparative analysis of the different supply chains does suggest that seasonality can be an important variable when defining the best choice of lettuce from an environmental point of view".

Analysis of salad crops, green beans and broccoli by some of the same researchers concludes that "In terms of year-round impacts, eating fresh produce which is in season represents the lowest environmental impacts".[13]

However, not all the research detects this same pattern. The Co-operative commissioned a detailed comparison of GHG emissions from strawberries supplied to them from Scotland and from Spain during their main respective growing seasons.[14] The carbon equivalent footprint figure for a 400g Scottish punnet was 0.867g, whereas for a Spanish punnet – reaching consumers outside the main UK growing season – it was 0.587g. Over a third of the carbon footprint of the Scottish strawberries was down to the off-site decomposition of peat that the farm uses as a bedding material.

So the research that is available on this issue suggests that fruit and vegetables produced in-season in the country where they will be consumed can be less GHG- and energy-intensive, but they are not necessarily so. Other differences in production, transport and storage can outweigh any seasonal effect.

In considering how important it is to change different aspects of our consumption habits, we not only need to compare the GHG-intensity of products but also the amounts that we consume. So, for example, while air freighted fresh produce is highly GHG-intensive, because we eat relatively small amounts of it, it accounts for just 0.3% of total UK emissions.[15] While cuts may be needed in every area to reach the UK target of an 80% emissions reduction by 2050, the total scope for reductions from changing how we eat fruit and vegetables is less than for other parts of our diet. Fresh fruit and vegetables account for 2.5% of the UK's overall emissions compared with 8% for meat and dairy, suggesting that more substantial GHG reductions might be available elsewhere within our diets. [16]

As it happens, the environmental footprint of meat and dairy production can also vary through the seasons, but that not been the focus of the major campaigns.

As well as energy use and GHG emissions, seasonality may also be a factor in agricultural biodiversity. A demand to extend domestic growing seasons may reinvigorate the market for traditional varieties with a range of cropping times. Equally, however, it may result in the introduction of exotic species. Greater agricultural biodiversity will not necessarily result from people eating more seasonally.

A report by Defra in 2008 concluded that of 12 changes towards a sustainable lifestyle that government was encouraging people to adopt – which also included using cars less for short trips, increasing recycling and wasting less food – eating more food that is locally in season would make the least difference to GHG emissions and provide little benefit to biodiversity.[17] It questioned whether this should remain one of its 12 main goals.

**Green citizenship**

The same Defra report that argued eating more seasonally would have a relatively small impact, also highlighted that people were more willing and able to act on this than on many other of the government's environmental goals.[18] The goal of wasting less food was more popular still, while the other food-related goal – to adopt a lower impact diet, which might mean eating less meat and dairy – was the least popular of the 12.

Behind these assessments of how much different ways of achieving a more sustainable lifestyle chime with the public at large is in-depth research with a wide-range of people. Successive studies have reiterated that eating seasonally is relatively popular.[19]

So, even if the direct environmental benefit of eating seasonally is comparatively modest, its acceptability makes it – like food waste – a feasible place to start a conversation with citizens about the sustainability of their lifestyles and their food. Indeed, previous work for Defra by Green Alliance found that groups working on sustainable development considered that eating local food in season might be a catalyst that leads people then to change their lifestyle in more significant ways.[20]

While it is plausible that eating seasonally may be a gateway to other forms of sustainable living, careful research to monitor the effects of campaigns such as Eat Seasonably would be needed to establish whether this idea holds in practice. Evidence that other changes in behaviour can have a catalytic effect would not seem sufficient to support the assumption that promoting seasonal eating is likely to have that effect. Nor would retrospective studies showing that eating seasonally led to other changes in lifestyle for people who are already 'green consumers', since their attitudes and concerns may be different from those of other groups within the population.

**Food education**

Research in 2009 by YouGov, for Eat Seasonably, found that a quarter of 16-24 year-olds think peas are in season throughout the year. Four percent of those aged over 55 thought the same.[21]

In a 2006 study, 70% of people aged over 60 could correctly identify the seasons of classic British fruit and vegetables, as opposed to 25% of 18-24 year olds.[22] Another poll, the same year, found that one in five people thought oranges could be grown in the UK and less than a quarter of young people

knew apples were picked in the autumn.[23] A 2002 survey of shoppers in the UK found that 96% of the public do not know when strawberries are in season.[24]

Overall there appears to be strong evidence that public awareness is generally low of which foods are in season when, and which can be readily grown in the UK, though older age groups score better.

The effectiveness of campaigns to highlight seasonality in increasing public awareness of traditional UK growing seasons is not known, and would need to be demonstrated by research to monitor the results of current and future initiatives.

It is also possible that even if campaigns succeed in increasing knowledge of traditional UK growing seasons – and see 'improved' poll results in future – they may not result in the kind of reconnection or understanding that campaigners want. It might be argued that a critical understanding of where our food currently comes from and the technologies that are used to provide the same foods year-round would be more valuable in empowering consumers and underpinning changes in their lifestyles. By comparison, the simple '5-a-day' message has spread very effectively yet has not been matched by changes on a comparable scale in fruit and vegetable consumption.[25]

**Health and wellbeing**

Seasonal marketing can be very effective at selling food and other products – that is why it is so heavily used to promote foods such as chocolate. Likewise concerted marketing efforts such as the Winter Berries Campaign, Aldi's 'super 6' and The Co-operative's 'mix your colours' campaign, can boost sales of fresh fruit and vegetables. While it is quite plausible, it does not however follow that seasonal marketing is a particularly effective way to increase sales and consumption of fresh produce. The devil will be in the detail and only careful monitoring of actual campaigns can reveal what works and what doesn't.

Even if seasonal marketing campaigns were to increase total sales of fresh produce, that may not mean that many more people reach achieve their '5-a-day'. If produce that is abundant and in season is cheaper, that may mean that people are more inclined to waste it. Conversely, inasmuch as marketing that celebrates seasonal abundance emphasises the high-quality of this produce, less food might be thrown away. In short, we do not know what effect different seasonal campaigns might have on fresh fruit and vegetable consumption, and, even if sales rise, we would need in-depth consumer research to be certain of any benefit.

A further benefit sometimes claimed for seasonal food is that, being fresher, it is more nutritious than food that is stored over a long period, whether for local consumption or in transit.[26] With some exceptions, such as frozen peas, storage is associated with micronutrient loss and chemical analysis shows in season, local produce to be fresher and healthier. However, the nutritional benefits of eating fresher produce appear to be marginal compared with the benefits of simply eating more fruit and vegetables.[27] Furthermore, out-of-season produce that is trucked to the UK from southern Europe or flown in may be stored in transit for a similar period to in-season fruit and vegetables produced within the UK.

It has also been suggested that eating seasonally may encourage a more varied diet.[28] While we could find no research on this topic, it is worth noting that eating fewer out-of-season exotic fruits and vegetables could offset any increase in the variety of domestically produced foods that people consume.

More plausible, perhaps, is the notion that varying your diet over the course of the year and in line with what is most readily available might improve our wellbeing for non-nutritional reasons. There is plenty of personal testimony to support this claim. Hugh Fearnley-Whittingstall writes, for instance, that "Shopping and cooking seasonally is not a high-minded duty or a restrictive chore but a liberating pleasure. The downside of… infinite year-round choice is a kind of options paralysis – there's so much on offer that you don't know where to start."[29] Psychologist Barry Schwarz has famously called this 'the paradox of choice', suggesting that limiting choice can benefit mental health and wellbeing.[30]

**Rural development**

Buying products from a particular locale, region or country implies varying consumption seasonally and supports that territory economically. However, all produce comes from somewhere and there is nothing intrinsically better about supporting producers who are closer to you geographically. More interesting is to consider whether buying locally and seasonally changes the relationships between producers and consumers in ways that are beneficial for rural development.

When people talk about buying local food they often refer to farmers' markets, vegetable box schemes and other forms of direct sale. In this report, though, we are concerned with supermarkets. Can campaigns that encourage consumers to demand local, regional or British produce significantly alter the relationship between retailers and producers, which affects how many pence from every pound spent on food goes to rural communities?

Producers offering products for which there is limited supply and high demand are in a stronger bargaining relationship with the supermarkets they sell to. If campaigning stimulates demand for fruit and vegetables produced in places and under conditions that restrict supply, then it should increase the power of producers to bargain with retailers.

Case studies of how producers have been affected by supermarkets introducing local or regional sourcing policies suggest that producers involved in such schemes have benefited.[31] However, such benefits are not unique to local or regional sourcing: initiatives such as Fairtrade can also change the relationship between retailers and producers, and their rural development benefits have been subjected to greater scrutiny.[32]

However, if seasonal UK produce substitutes for imported food then producers in other countries would lose out. In some countries, exports of food to the UK and other parts of Europe provide a source of income and investment that it would be difficult to replace. In Sub-Saharan Africa, for example, over 100,000 rural people are employed in the fresh fruit and vegetable export sector and a further 100,000-120,000 more jobs exist in support services.[33]

**Demand and supply**

In assessing the public benefit of promoting seasonal food through supermarkets it is also important to examine the relationship between demand and supply. Does it follow that food which is in-season and produced with fewer external inputs will be cheaper? Is that lower price likely to be passed on to supermarket customers? Would a greater demand for particular kinds of produce during their traditional growing seasons result in lower waste in the supply chain, which could offer

significant environmental benefits? If people did eat more seasonal food, what would they be substituting it for?

- **Production cost**. As the costs to the environment of agricultural inputs such as fuel are not fully reflected in the prices of those inputs, it does not follow that food costs less if it has caused less harm to the environment. Sometimes it will, but other factors such as international oil prices and the cost of labour may have a more direct effect.
- **Consumer prices**. Farm gate prices for products do not directly reflect the cost of production, and the prices retailers charge consumers do not simply track farm-gate prices. Factors that influence these relationships include forward planning, which may affect how much of a product gets planted, vagaries in the weather, which damage harvests, and different retailers' systems for deciding prices and distributing products to their stores, which may offer or more or less flexibility to push low-cost production flushes through the system to consumers.
- **Waste and efficiency**. Eating more of foods when they are naturally abundant might seem to offer potential to reduce the amounts of food that get wasted in the supply chain and thereby yield major environmental benefits. However, inasmuch as the volumes of a food that get planted are based on projections of demand, the real waste issue is how flexibly the supply chain and marketing can match consumption to an unpredicted variations in supply. Creating distribution, pricing and marketing systems that can respond rapidly to changes in availability may also benefit workers, since oversupply puts pressure on pay and employment, while intensive work to fulfil promotions in the event of undersupply can lead to exploitation.
- **Substitution**. Which foods people would substitute seasonal produce for would have a major bearing on the environmental and health consequences, yet is unknown. Healthy eating research suggests people don't necessarily substitute fruit for fruit, for example. If we ate apples by habit, and they weren't available, we might eat crisps instead, rather than strawberries. This behaviour is affected by marketing and price, among other factors. When people do swap fruit for fruit, they do not necessarily eat similar volumes of the substitute. How much apple or strawberry you eat is in part determined by the unit size and character of each, by how they are presented and so on. The price and the environmental footprint per unit volume of an in-season strawberry may, in any case, be higher than the price and environmental footprint of an out-of-season apple.

# 5. What should supermarkets do?

This brief analysis suggests that it is uncertain whether encouraging people to buy seasonal food through supermarkets would meet the objectives that campaigners and government are hoping to achieve. How should a responsible retailer act in the context of this uncertainty? How should environmental groups and other organisations that scrutinise retail behaviour assess supermarket responses to this issue?

One approach has been to try and delineate a definition of seasonality that would help to ensure that foods regarded as being in-season actually did have a lower environmental footprint. Sustain, for example, has defined seasonal food as "minimally stored, refrigerated or treated with post-harvest treatments, and not grown using unnecessary energy inputs such as heated greenhouses, polytunnels or heated soil".[34]

The New Economics Foundation has proposed defining seasonal food as: (a) produced without using fossil fuels to alter air temperature and/or light levels; (b) having little seasonal difference between the areas of production and consumption; and (c) being stored for fewer than a defined number of days (e.g. 10) post harvest or in low energy storage systems.[35]

Such definitions might be used as a reference point for deciding whether retailers are supporting environmental goals when they are marketing seasonal products. But while greater clarity in defining what people mean by 'seasonal' is helpful, we do not believe it is sufficient to ensuring that campaigns to promote seasonal eating live up to their ambitions.

So how should a responsible retailer respond to calls for them to act on this issue? We recommend that they should consider greater seasonal variation in their product ranges as one possible outcome – not a goal in itself – of a concerted strategy to improve the environmental and social footprints of their supply chains. Seasonal marketing should be seen as one of a package of ways that retailers can help match demand to variability in supply, and should be carefully monitored for its effectiveness in promoting green citizenship and healthy eating.

Specifically, we recommend that retailers:

- Have a clear, overarching environmental strategy that explains how the retailer will reduce total supply chain emissions in line with the UK target of 80% by 2050, that focuses efforts where scientific evidence shows there are major GHG savings to be made, and that systematically addresses wider environmental issues such as water scarcity, biodiversity and waste.
- Openly lobby government to make domestic and international policy changes to ensure that the environmental costs of production are reflected in the price of food.
- Ensure that their pricing and distribution systems are equipped to minimise the waste from flushes in supply, passing higher than forecast volumes and lower unit prices through to their customers.
- Use this flexibility in their pricing and distribution systems to offer suppliers greater security of demand as an incentive to invest in more sustainable production systems.

- Pilot, nationally or locally, seasonal marketing campaigns designed alert customers to natural variability in the availability of foods, and to celebrate this as an opportunity to eat high quality produce at a lower cost. The campaigns should:
    - Run throughout the year, rather than focusing only 'celebrity' seasonal produce like asparagus.
    - Be used to market produce in ways that respect the concern of stakeholder groups that seasonal messages should not be used to sell food that has been produced or stored in ways that are known to be highly energy intensive.
    - Experiment with including non-UK-grown foods that are imported in bulk and have defined production seasons, such as citrus fruits, and also meat, dairy and fish from relevant production systems and fisheries.
    - Avoid claiming direct environmental benefits from eating in-season produce since these could potentially be misleading, though greater seasonal variation may be highlighted as an outcome of promoting lower input production systems and offering producers greater security of demand.
- Undertake or commission consumer research to monitor the effects of these campaigns on fresh fruit and vegetable consumption, substitution behaviour, household food waste and other sustainable lifestyle choices.
- Complement seasonal marketing with campaigns that increase consumers' awareness of and appetite for natural variations in food production, such offering fresh produce in greater range of sizes and shapes.

# 6. Notes

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