

EATING VEGETABLES AND AVOIDING FOOD WASTE

MOTEA OANA*¹, SURDULESCU ALINA MARIA¹, SABOU ALIN¹, WOLF DAVID¹,
BĂLAN IOANA MIHAELA¹

¹*University of Life Sciences "King Mihai I" from Timișoara,
Faculty of Management and Rural Tourism, Timișoara, Romania*

*Corresponding author's e-mail: oanamotea@yahoo.com

***Abstract:** This paper aims to investigate the effects of food wastage among vegetables. The effects of food wastage are of major importance and it would be good for each of us to be more careful with our food. After processing the information found, we found that vegetables have many benefits for human health. There are also different ways of preserving vegetables so that we can eat them for as long as possible. In other words, what we discovered is useful for consumers, but also for producers.*

***Key words:** food waste, vegetables, benefits of vegetables, health, vegetable preservation methods.*

INTRODUCTION

This paper aims to analyse the reduction of food losses and waste. Over time this remains a real problem for mankind. From the producer to the smallest consumer, everyone has thrown away a piece of food at least once. We'll focus on one category of food that is necessary for life, namely green vegetables.

Green vegetables have many benefits for the body, but what happens to them if they are not fully exploited?

Dark green vegetables refer to a category of vegetables that are characterised by their dark green colour, which indicates a high nutrient density. These vegetables are full of essential vitamins, minerals, fibre and other health-promoting compounds. They are a vital component of a balanced and nutritious diet. Here are some examples of dark green vegetables: spinach, asparagus, broccoli, cabbage, lettuce.

All these vegetables are born, grown and developed by a producer. He is responsible for ensuring that what he grows is of the highest quality. The processing of these vegetables or the fresh consumption of vegetables is ensured by the grower and the way he puts them to good use. [2]

It should be noted that there can be errors during these processes, so that during harvesting predators and carelessness on the part of the producer can lead to the loss of the crop. Unexpected reactions can also occur during processing of vegetables. Moreover, vegetables are short-lived foods, and if they are not eaten on time they will spoil, so their perishability is an important factor in reducing food waste.

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In order to avoid food waste and to avoid throwing away vegetables, producers and others can use preservation methods that extend the shelf life of green vegetables.

In this short study we will focus more on vegetables and fruit. So, we will investigate the causes of food waste and try to find solutions to lose this habit of throwing food away. Let's not forget that food is essential to life. [1]

MATERIALS AND METHODS

To make this work and to achieve its aim, we used several types of materials and methods to learn more about vegetable consumption and how vegetables can be preserved to avoid food waste. The most commonly used method was to research in depth and in detail to extract the most appropriate information. This was achieved through repeatability, as the information was difficult to find. The data obtained from the research was noted, analysed and then interpreted. The role of the authors was to critique and analyse the information found from several sources to follow up on the topic of the paper.

RESEARCH RESULTS

The effects of food waste

We can change the world for the better. Where to start? From learning and relearning to take care of our food. Thank you, don't waste it!

Food resources are the foundation of our daily lives. Our food choices make the difference between a full and healthy life and one that wastes time, money and energy.

The issue of food waste is linked to all important aspects of our lives, including the economy, the environment and education.[3,4]

When talking about food waste, it is important to understand the food chain-how we get food, how we consume it and how we conserve this resource.



Figure 1. The food chain

Source: Food Waste Combat,2021

Food waste includes all food produced for human consumption that is wasted or discarded from the time it is produced until it reaches the table.

At the global level, the fight against food wastage is analysed and monitored through Sustainable Development Goal 12.3 (food waste and loss).

The target set by the UN through Sustainable Development Goal 12.3 is to reduce food waste by 50% by 2030. According to the FAO, currently only 14% of this target is achieved globally. [5,6,7]

The environmental impact of waste is not limited to the production and consumption process. Once discarded and improperly stored in landfills, rotting food produces methane in the absence of air. Methane is 20-25 times more harmful than carbon

dioxide: in 2007, methane emissions from rotting food were equivalent to 3.3 gigatonnes of carbon dioxide. An equivalent amount is generated by the US transport sector.

Each of us is involved in the food chain and it is essential to understand at what stage of the process waste occurs. Understanding the causes of waste at each stage of the chain will help us understand how we should act and identify solutions.

In the long term, food waste has devastating effects on humanity, so it is necessary for us humans to increase our knowledge about this major problem and take action. All of this is necessary for our lives.[8]

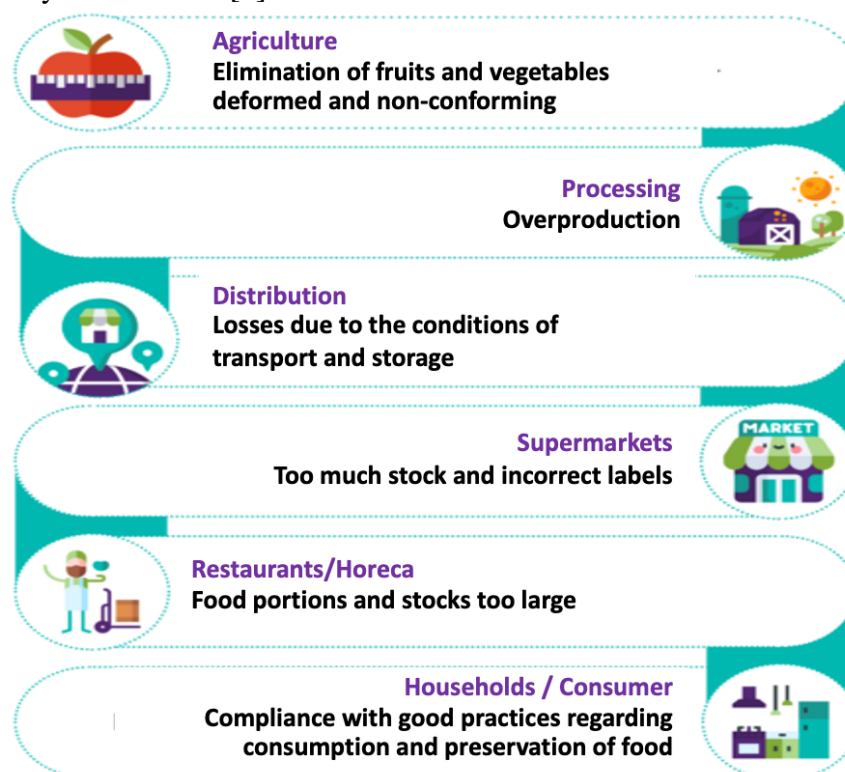


Figure 2. Food processing

Source: Food Waste Combat, 2021

Food waste among vegetables

Vegetables end up in the bin because they are damaged or don't meet beauty ideals. Every type of vegetable used in our food has a story, a journey from the farmer's field to the shelves of shops and market stalls before being put in our shopping basket. However, not all vegetables end up in our shops, markets and on our plates.[9,10]

Much of the world's agricultural land produces food that is ultimately lost or wasted. Food loss and waste is a major cause of climate change, hunger, economic insecurity and pressure on scarce resources.

Vegetables play an important role in a balanced and nutritious diet. While the challenges and obstacles to food security are manifold, innovations in the way vegetables are grown, harvested and even prepared can be part of the solution to addressing food security.

Among vegetables, wastage is very easy. It can happen as early as when they are growing. In some cases, the whole vegetable crop is affected by various pests. In this case, producers must take precautionary measures early on, avoiding great damage.

Once they grow and mature and are ready for consumption, they can suffer damage if they are not consumed in time. In other words, the way they are stored plays an

important role. Moreover, their transport to shops and markets must be in the best possible condition. [11,12]

We as consumers must know that when we go shopping it is not necessary to take something that is of no use to us. In order to avoid wasting vegetables, we should only buy what we consume. In this way, we will be able to enjoy vitamin-rich products and stop throwing vegetables away, thus reducing food waste.

Benefits of vegetables

Eating dark green vegetables offers a wide range of health benefits due to their high nutrient content. Here are some of the main benefits of including dark green vegetables in your diet:[13]

1. ***Rich in nutrients***: Dark green vegetables are packed with essential vitamins and minerals, including vitamin K, vitamin A (in the form of beta-carotene), vitamin C, calcium, iron, potassium and folic acid. These nutrients are important for overall health and well-being.

2. ***Antioxidant properties***: Many dark green vegetables contain antioxidants, such as flavonoids and polyphenols, which help protect cells against oxidative damage and reduce the risk of chronic disease.

3. ***Bone health***: The high vitamin K and calcium content of dark green vegetables are essential for maintaining strong, healthy bones. Vitamin K plays a crucial role in bone metabolism, while calcium is a key mineral for bone density.

4. ***Heart health***: Dark green vegetables are often associated with a reduced risk of heart disease, due to their low levels of saturated fat and cholesterol, as well as their high fibre content. Fibre helps lower cholesterol levels and supports heart health.

5. ***Eye Health***: The beta-carotene found in dark green vegetables, such as spinach and kale, is converted into vitamin A in the body, which is essential for maintaining good vision and reducing the risk of age-related macular degeneration.

6. ***Cancer Prevention***: Some dark green vegetables, including broccoli and kale, contain compounds like sulforaphane and indole-3-carbinol, which have been linked to a reduced risk of certain cancers, including breast and prostate cancer.

7. ***Digestive Health***: The fiber in dark green vegetables aids in digestion and helps maintain a healthy digestive system. It can prevent constipation and support a balanced gut microbiome.

8. ***Weight Management***: Dark green vegetables are low in calories and high in fiber, which can help you feel full and satisfied, making them a valuable addition to weight management and weight loss diets.

9. ***Anti-Inflammatory***: Many dark green vegetables have anti-inflammatory properties, which can help reduce inflammation in the body and lower the risk of chronic diseases associated with inflammation.

10. ***Improved Immunity***: The vitamins and minerals in dark green vegetables, such as vitamin C and folate, play a role in supporting a strong immune system, helping your body fight off infections.

11. ***Blood Sugar Control***: The fiber in these vegetables can help stabilize blood sugar levels and reduce the risk of type 2 diabetes.

12. ***Skin Health***: The antioxidants in dark green vegetables can contribute to healthy, glowing skin by reducing oxidative stress and supporting collagen production.

To maximize the benefits of dark green vegetables, it's a good idea to incorporate a variety of them into your diet. You can enjoy them in salads, stir-fries, soups, smoothies, or simply as a side dish. Remember that a balanced diet that includes a wide

range of colorful fruits and vegetables is key to promoting overall health and well-being.[17,18,19]

Methods of preserving vegetables to extend their shelf life

Food preservation is a process of taring food with the aim of keeping food in a suitable condition for consumption for as long as possible. Preservation is the process of maintaining the edible taste, flavour, freshness, texture, chemical and microbiological suitability of food. Preservation processes can ensure that perishable foods, such as vegetables, which would normally begin to spoil within hours or days, are still preserved and ready to eat even after years. [14,15]

What's more, vegetable preservation methods bring several benefits, including no food waste. That is, once they are preserved, they are no longer thrown away, but are processed so that they can be eaten later in the best possible condition.[16]

Some of the methods of preserving vegetables are:

1. Preserving in salt or brine: Salting is one of the oldest methods of long-term preservation of vegetables. There are two methods for this type of preservation: -Wet salting preserves vegetables in a solution of water and salt. Cucumber pickles are one method of wet salting; -Dry salting uses salt in its natural state. Layers of salt are used to remove water and preserve vegetables. Pickles made by salting help develop probiotics and strengthen our immune system.

2. Preserving in vinegar: This method uses a solution of vinegar plus water, sugar, salt and other spices (e.g. currants). In some cases, undiluted vinegar solution can be used directly for preserving. (e.g. chilli peppers).

3. Preserving by freezing: This is the simplest method of preserving, but as the percentage of vitamins and minerals in vegetables changes as they lose their freshness, it is better to freeze them as soon as they are harvested. By freezing, nutrient retention is very high, close to 100%.

4. Preservation by sterilisation: Glass jars and bottles are ideal for storing vegetables as they are easy to sterilise. After the containers are filled and sealed, they should be boiled in hot water at a maximum temperature of 100°C. Sterilisation can also be carried out in an oven at 150°C for about an hour. This will destroy all micro-organisms.

5. Preservation by dehydration: Dehydration methods allow vegetables to retain their flavour and nutritional content for a longer period of time. Equally important, vegetables shrink and can therefore be stored in smaller spaces.

All these methods listed above play an important role in reducing food waste and are designed to avoid throwing vegetables away. Thus, it is necessary to know these processes, especially as consumers, in order to help mankind from throwing food away. [18,19]

CONCLUSIONS

In conclusion, this small project aims to minimise food waste, especially among vegetables. During the first part of the work we identified what the effects of food waste are and what we should do to waste as little food as possible.

From the research we have done we have identified what the benefits of vegetables are and how important they are for people's health.

Finally, some information was found on the best ways to preserve vegetables. These are a must for all people because this way they can use vegetables for a long period of time and eat them safely. The paper concludes with a series of conclusions, covering its main points.

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