

## 2. Traders

**Traders – buyers, wholesalers and sales departments of retail chains – adhering to the Code of Good Practice undertake to do the following:**

### 2.1 Ensure proper training of personnel

Personnel need to know how to handle, store and transport perishable products and to understand the impact of handling on quality, shelf life, food losses and waste, and profitability for the company and its suppliers, which is in line with sustainability targets. Warehouse and Quality control staff, need to be trained in handling the products and understand the consequences of shortcomings in handling, transporting and storing the products. (Dorian: failure to adhere to these practises).

Sales personnel need to be trained on the urgency of selling products within shelf-life limits so as to avoid food losses and waste, has a negative impact on the planet, the farmers and their profits due to inefficient resource usage.

[Traders are encouraged to provide training on proper product handling. Handling guides per product developed taking into account the level of education and the high-labour force turnover may be a useful tool for this. (Note: Look at CODEX code of good hygiene practice wording). The guides should highlight appropriate practices and key parameters affecting quality. Special attention must be paid to sorting and grading as this affects food losses and waste throughout the chain.]

### 2.2 Ensure that ordered volumes of products are planned and adjusted to demand, in terms of both quantity and quality

Planning and adjusting ordered volumes to market demand via careful product planning is necessary to ensure that products ordered can be delivered to retailers without unnecessary delay and thus with minimal losses. Careful product planning also includes harvesting at market maturity and having logistical arrangements that facilitate product arrival at retail stage with a longer shelf life remaining, i.e. fresher and better quality leading to reduced loss and waste at both retail and at consumer levels. Products delivered to clients must meet quality specifications, including maturity, so as to avoid rejections or disputes that can lead to waste of these at client or consumer level.

Fresh fruit and vegetable demand varies depending on weather, season, holidays and celebrations. For some products, demand periods are well established, whereas for others they are less predictable, thereby making planning more difficult. Procurement staff are required to speculate less and employ demand planning strategies and tools, to minimize as much uncertainty as possible.

An efficient chain from harvest to retailer requires market knowledge and careful planning as well as implementing the plan. Planning involves pre-guaranteeing sales volumes of different products, but also for example trade types, varieties, sizes, quality classes/ grades, colour requirements and maturity level/stage of ripeness. Good communication with both clients and suppliers is very important to coordinate market supply and demand. [Give example(s)]



## 2.3 Improve logistics to shorten time from harvest or packing to retail

An efficient logistics chain that reduces the time from producer or packer to retailer is important for ensuring an appropriate shelf-life of perishable products for retail and consumer stages. Such efficiency reduces quality losses and waste along the chain.

An efficient logistics chain has no more stops and reloading points than necessary. Stops should be short and reloading conducted effectively and efficiently. Strict first-in, first-out principle must be followed, as long as the quality of the produce is also aligned. In the case that a later delivery has more sensitive products (shorter shelf-life), these must be prioritized. Quality control staff are encouraged to frequently monitor the quality of the products in the warehouse. In the absence of automatic systems, environmental conditions should also be monitored.



## 2.4 Cooperate to establish unbroken cool chains at the appropriate temperature for respective products

Shelf-life is highly influenced by temperature deviations during transport and storage. Suboptimal cold chain processes and management lead to considerable food losses. Optimum product temperature is one of the most important factors for retaining product quality during distribution. High temperatures shorten shelf life by increasing respiration rate and thereby ripening, ageing and loss of water of the perishable product. Too low temperatures on the other hand causes chilling injuries and therefore shortens shelf-life and increases losses and waste in all the following stages including at consumer level.



Perishable products should be kept at an appropriate temperature all the time from harvest to retail. The resources invested into pre-cooling and cooling products to the appropriate temperature is quickly lost if these products are kept at inappropriate temperatures later in the chain. Frequent changes in temperature as well as shipping and/or storing fresh fruit and vegetables with different temperature requirements in the same shipping container or cold storage also reduces shelf life. Having good communication along the distribution chain should therefore include discussions on how to establish and maintain an uninterrupted cold chain.

There is thus much to gain in terms of reduced loss and waste and improved quality by keeping products in appropriate climate conditions throughout distribution and retail. The higher the temperature is and the more sensitive products are, the greater the gain from an unbroken cool chain. For example, lettuce has an estimated shelf life of up to 12 days at zero degrees Celsius but only 2 days at 20 degrees; leek and cauliflower may be stored over 40 days at zero degrees but only 2 days at 20 degrees. This only refers to products that are not chilling sensitive (see annex II).



Subtropical and tropical products develop chilling injuries when kept at low, though non-freezing, temperatures. Therefore, attention must be paid to appropriate storage and transport temperatures

to ensure that chilling sensitive products are not subjected to temperatures below those that may cause chilling injury (see annex II).

The cool chain should be established from harvest and retained all the way through retail, including, where possible, during display for the consumer.

## 2.5 Place and change orders with enough time to allow for products to be carefully harvested, handled and pre-cooled before dispatch

Orders for fresh fruit and vegetables should be placed with producers in advance giving them enough time to be able to pre-cool products to the appropriate temperature and to sort and pack according to specifications given. If orders are placed or changed shortly before time of dispatch, producers may not be able to make harvest or sorting arrangements. They may send lesser volumes than ordered or send products that are not properly cooled. [This will reduce the shelf life of the products. It may also lead to improper sorting and packing by being done too quickly to allow for careful handling and for proper quality assurance activities.]

## 2.6 Avoid cancelling orders close to planned dispatch of products from packer/producer<sup>1</sup>

When orders of perishable products are cancelled at short notice and close to dispatch, it is very difficult and sometimes impossible for suppliers to find a new buyer or new uses for these products and as a result the products are often wasted. [Guy will provide new text]

Often the reason for late cancellations is due to market demand for a product, at that given time, is lower than when the buyer's order originally was placed. Other reasons include changes in transportation schedules, lower prices from competing suppliers and improper inventory control by the buyer or his clients. Products may therefore still be wasted even if the order is kept, but in this case wasted by the buyer. In these cases, the buyer should consider, for example, measures to promote the sale of these products.

The negative impact of a cancellation will be particularly severe for the supplier and/or producers if an order is cancelled late. [Go back to original text] The supplier or producer may have no option but to remove the product from cold storage or a Controlled Atmosphere (CA) store. For product held in CA, once a CA store has been opened, the fruit has to go into the distribution chain.

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<sup>1</sup> The EU has adopted a directive on Unfair Trading Practices which includes a section on cancellation of orders (EU 2019/633).

The negative impact of a cancellation will be particularly severe if an order is cancelled for example after a producer has opened a cold store or a Controlled Atmosphere (CA) store and removed the products from the storage room. Once a CA store has been opened, the fruit has to go into the distribution chain.



## 2.7 Ensure that contracts include appropriate maturity requirements

Perishable produce needs to have reached an appropriate stage or degree of development to have sufficient shelf life and good eating quality. The OECD brochures are acknowledged worldwide as a prime reference to interpret international standards. Their adoption should be agreed on between producers and buyers (wholesalers and importers) and between seller (wholesalers and importers) and retailer. They should be respected and developed by agreement and communication between producers, traders and retailers (link to OECD and ECE brochures in a footnote).



Consumers may be very eager to buy products when these first appear on the market at the beginning of the season. They may also be willing to pay a premium price for these first products. It may therefore be tempting to sell products as early in their season as possible to reap economic benefits. If, however, products are marketed before they have reached the appropriate level of maturity, they may not be able to meet the desired consumer utility requirements; including being unable to ripen into a product with good eating quality or lack the desired taste and deteriorate quickly.

Immature products are most likely to be thrown away by the consumer and the (disappointed) consumer may avoid buying this product again for some time. This will have a negative impact on price and demand of such products for an extended period of time, as well as the reputation of the supplier/producer [give examples; also affects the product reputation for season]. [Search development, replace with maturity, explain maturity, horticultural maturity at some point.]



The different fruit varieties from the same region or country, for example apples and pears, mature and ripen at different times and should therefore be marketed at different times. It is important that each variety is placed on the market at the appropriate time with respect to harvest and storage period to avoid poor eating quality and products being wasted. The best way to avoid such waste is to follow the guidelines as set out in the OECD brochures for fresh fruit and vegetables and to have a good adherence among producers and traders in respect to the international standards in regard to the maturity requirements and to seriously respect the advice given by producers and traders.

## 2.8 Define clear specifications that will prevent food loss and avoid interventions, by agreement and communication between producers, traders and retailers

Specifications for fresh fruits and vegetables should be clearly defined in a dialogue with producers, in such a manner that they avoid causing unnecessary loss and waste. The specifications should be

based on international standards and documents. These standards are elaborated to specify the quality while taking into consideration their impact on food loss and waste.

Traders should follow international standards to know how to differentiate quality loss from biological variation. Trading parties should be mindful of unbalanced specifications that, for example, might require trimming of produce to attain the same size or length to fit into a specific package. Such interventions often lead to food loss and waste. Keeping specifications, that are additional to those agreed in international standards, at a minimum will reduce food loss and waste.

It is recommended that traders request outbound quality reports from producers that either match the product specification they need, or match their own inbound quality reports. This practice will ensure that best practices are followed and any external quality affecting factors can easily be pinpointed.

## 2.9 Control the ordered products at arrival

The buyer (wholesaler or importer) should inform the supplier of the inspection protocol that produce undergo upon arrival. This is important because in many cases produce undergo food safety and plant health inspections before quality/conformity assessment. Additionally, it is prudent for both parties to:

- Apply an agreed inspection procedure
- Set up a control protocol specifying the defects and the percentage of non-conforming products
- Communicating complaints/claims to the supplier in preferably a written report format such as the inspection report and within a timely manner after the products are inspected and/or have arrived at the buyer's premises
- Establish, if possible, the likely reason for the non-conformity and possible actions that can be undertaken to reduce food loss and waste (reconditioning, downgrading, processing, feed).

Rejection of products at wholesale level due to products not fulfilling the requirements of a quality standard or the requirements that have been agreed by buyer and supplier constitutes a major cause of waste.

An added difficulty is that buyers and suppliers do not always agree on whether products are in conformity. However, when the complaint is fair, and is justified by photos and additional supporting evidence, common agreement is facilitated.

When evidence in the case is clear, for example if all products are dirty or overripe, non-conformity is easy to establish. Applying an agreed control method may then not be necessary. Instead, photographs may sufficiently communicate the extent of non-conformity to the seller.

Products may also be judged by the buyer as not to be in conformity because the tolerances set out in the standards have been exceeded. However at times when such non-conformity is not excessive and the complaint is less visible from photographs, a common control method that is applied will give a replicable and objective control result. With an agreed control method, the buyer can establish the percentage of products with different defects and communicate the result to the supplier. The communication of non-conformity is difficult without having an agreement to use international standards and control methods for conformity assessment. Having a commonly agreed control/inspection method can also avoid products being rejected erroneously.

To guarantee a reliable and repeatable inspection result, the OECD has developed an inspection method to be used for conformity controls of fresh fruits and vegetables (see OECD guidelines on Quality inspections).

The inspection method defines the number of boxes in the primary sample – depending on the size of the lot – that should be taken randomly and inspected. It also defines the method of inspection for products in consumer packages and for products in different sizes of consumer packages and for products loose in the package.

The perishable nature of fresh fruits and vegetables demand that quality control results are communicated to the supplier within a reasonable time depending on the sensitivity of the products, thus allowing for consideration of alternative actions, including price adjustments, if necessary. This also help the actors involved to take measures to avoid this problem in the future. If, for example, products show symptoms of chilling injury and there has been known deviation from the appropriate temperature during transport, this is an important information to those involved. The buyer, in agreement with the supplier, should always try to find ways to avoid returning or rejecting products.

The control protocol should preferably specify the percentage of products with different defects as found in the control that has been made. Depending on the sensitivity of the products and how they are kept and handled after arriving at the buyer's premises, their quality may diminish quickly.

Control results are therefore only a valid judgement of the quality of delivered products at a point in time immediately after the arrival of these products at the buyer's premises. What is judged to be "a reasonable time" will vary according to the product and how it is stored, transported and handled after arrival.

Areas considered high risk and likely to cause problems should be defined in the contracts in advance or otherwise by a common agreement between buyer and seller.

When products do not meet specifications, this should be communicated to the dispatcher immediately and the reason for the non-conformity should be sought. This will help the actors

involved to take measures to avoid this problem in the future. If, for example, products show symptoms of chilling injury and there has been a known deviation from the appropriate temperature during transport, this is important information to those involved. The buyer, in agreement with the seller, should always try to find ways to avoid returning the respective product.

## 2.9b Record quality parameters per handling stage, for every shipment

Quality affecting parameters such as temperature or humidity should be monitored throughout the distribution chain and recorded for easier identification of points for the implementation of corrective measures.

## 2.9c Outbound Quality reporting

Reducing loss and waste in the global food chain starts by supplying the appropriate quality into the system. It is recommended that producers create “outbound quality control reports”. These should mirror the quality reports from the buyers arrival control to convey what critical quality parameters the client monitors and check these parameters when product is ready for sendoff from the supplier. This allows for the supplier to take corrective measures before sendoff and informing the client of the quality of the consignment in order to avoid rejections. (link to OECD procedures? Andre, Milza, Kristina to look at.)

## [2.10 Find alternative outlets for products that cannot be sold on the intended market] [KM to make sure in line w/ previous section]

Even with the most careful planning, there will invariably be products that cannot be sold to the intended buyer. Companies in the fruit and vegetable trade should therefore have in place alternative outlets and uses for products that cannot be placed on the intended market and/or sold to the intended buyer.

The following alternatives are examples that might be considered:

- Find new markets or destinations, e.g. in HORECA sector
- Reduce price and sell as a lower category
- Change presentation to address new market segments
- Process into fresh-cut fruits and vegetables
- “product for home processing”
- “product for immediate consumption”
- Donate to charity (see EU Guidelines)
- Process (industrial) for food purposes

If no alternative outlet can be found, products should be treated in a way that limits the negative effects on the environment. [make sure wording is in line w/FAO vocabulary “food loss/food waste”. Felicitas to look at.]

## 2.11 Measure the amount of produce that is wasted and specify the major causes

Companies in the food chain that understand the causes of food waste and have the means to measure the waste should have greater capacity to reduce food losses and waste at its source and by the actions taken throughout the distribution channel. This implies that most companies acknowledging there is a problem, measure the losses, identify hotspots and manage the food losses through targeted interventions.



The results can be used not only for future planning but also for the implementation of measures related to handling, temperatures, transport, logistics etc. Apart from the aspect of reducing waste there are strong business incentives to implement this Code of Good Practice since money spent on reducing waste is reported to give an estimated 14-fold return on the money spent. (For further details, see the UNECE measuring methodology in Annex III)

## [2.12 Local government interaction

Submit/communicate waste data to the local government or the agricultural office.

This information opens opportunities for public measures (e.g. redistribution of surpluses into shortage areas). The UNECE digital food loss management system named FeedUP@UN allows the collection of data and may facilitate redistribution of products.

The EU Food Donation Guidelines, for example, provide valuable advice:

<https://eur-lex.europa.eu/legal-con>[Neville to elaborate text.]

# 3. Transporters

**Transporters – adhering to the Code of Good Practice undertake to do the following:**

## 3.1 Provide the best possible conditions during transport

Shelf-life is highly influenced by temperature deviations during transport and storage. Suboptimal cold chain processes and management lead to considerable food losses. Optimum product temperature is one of the most important factors for retaining product quality during distribution. High temperatures shortens shelf life by increasing respiration rate and thereby ripening, ageing and loss of turgidity of the perishable product. Too low temperatures on the other hand causes chilling injuries and therefore shortens shelf-life and increases losses and waste in all the following stages including at consumer level.

Perishable products should be kept at an appropriate temperature all the time from harvest to retail. The resources invested into cooling products to the appropriate temperature is quickly lost if these products are kept at too (Dorian : inappropriate) high or low temperatures later in the chain. Frequent changes in temperature as well as shipping and/or storing fresh fruit and vegetables with different optimum temperature in the same shipping container or cold storage also reduces shelf life. Having good communication along the distribution chain should therefore include discussions on how to establish and maintain an uninterrupted cold chain.

There is thus much to gain in terms of reduced loss and waste and improved quality by keeping products in appropriate climate conditions throughout distribution and retail. The higher the temperature is and the more sensitive products are, the greater the gain from an unbroken cool chain. For example, lettuce has an estimated shelf life of up to 12 days at zero degrees Celsius but only 2 days at 20 degrees; leek and cauliflower may be stored over 40 days at zero degrees but only 2 days at 20 degrees. This only refers to products that are not chilling sensitive (see annex II).

Subtropical and tropical products develop chilling injuries when kept at low, though non-freezing, temperatures. Therefore, attention must be paid to appropriate storage and transport temperatures to ensure that chilling sensitive products are not subjected to temperatures below those that may cause chilling injury (see annex II).

If possible, products should be transported in vehicles with regulated temperatures. In closed vehicles, products emitting ethylene should not be transported long distances together with ethylene sensitive products.

If products are transported in open vehicles, loading should take place in the shade, products should be protected from direct sunshine and from wind that will dry out the products, by a covering cloth or tarpaulin. Stops and reloading should be kept at a minimum. Products should also be protected from bruising during transport by appropriate packaging.

### 3.2. Plan transports for optimal conditions

The longer the transport, the more important it is to provide optimal transport conditions for the transported products in the vehicle. In vehicles with regulated temperatures careful planning shall put those products that have similar temperature requirements in the same compartment of the vehicle. Careful planning should also avoid putting products emitting ethylene in the same space as products that are sensitive to ethylene.

### 3.3 Ensure proper training of staff

Your staff need to know how to handle, perishable products and to understand the impact of handling on quality, shelf life and waste, as well as on profitability. Transporters are encouraged to provide training for truck drivers as well as the re/unloading point staff that handles and transports

fresh fruit and vegetables to ensure that vehicles are packed carefully and as far as possible provide the best conditions for products during transport. Transporters are also encouraged to provide training for the staff that plans transport giving them basic knowledge on products having different temperature requirements and about ethylene producing and ethylene sensitive products. Detailed information on products should be available for the staff.

### 3.4 Monitor temperatures during transport

Keeping track of the temperature in the vehicle during the entire duration of the transport will raise awareness of the importance of temperature. It can also help identify what has happened if product quality at the point of destination is not the expected.

### 3.5. Responsibility of damages has to be clarified

Products may be damaged during loading, unloading and during transport. When the responsibility at each point and stage is clear, handling improves and damages decrease.



## 4. Retailers

### **Retailers and retailer chains adhering to the Code of Good Practice undertake to do the following:**

#### 4.1 Ensure proper training of staff

Your staff need to know how to handle products and to understand the impact of handling on quality, shelf life and waste, and loss of profit for the company. Staff working with fresh fruit and vegetables need to be trained in how to handle the products and have a good knowledge of the consequences of shortcomings in handling and storing the products.

#### 4.2 Ensure that ordered volumes are planned and adjusted to demand, in terms of both quantity and quality

If you plan and adjust your ordered volumes to meet demand, the products will not need to be kept in storage or on display longer than necessary, thus retaining their quality and lead to less waste.

Demand for products will vary according to the weather, season, holidays and celebrations. Some high-demand periods can easily be foreseen, whereas others are less predictable. To ensure a steady flow of products through your shop, you need to have good market knowledge and plan carefully.

Planning involves estimating not only the sales volumes of the various products but also types, varieties, sizes, quality categories, colour categories and stage of ripeness. Campaigns promoting the sale of one product may also influence the sales volumes of other, similar products. Good communication with the supplier or distribution centre should help coordinate demand and supply.

A “first-in, first-out” approach to stock will contribute to minimizing wastage.

#### 4.3 Define clear specifications that will prevent food loss and avoid interventions, by agreement and communication with the producer and traders

Specifications should be clearly defined in a dialogue with producers, in such a way that they avoid causing unnecessary waste. Trading parties should be mindful of specifications that might require trimming of produce to the same size or length to fit into a specific package. This type of intervention often leads to food waste.

#### 4.4 Ensure that contracts include appropriate maturity requirements

Produce needs to have reached an appropriate stage of development and maturity to have good eating quality and shelf life, and this should be respected.

Consumers may be very eager to buy products when these first appear on the market at the beginning of the season. They may also be willing to pay a high price for these first products. You may therefore be tempted to sell products as early in their season as possible. If, however, products are marketed before they have reached the appropriate maturity, they may not be able to ripen properly and will remain hard and tasteless. The consumer will then probably throw these products away and avoid buying such products again in the near future.

As the different varieties of many fruits, for example apples and pears, mature and ripen at different times, they should be also marketed at different times. Each variety should be placed on the market at the correct time to avoid low eating quality that leads to products being wasted. The best way to avoid this is to have good communication with producers, and seek and respect their advice.

#### 4.5 Control products and make complaints/claims within a reasonable time after products have arrived at the buyer's premises (buyer and seller should have a common agreement on criteria and method for controls and claims)

Rejection of products at wholesale level because they fail to fulfil the requirements of a quality standard or the requirements agreed to by buyer and seller is a major cause of waste.

The added difficulty is that buyers and sellers do not always agree on whether products are in conformity with standards. When the complaint is fair, and is justified by photos and additional supporting evidence, common agreement is facilitated.

In obvious cases – for example, if products are dirty or overripe – non-conformity is easy to establish. Photographs usually suffice to communicate the extent of non-conformity to the seller. In less obvious cases, there may be a need for a more thorough check. Buyer and seller should have a common agreement on methods for controls and claims and also on how claims are communicated and what documentation they should be based on.

The checking and the results should be communicated to the seller within a reasonable period of time. Depending on how sensitive products are and how they are kept and handled after arriving at the buyer's premises, they may quickly lose quality.

The results of the checking are therefore only a valid judgement of the quality of delivered products if made in connection with the arrival of these products at the buyer's premises. What is judged to be "a reasonable time" will vary depending on which product it is and how it is stored and handled after arrival. Areas considered high risk and likely to cause problems should be defined in contracts in advance or otherwise by a common agreement between buyer and seller.

When products are found not to meet specifications, this should be communicated to the dispatcher immediately and the reason for the non-conformity should be identified. This will help those involved to take measures to avoid this problem in the future. If, for example, products show symptoms of chilling injury and there has been a known deviation from the appropriate temperature during transport, this is important information for those involved. The buyer, in agreement with the seller, should always try to find ways to avoid returning the product.

#### 4.6 Store and display products in shops at the appropriate, product-specific temperature

Inadequate cold-chain processes and management cause a considerable share of food losses. Temperature is a vital factor in retaining product quality during distribution. It increases shelf life by affecting respiration rate and thereby the ageing of the fruit and vegetables. Shelf life is highly influenced by deviations in temperature during transport and storage.

An appropriate temperature must be kept all the time from harvest to retail. If products are kept at too high temperatures later in the chain, the money and effort put into cooling products to the appropriate temperature is quickly lost.

Frequent change in temperature also reduces shelf life. A good dialogue along the distribution chain shall therefore include discussions on how to establish an unbroken cold chain.

The higher the temperature and the more sensitive the products, the greater the gain from an unbroken cool chain. For example, lettuce has an estimated shelf life of up to 12 days at zero degrees Celsius but only 2 days at 20 degrees; leek and cauliflower may be stored over 40 days at zero degrees but only 2 days at 20 degrees. This, however, only refers to products that are not sensitive to chilling (see annex II).

Subtropical and tropical products develop chilling injuries when kept at low, though non-freezing, temperatures. Attention should therefore be paid to ensuring that chilling-sensitive products are not subjected to temperatures below those that may cause chilling injury. (See Annex II).

Products must be stored and displayed at their appropriate, product-specific temperature to retain the visible quality, keeping quality and the nutritional quality, and to reduce waste. When possible, there should be different temperature zones to accommodate the different temperature requirements of products. The volume of products displayed at unfavourable temperatures should be limited to avoid shortening shelf life.

Taking products from cool storage and back should be avoided as frequent changes in temperature reduces shelf life. When products are offered for sale in the open, measures should be taken to protect them from unfavourable weather conditions.

Retailers who have no cooling facilities may prolong shelf life by covering their fresh produce overnight with wet cloth or tissue.

#### 4.7 Handle products carefully and take measures to reduce the risk of products getting bruised

Bruising causes damage, reduces quality and often leads to products being wasted. Products may become bruised not only when being transferred from boxes into display areas but also when consumers handle and squeeze them.

Products that are packed individually on trays in the packages (boxes) will be less bruised if displayed for sale in these boxes.

Products should be handled as carefully as possible when transferred into display. Your staff should be well instructed and fully understand the consequences of not handling products carefully.

Consider taking measures that limit the damage caused by careless consumers, such as limiting the volume displayed at any given time and thereby the number of times each product is scrutinized by a consumer until finally chosen.

#### 4.8 Store and display products appropriately

Products should be stored and displayed appropriately, taking into account their specificities and the facilities available. In addition to temperature, you should take into consideration any other aspects of the presentation of the produce that are important to retain the visible quality, the keeping quality, the nutritional quality and that would reduce waste.

You should present the products in such a way as to:

- minimize a negative impact of fruit with a clear ripening stage (climacteric fruit,<sup>2</sup> such as bananas) on other produce
- maintain adequate humidity.

#### 4.9 Avoid campaigns encouraging consumers to buy more than they can eat

Promotional campaigns such as “buy three, pay for two” encourage consumers to buy more products than they may be able to consume, thus causing a waste of food. Although there may be good intentions behind such campaigns – such as increasing consumption for health reasons or helping producers sell an unexpected overproduction due to a period of hot weather – it is, however, better to decrease the price instead.

Consider, also, that when you encourage consumers to buy more of a certain product, they may quite likely buy less of other similar products: for instance, a campaign to promote pears may lead to decreased sales of apples, thus leading to possible waste of apples.

Therefore, in the long run, a stable volume and price decreases waste.

#### 4.10 Find ways to use or sell damaged or suboptimal products

Even with the most careful planning, storage and handling, you will find that some of your products cannot be sold as you originally intended. You should therefore have some alternative solutions for selling or giving away these products:

- Reduce price and sell as
  - Category II (if applicable)
  - “for home processing” (if applicable)
  - “for immediate consumption”
- Highlight for the consumer alternative uses of products (at point of sale)
- Process to juices, jams, smoothies, etc.
- Give to charity (e.g. see EU Guidelines)<sup>3</sup>

#### 4.11 Measure the amount of produce that is wasted and specify the major causes of the waste

Companies that understand the causes of food waste and measure it have a greater capacity to reduce waste than companies not making this effort. Companies that regularly measure waste, identify the specific causes for this waste and hold discussions on the results start a learning process that is an important tool for finding measures that reduces waste. The results can be

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<sup>2</sup> A climacteric fruit is a fruit with a clear continuing ripening stage when many characteristics of the fruit change, for example fruit texture which becomes softer, content of sugar and aroma substances, increased respiration rate and production of ethylene. Non-climacteric fruit lack this stage. A list of climacteric and non-climacteric fruit is found in annex I.

<sup>3</sup> The EU Food Donation Guidelines provide valuable advice:  
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C:2017:361:FULL&from=EN>

used for future planning but also for measures related to handling, temperatures, transport, logistics etc. Apart from the aspect of reducing waste there is a strong economic incentive to carry out this work since money spent on reducing waste is reported to give up to an estimated 14-fold<sup>4</sup> return on the money spent. (For further details, see the UNECE measuring methodology in Annex III.)

**Retailers buying directly from producers should also undertake the following:**

4.12 [Improve logistics to shorten time from harvest or packing to retail](#)

As fresh fruit and vegetables have a limited shelf life, the time that elapses from harvest to retail, or for long-term stored products from packing to retail, should be as short as possible. A strict “first-in, first-out” principle should be applied.

4.13 [Cooperate to establish unbroken cool chains, at the appropriate temperature for respective products](#)

An appropriate temperature shall be kept at all times from harvest to retail. The money and effort put into cooling products to the appropriate temperature is quickly lost if products are exposed to unfavourable and/or fluctuating temperatures later in the chain. Therefore, a good dialogue by all participants along the distribution chain shall include discussions on how to establish an unbroken cool chain.

The cool chain should be established from harvest and retained all the way through retail, including, where possible, during display for the consumer.

4.14 [Place orders and/or change orders with enough time to allow for products to be carefully harvested, handled and cooled before dispatch](#)

Producers need to be given enough time to be able to cool products to the appropriate temperature and to sort and pack according to specifications given. If orders are placed or changed shortly before time of dispatch producers may have to send products that are not properly cooled. This will reduce the shelf life of the products and increase waste. It may also lead to sorting and packing having to be done too quickly to allow for careful handling and for quality assurance to be carried out properly.

4.15 [Avoid cancelling orders close to planned dispatch of products from packer/producer](#)

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When orders of perishable products are cancelled at short notice and close to dispatch, it is difficult to find a new buyer for these products and the products are often wasted.

The reason behind late cancellations is often that market demand for a product, at a given time, is lower than when the buyer originally placed the order. Products may therefore still be wasted even if the order is kept. In these cases, the buyer should consider measures to promote the sale of these products.

The negative impact of a late cancellation will be particularly severe if an order is cancelled for example after a producer has opened a cold store or a Controlled Atmosphere (CA) store and removed the products from the storage room. Once a CA store has been opened, the fruit has to go into the distribution chain.

### **Further reading**

Food and Agriculture Organization. 1989. *Prevention of Post-harvest Food Losses: Fruits, Vegetables and Root Crops*. (Training manual).

Gross, K.C., Wang, C., Saltveit, M. Revised 2016. *The Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stocks*. USDA Agricultural Handbook No. 66.

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