

Good Practices for Food Waste Reduction in Food Waste Handling in Communities



Good Practices for Food Waste Reduction in Food Waste Handling in Communities

CIVIL ORGANIZATIONS - GLEANING

The aim of this guide is to shed light on the reasons of food waste production in primary production, and also to familiarize the reader with food waste categories and their economic and environmental effects. The guide offers a solution to reduce the amount of food waste generated in primary production, in which the help of NGOs is essential. We would like to facilitate the work of NGOs with already tested, concrete, good practices supporting gleaning to prevent food waste and to decrease the amount of food waste.

INTRODUCTION

According to data from the Food and Agriculture Organization of the United Nations, FAO, (2011)¹, one third of the produced food goes to waste at some stage in the food chain worldwide. Food waste is not only a problem on the economy, but it has also severe damaging effects on the environment.

In order to find practical solutions to the issue of food waste, it is important to inspect the actors of the food chain from this point of view. Depending on the economic development of the countries, actors in the food chain are responsible for the generation of food waste to varying degrees. In developing countries, a significant amount of food waste is generated typically during cultivation, post-harvest treatment, and storage. Meanwhile in developed countries, the greatest amount is present mostly in the phases of production, processing, distribution, and consumption.

Considering the entire life cycle of a product from the food industry, the producing phase has the greatest effect on natural resources. At the same time, each phase has additional environmental effect. This means that the cost and the negative effect on the environment will increase the later we dispose of the food.²

According to the estimation of FUSIONS regarding 28 member states of the European Union in 2016, the most significant proportion of generated food waste 53% occurs in households. Based on their data, it can be stated that 19% of food waste is generated in the processing industry, 12% in food service and restaurants, 11% in the primary production sector, and 5% in trade (*Figure 1*).³

It is a fact that households are responsible for the largest proportion of food waste in developed countries. However, the presence of other sectors is not negligible; the responsibility is shared. Other actors of the food chain can have indirect effect on consumer behaviour: they can call attention to the importance of the issue with their exemplary attitude and awareness-raising campaigns.

¹ FAO (2011). Global Food Losses And Food Waste - Extent, Causes And Prevention. Rome, Italy

² FAO, (2013). Toolkit. Reducing the Food Wastage Footprint

³ FUSIONS (2016). Estimates of European food waste levels

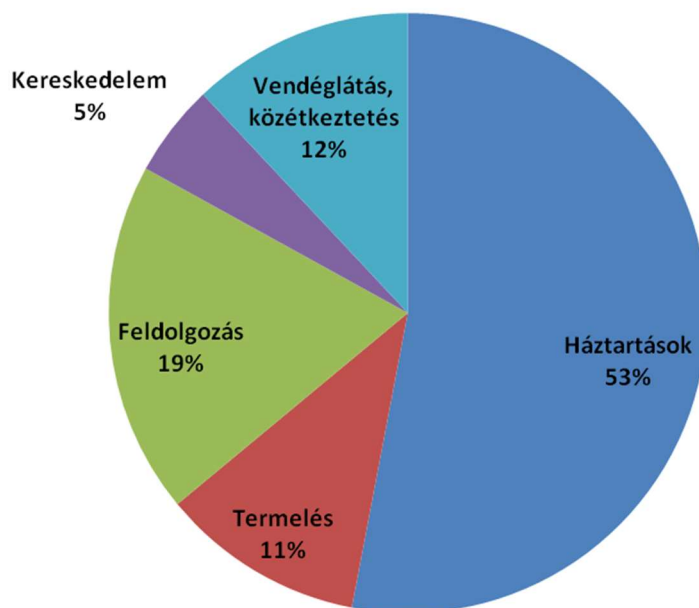


Figure 1. Sectors responsible for food waste (source: FUSIONS, 2016)

Primary data based on actual measurements was used only partially in order to prepare the estimate. In the case of primary production, 15 member states provided data, however, only 6 sets of data were proven suitable for use among them. Moreover, another issue is that the estimated figures illustrate the total amount of food waste generated in the food chain, and it does not provide information on the result of actual wasting, called avoidable food waste.

The decrease of food loss and waste means a three-time advantage for every actor of the food chain: it alleviates the pressure on the climate, water and soil; it has positive economic effect on the producers, companies and households; and it allows that more people can be supplied with the food currently produced.

Food is the result of valuable resources' utilization, which has large ecological footprint considering energy that is invested in cultivation, harvesting, transportation, production, packaging, storage, trade and preparation. Through food waste, we also waste the invested energy. 4

There are several solutions to eliminate this. Prevention of waste is the most effective and easiest solution among these, since the later in the procession we are, the more invested energy and value will be thrown out and used unnecessarily. Through prevention, less resources and labour for additional treatment of the wasted food will be required. Instead, this energy can be invested in value-creating processes.

WASTE PYRAMID

A communication of the European Commission published in 2015 presents EU action plan on circular economy. 5,6 In the statement's section regarding food waste, concrete commitments are made to decrease the amount of waste, which are the following:

⁴ Creedon, M., Hogan, J. (2010). Less Food Waste More Profit. A Guide to Minimising Food Waste in the Catering Sector

⁵ FAO (2013). Toolkit. Reducing the Food Wastage Footprint

⁶ <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52015DC0614&from=HU>

- developing common EU methods for measuring food waste and identifying relevant indicators,
- establishing a platform with the involvement of Member States and stakeholders to support the achievement of sustainable development goals for food waste and the sharing of best practices,
- clarifying EU legislation on waste, food and forage,
- facilitating the use of by-products in forage production without jeopardizing food and forage safety,
- conducting studies on the ways in which food chain operators can improve date labelling and the consumers' knowledge on it.

In its communication, the Commission emphasizes the importance of following the waste hierarchy, with priority being given to compliance with the principle of prevention.

According to directive 2008/98/EC:

“Waste policy should also aim at reducing the use of resources and favour the practical application of the waste hierarchy.” (Figure 2)



Figure 2. Waste Hierarchy

Prevention

According to § 2 of Act CLXXXV of 2012 on waste (hereinafter Act CLXXXV of 2012):

is a measure taken before the substance or product has become waste, which can reduce

- the amount of waste, through reusing products or extending the life of products, for instance,*
- the harmful effects of the waste on the environment and human health, or*
- content of hazardous substances in the materials and products*

Through measures to prevent food waste, the use of necessary resources required for food production can be reduced, and the costs associated with the disposal of waste and environmental, economic and social impacts can be mitigated.

NOMENCLATURE

Waste: according to § 2 of Act CLXXXV of 2012, any substance or object which the holder discards or intends to or is required to discard.

Biowaste: according to § 2 of Act CLXXXV of 2012, biodegradable; park or garden waste; food or kitchen waste generated in households, restaurants, at caterers and establishments engaged in retailing activity, as well as similar waste generated in food processing plants.

It is important to emphasize that Act CLXXXV of 2012 does not define food waste.

Apart from the fact that food waste is not defined on the level of policy currently, the concept is understood differently in scientific publications as well. Consequently, measurements concerning the quantity and quality of food waste are not compatible with each other. The following definitions were created as a result of the project FUSIONS in order to help the communication between each other, the unification, and the introduction of more efficient and successful solutions.

Based on the definition of FUSIONS, food waste is food removed from the food chain, so it is the total amount of food that has been thrown away. Both avoidable and unavoidable food waste belong to this category. FUSIONS does not consider food given to animals food waste, yet composted food parts belong to the category of food waste.

Avoidable food waste: raw material or meal originally intended for human consumption, which was thrown away. For example, expired yoghurt, shrunken whole fruit, thrown-out meal.

This type of food waste is in general the result of human negligence. This is the actual food waste, as its name suggests that its production could have been avoided.

Unavoidable food waste: food parts of animal or vegetable origin, which are not suitable for human consumption. For example, eggshell, bones, banana peel. Such waste inevitably arises in the food chain.

Potentially avoidable food waste: raw material or meal suitable for human consumption that was thrown away because of health reasons (such as the deterioration of chewing ability), or because of personal taste. For example, chicken skin, bread crust, apple peel.

THE REASONS BEHIND FOOD WASTE DURING PRIMARY PRODUCTION

Unpredictability of weather

Plants grown in our climate need warm and cold weather, sunny and rainy periods as well. At the same time, the unpredictability of weather can cause damage to crops. It is impossible to be prepared for when an extreme event occurs, and it cannot be accurately determined how much rainfall can be expected during the given cultivation period or how many the number of hours of sunshine will be. Unfortunately, it cannot even be predicted whether the weather will favour the growth of pests and will be ideal for the spread of mould. Therefore, the weather determines how much the yield will be and what quality the crop will be.

It is in the producer's own interest to save as much and as high-quality crops as possible, but damaging weather conditions are inevitable, they cannot be prevented.

Labour shortage

As a result of a number of demographic effects, there is a decrease in the available workforce in agricultural production, which entails the need for higher labour costs for those carrying out manual labour. Unfortunately, this means that the growing of certain plants is often economically meaningless. This will lead to rearrangement of economic sectors in the long run (other production methods or less labour intensive cultures). Until then, it can occur often that the produced goods are available in large quantities with appropriate quality at the farmer, but harvesting is no longer economical. It may also be the case that only one-time harvesting is economical for the producer, so the harvesting of crops that ripen later will not be refunded.

Machine stock

Certain harvesting operations can be mechanised, but the most modern machine stock is not always attainable. It is possible that less modern machines work with greater loss, resulting in a great number of crops being left on the ground, on the tree, or damaged during harvesting. Upgrading the machine stock can be an important factor in reducing food waste, but this is, of course, a complex economical issue that goes beyond this document.

Standards and expectations of traders

A significant number of commercial companies have some kind of minimum requirements to meet, such as the size, shape, and colour of the crop. Unusual fruits and vegetable, although suitable for human consumption, often remain on the soil because they do not meet the traders' requirements, which are often only aesthetical.

The factors listed are mostly independent of the choices of producers, and their impact on the factors is low. Gleaning, as an initiative that can be organised by the cooperation of NGOs, can be a solution. During gleaning, crops left on the soil are harvested (mainly by the help of volunteers), and donated part of the harvested amount to families in need or to animal shelters.

THE COST OF FOOD WASTE

Since the concept of food waste is understood differently, the studies with quantified data available have particularly different methods. For this reason, it is difficult to estimate the cost of food waste.⁷

As processing progresses, more and more resources are used, and this obviously shows in the price of the products. Since primary production is located in the beginning of the chain, the added value of a unit of food is relatively low. Of course, the price per unit of food consumed by the consumers is the highest, but the cost of waste generated during production should be also taken into account. On a yearly level, the agricultural sector accounts for 124 000 Hungarian Forints per tonne of waste in the average of European countries, which – if we take

⁷ FUSIONS (2016). Estimates of European food waste levels

the total amount of waste (9,680,000 tonnes in Europe) into account – means approximately 1,200 billion Hungarian Forints annually.

GOOD PRACTICE – GLEANING

WHAT IS GLEANING?

Gleaning is primarily the harvesting of crops that remain on the soil, gardens, and nurseries, which cannot be harvested economically. According to some interpretations, the distribution of the crop surplus collected on markets, fairs, and restaurants to those in need can be called gleaning as well.

During gleaning, one part of the crops picked up by volunteers are usually theirs, while the other part is the producer's. The organisations concerned conclude an agreement beforehand.

IDENTIFICATION OF LOCATIONS APPROPRIATE FOR GLEANING

Find nearby agricultural lands or nurseries that are run by open, enterprising producers. Thus, the harvested crops will have to be transported to smaller distances, which is not only economically advantageous, but the ecological footprint associated with the activity will also be much lower, and there is also less chance of damage to the cargo.

INVOLVING POSSIBLE SUPPLYING PARTIES

It is recommended to visit the partners in time, months before the gleaning period, whether they are producers, receivers, or volunteers conducting the harvest. Never forget that the producers are usually busy, and gleaning is not necessarily a priority for them. Therefore, it is advisable to start organising in time and to focus mainly on periods when agriculture work involves fewer tasks (depending on the crop culture). So, they can spend more time thinking about whether they want to take part in the gleaning. Moreover, the organiser has more time to prepare for the action as well.

Firstly, inquire whether they know the concept of gleaning, and whether they have had the opportunity to take part in a similar initiative. It is possible that this program is familiar to them and has already done it. Please ask them to tell about their experiences, since knowing them will give us help on how much background information will be needed, and we can improve the success of our gleaning through learning from mistakes of others.

It is important to know that the producer can also be responsible for the safety of the product if it is provided for free. So, it is in the common interest to inquire whether the not harvested products are adequate regarding food safety aspects. However, it is also an important piece of information that if products are donated to non-profit organisations, there is the opportunity of preferential taxation. An additional incentive for supplying organisations could be that the direct efforts for the community are an excellent opportunity for their business to become recognized and be favorably condemned by locals. Therefore, it is worth discussing what kind of communication (e.g. local newspaper, local television, online sites, posters on food distribution) is used concerning gleaning and how exactly he will appear as a partner.

FINDING RECEIVING ORGANISATIONS

Partner search is also a priority in the case of the receiving organisations. In many cases, harvested crops must undergo further treatment and processing before they can be donated

(e.g. cleaning, removing certain plant parts). Additionally, the use and contribution of raw materials appearing in varying quantities can be problematic as well, as the principles of a balanced diet also have to be taken into consideration as much as possible while supplying those in need. Therefore, it is worth looking for receiving organisations that have a storage capacity (cool, rodent-free depot, refrigerators, possibly a refrigerating chamber) and are able to process the incoming crops as needed (e.g. they have their own kitchen). It may also be important for a given organization to have a built-in logistics network that can deliver harvested products to multiple towns, in order to avoid the diet of those in need living in the area becoming too monotonous.

Although the goal of gleaning is essentially the supply of food to people in need, it often happens that the crops that would be harvested are no longer suitable for human consumption (for example, wilted or mechanically damaged vegetables, unripe fruits). In such cases, it is worth considering that the raw material that is about to be saved can still be suitable for animal shelters.

FINDING VOLUNTEERS

Recruit a team of volunteers who participate in gleaning. It is recommended to start recruiting in educational institutions. It is also good to know that there are certain days in Hungary where the attention of students is directed to a social problem. Examples include sustainability theme weeks or health days. Universities can also be good partners. It might be worth addressing the staff or internal communications manager of larger companies. Certain companies pay special attention to show they take social responsibility and that they are open to new ideas. Naturally, the role of social media in recruiting is not negligible, and it is evident that a well-communicated and well-organised charity even can move socially sensitive people.

During the recruitment process, it is recommended to compile a questionnaire that can be used to assess the individual needs of volunteers. Obviously, an important question is when they are available, what are their strength and weaknesses (for example, what kind of physical work they are capable of and willing to do). It is also important to know who can offer what capacity. It is advantageous if there are some people who can provide for others delivery vehicle (for egress and the crop's transportation), boxes, bags, tools, or just a snack, water, or tea. With this knowledge, gleaning will be more effective.

Such volunteers are also needed who can regularly participate in gleaning. Over time, a positive relationship can be established with their help with the supplying and receiving parties, ensuring that the program is successful on the long run. If a volunteer team with many members is available, create groups whose participation can be rotated.

PREPARATION OF GLEANING

Set measurable goals and keep track of progress (e.g. the weight and types of harvested crops).

Make sure that there are sufficient means of transport, vehicle, and human resources available to conduct the gleaning.

Go through the check list (*Appendix I*). This list can be used to check if all necessary tools and equipment are prepared.

Check the following with the supplying party:

- The exact time and location of the arrival (it is recommended to define the locations outside inhabited areas with GPS coordinates, but also select a nearby meeting point that is easy to find).
- The method of identifying foods that are going to be transferred (to avoid harvesting anything else than what the supplying party offered).
- The way to harvest and treat crops; tips and tricks (how to work efficiently, how to do no harm with our presence).
- Whether it is necessary to use larger machines during gleaning, and if so, can the supplying party provide them (e.g. to dig up potatoes out of the soil).
- The list and quantity of tools that the supplying party might provide (boxes used for harvest have a value; it is not certain that the producer can provide the volunteer with the necessary amount, since he needs them as well).
- How many volunteer's involvement is necessary to harvest the crops within the available time frame.
- Where to park the vehicles.

Prepare the volunteers:

- Define the goals and inform the participants about this.
- Inform the volunteers about the cultivation area where the gleaning will be conducted, and clarify which crops will/can be harvested.
- Explain the rules of the cultivation area and the necessary techniques (the stock and bush could be valuable, so be careful with the plant to avoid damaging it with a wrong technique).
- If possible, they should carpool to the site, as not every participant has his own car. Respect the traffic routes and parking spaces suggested by the producer.
- It is recommended to wear layered clothing and to wear workwear and closed toe shoes that the volunteers will not feel sorry about if it becomes dirty.
- Have enough drinks and snacks for themselves.
- Visit the restroom before starting work.
- Do not participate in gleaning during illness; this is forbidden by the rules of food safety.
- Let volunteers know that gleaning depends on the weather as well. This is not only an aspect of comfort, but a large amount of rainfall can also lead to rotting.

Check in with the selected NGO(s):

- Make sure that they are still ready to receive the crops harvested during gleaning.
- Clarify the location of delivery, approximate quantity, and arrival time.
- Make sure that refrigeration capacity is available to the extent of the expected quantities (if the crops that will be harvested require it and its distribution is not immediate, see Appendix II.)
- Make sure that the receiving organisation has the necessary free space for the parking and unloading of the delivery vehicle. The room provided should be clean, free of foreign substances that can endanger crops.

Media appearance:

- Media appearance and the PR utility that can be accessed through it can mean the attraction that can make cooperation desirable for certain partners. Pay special attention to this field, since if we are successful, we can more effectively support people in need; for whom we teamed up with the volunteers.
- Make the event public, publish a press release, or call the attention to it in a different way.
- It is worth using the opportunities offered by social media, such as targeted online surfaces for reducing food waste (such as the Hungarian website of www.savingfood.eu).
- Ask the producer whether it is allowed to take photographs at the area of gleaning. If the answer is yes, bring a camera as well.
- It is also recommended to check with the receiving organisation whether there is a way to track the route of the food. If the donees agree, they can contribute to popularising the program with their speech and appearance as well.

DURING GLEANING

Be attentive.

Be on time.

Honour the producer by introducing him the volunteers if he is present at the gleaning.

Pay attention to the surroundings, so you do not tread on plants or cause harm in any way.

Stay within the designated harvest area.

Carpool to the place to minimise the number of cars arriving there.

Bring your own meals and drinks.

Say thank you for the opportunity.

Inform the producer about the route of the food.

INTERESTING FACTS

1. It might also occur that the crops that have already been harvested cannot be sold because of overproduction or extreme production due to seasonality are donated to people in need instead.

2. The possibility of gleaning is available not only at larger producer's. In order to keep vegetables and fruits – grown in the garden of people who are old and cannot handle work in the garden anymore – from going to waste, volunteers can help with harvest and processing, and give a part of the finished products to the owner of the garden in return.

DONATION

Make sure the transport equipments and the people conducting the transfer are ready by the end of the gleaning to get the harvest to the receiving organisations as soon as possible.

If requested by the receiving organisation, assist in loading if there are enough volunteers available for this task.

POSTPRODUCTION

Send a thank you message to all partners and volunteers, including how much you have been donated. A summary can also be included, illustrated with the best photos, for internal or even public use.

Ask the volunteers to give their opinion on the gleaning, so that the next event can be conducted even more smoothly.

Select a leader within your own team who will help you organise the next gleaning.

Provide information and news regularly to those interested to maintain the community of volunteers.

Search for new supplying and receiving parties to be prepared in case one of the available partners are out.

WHY IS GLEANING GOOD?

Through gleaning, unnecessary food waste can be prevented.

It helps to provide fresh, nutritious food for low-income people.

It has a community building power.

It helps to spread the philosophy of sustainable consumption.

It helps to bring agricultural production closer to the urban population so that better communication and cooperation can develop between different social groups.

It is also better to work with volunteers than employees because these people volunteered for the job, so they will surely put their heart and soul into it. They will care about the intactness of the crops and the cultivation area, and their passion for the cause also encourages others.

TIPS FOR FOOD SAFETY

Plan the date of harvest in the summer to minimise the negative impact of high temperature on crops. It is recommended to time the harvest for early morning or evening, so that crops do not get damaged due to the heat. There are crops more sensitive to high temperature than others. Producers can provide accurate information about this.

All tools and equipment used for harvesting and transport should be clean before use. The reusable container must be cleaned after each use.

Before harvesting, it is necessary to decide whether it is really suitable for harvesting. For instance, if you notice a larger size of insect damage or the presence of insect, do not harvest the crops to donate them to people. Consider whether the fruits and vegetables that are to be harvested are suitable for donating to animal shelters. If the crop has damages on its surface or signs of rotting, it might – if stored together with the intact crops – spread the existing pathogenic microorganisms and infect the whole cargo.

Wash your hands thoroughly before touching the crops and make sure that any open wounds are properly bandaged. Any injury that is caused during the gleaning, or because of something connected to it (e.g. transportation), must be tended to immediately to avoid infection and the crop's contamination as well.

For traceability and practical transportation, every crop must be boxed. They must be measured and should be labelled with the name and origin of the crop, date of harvest, and their weight.

Remove unnecessary soil from the crop, sweep it with a soft cloth or rinse it with drinking water if it is possible and its quality or shelf-life does not decrease due to it. Certain crops are very fragile because of their thin peel, such as tomatoes, aubergines, or berries, so do not wash them during the gleaning. Leave onions and garlics also dry.

Larger, heavier crops should be placed at the bottom of the stack, and lighter, more quickly deteriorating ones to the top. This not only protects the crops from crashing, but it is also easier to notice deteriorating ones before they are spoiled completely.

If it is possible and longer storage time is required, different ethylene-producing and ethylene-sensitive crops should be stored separately. Ethylene produced by certain fruits accelerates the ripening of those fruits that are sensitive to it, so they start deteriorating much earlier.

During harvesting, crops should be stored away from sunlight in well-ventillated containers. Cooling with water or immersing plants in clear cold water can preserve their quality and freshness in the case of certain crops. Such vegetables are left vegetables, beetroot, carrot, and broccoli. The clearing water should not be 5°C colder than the temperature of crops at the time of harvesting.

Transport the harvested crops in clear vehicles. Crops must be stored and transported separately from cleaning utensils, chemicals, dirty containers, and waste.

If you cannot make sure that these aspects have been respected and the workflows have been conducted accordingly, so the whole process can be traced, do not donate the harvested crops to anyone.

SOURCES

Food Recovery Network, 2015. Guide to Gleaning.

USDA. Lets's Glean! United We Serve Toolkit. (2017.09.19.)

APPENDIX I.

CHECK LIST

Tools for harvesting

- containers
- buckets
- grain storage bag
- adhesive tape
- spade
- pruning shears
- shovel
- hoe
- scale

Personal equipment

- first aid kit (one per group)
- markers
- workwear appropriate for weather (cap, sun visor, raincoat)
- gloves
- long top and trousers
- (rubber) boots
- own meals and drinks
- camera (one per group)

APPENDIX II.

INFORMATION REGARDING THE STORAGE CONDITIONS OF HORTICULTURAL PRODUCTS⁸

List of vegetables that can be stored together for 7 days of storage:

*: ethylene-sensitive

Storage temperature: <u>0-2 °C</u>		Relative humidity: <u>90-98%</u>	
Artichoke	Garlic	Fava bean, lima bean	Lettuce*
Broccoli*	Mushroom	Swiss chard*	Carrot*
Beetroot	Daikon*	Mint*	Asparagus*
Chicory*	Cabbage*	Shallot*	Spinach*
Snow pea*	Kohlrabi	Collard*	Celery stalk*
Jerusalem artichoke	Cauliflower*	Parsnip	Horse-radish
Sweet corn	Rutabaga	Parsley*	Celery root
Fennel*	Kale*	Leek*	Romanesco broccoli*
Endive*	Brussels sprouts*	Rhubarb	Green onion*
Turnip	Chinese cabbage*	Radish	Herbs* (except basil)

Storage temperature: <u>7-10 °C</u>		Relative humidity: <u>85-95%</u>	
Basil*	Zucchini	Pattypan squash	Calabaza, squash*
Beans: green, wax, snap, long bean	Aubergine	Pepper: bell, chili	Cucumber*

Storage temperature: <u>13-18 °C</u>		Relative humidity: <u>85-95%</u>	
Potato	Onion/ redonion	Squash, winter*	
Sweet potato*	Tomato (ripe, semi-ripe, mature green)		

List of fruits that can be stored together for 7 days of storage:

*: ethylene-sensitive

#: produces a significant amount of ethylene

Storage temperature: <u>0-2 °C</u>		Relative humidity: <u>85-95%</u>	
Blueberry	Gooseberry	Nectarine	Strawberry
Apple#	Fig	Peach	Plum (ripe) *
Quince*	Blackberry	Currant	Grape
Elderberry	Pear	Apricot#	
Cherry	Raspberry, loganberry	Melon#	

Storage temperature: <u>13-18 °C</u>		Relative humidity: <u>85-95%</u>	
Watermelon			

⁸ United States Department of Agriculture (2016). The Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stocks.

Horticultural products, for which it is advantageous to misting during chilled storage

Bean: snap	Cabbage	Aubergine	Lettuce
Peas	Cauliflower	Paprika	Carrot
Broccoli	Kale	Parsnip	Asparagus*
Beetroot	Brussels sprouts	Parsley	Spinach
Sweet corn	Swiss chard	Leek	Squash, summer
Endive	Shallot	Rhubarb	Celery stalk
Turnip	Giant cabbage	Radish	Green onion

* *Asparagus must be placed vertically with cut ends on a moisture-absorbing pad.*

Horticultural products that are prone to cold damage at low temperature, but not below freezing temperature

Product name	Lowest safe temperature (°C)	Product name	Lowest safe temperature (°C)
Cranberry	2	Pepper, sweet	7
Apple	2-3	Tomato, ripe	7-10
Bean: lima bean	1-4,5	Tomato, mature green	13
Bean: snap bean	7	Cantaloup	2-5
Potato	3	Asparagus	0-2
Sweet potato	13	Pumpkin	10
Watermelon	4,5	Cucumber	7
Aubergine	7		

Other useful information, vegetable features:

Carrot: next to ethylene-producing vegetables, bitter taste might be experienced.

Paprika: slightly ethylene-producing, but it is not recommended to co-store with ethylene producers, and it is recommended to create air gaps on the storage cartons. Symptoms of cold damage occurring below 7 °C: blear surface indentations, brownish discolouration of surface and core, and non-normal taste and fragrance.

Tomato: in the state of green ripe, the presence of ethylene has a ripening starter effect.

Edited by

Working Group for Community of the Wasteless programme

Published by

National Food Chain Safety Office
H-1024 Budapest, Keleti Károly utca 24.
portal.nebih.gov.hu

www.maradeknelkul.hu/en
maradeknelkul@nebih.gov.hu

Photos

Fotolia

The Wasteless program is co-funded by European Union's LIFE Program.

