



Erasmus+



AGROPLUS

---

Co-funded by the Erasmus+ programme of the European Union

1

REPORT CONTAINING RESEARCH  
AND EXCHANGE OF GOOD PRACTICES  
ABOUT CURRENT TRENDS IN FOOD LOGISTICS  
WITHIN THE ERASMUS+ PROJECT  
„AGROPLUS”



PERFECT PROJECT



HumaCapiAct



---

„AGROPLUS” (2020-1-PL01-KA202-081540)

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



# Erasmus+



**AGROPLUS**

---

Co-funded by the Erasmus+ programme of the European Union

2

Publication financed by the European Commission under the Erasmus+ Program.  
The publication only reflects the position of its authors and the European Commission is not responsible for the report content.

Białystok, 2021

Authors:

Perfect Project Sp. z o.o. (Poland)

Humacapiact srls (Italy)

Vilniaus agroekologijos mokymo centras (Lithuania)

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



# Erasmus+



**AGROPLUS**

---

Co-funded by the Erasmus+ programme of the European Union

3

#### Elements of the report:

1. Food transport, including fruit and vegetables on an example Poland, Lithuania and Italy – introduction, basic definitions.
2. Analysis of the current state of transport organization in the trade of fresh fruit and vegetables on an example Poland, Lithuania and Italy.
3. Size and structure of food logistics, costs, methods of reducing losses in supplies on an example Poland, Lithuania and Italy.
4. Pro-ecological trends in logistics and food transport in agri-food sector on an example companies from Poland and Italy.

#### Report annexes:

1. Photo documentation.
2. Training program in Italy "Modern pro-ecological trends in food logistics"

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

**[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)**



Co-funded by the Erasmus+ programme of the European Union

(1)

### Food transport, including fruit and vegetables on an example Poland, Lithuania and Italy - introduction, basic definitions.



PERFECT PROJECT

#### Characteristics of the markets exporting fresh products

The export of fresh products such as fruit and vegetables is a very important element of the global food economy. Thanks to modern technologies in agriculture and processing, fresh products can be produced almost all year round. Harvested vegetables and fruits can be stored in appropriate conditions for a long time and transported for thousands of kilometers between countries. While characterizing fresh fruit and vegetables, it has been noticed that most of these products are not suitable for longer storage in a fresh state. The fruit and vegetable industry uses various methods of preserving fruits and vegetables, the most important of which are: preservation by heating, freezing, thickening, drying, souring, pickling, salting, as well as combinations of the above-mentioned methods.

#### Poland- characteristics of the fresh products market

Poland is a significant fruit producer in the European Union. **It is one of the leading countries exporting mushrooms (1st place), currants and raspberries (2nd place) and apples (3rd place).** More than one in four apples produced in the European Union comes from our country. In addition, we also export cherries, gooseberries, blueberries, strawberries and chokeberry in large quantities. The data provided by KOWR show that in 2020 agri-food products were exported from Poland and were mainly - no surprise here - to the EU market. Deliveries to EU countries generated 27.2 billion eur (an increase by 5 percent), which accounted for 80 percent of total revenues obtained from the export of agri-food products. Below is a table with the percentage distribution of sales to EU countries:

Sales revenues: 405 mln EUR	
<b>Germany</b>	105 mln EUR
<b>Romania</b>	49 mln EUR
<b>Czech Republic</b>	37 mln EUR
<b>Niderlands</b>	29 mln EUR
<b>Lithuania</b>	24 mln EUR

Source: National Agricultural Support Center

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



Co-funded by the Erasmus+ programme of the European Union

Vegetable harvest in Poland in 2015–2020:

5

<b>Total vegetables</b>	<b>4,8–5,7 mln ton</b>
<b>Ground vegetables, including:</b>	<b>3,8–4,6 mln ton</b>
<b>Cabbages</b>	0,8–1,0 mln ton
<b>Carrots</b>	0,7–0,8 mln ton
<b>Tomatoes</b>	0,236–0,26 mln ton
<b>Onions</b>	0,122–0,156 mln ton
<b>Cucumbers</b>	0,221–0,261 mln. ton
<b>Beetroots</b>	0,13–0,25 mln ton
<b>Greenhouse vegetables:</b>	<b>1,0–1,2 mln ton</b>
<b>Tomatoes</b>	0,553–0,677 mln ton
<b>Cucumbers</b>	0,267–0,297 mln ton

Source: National Agricultural Support Center

The commercial value of fruit and vegetables is determined by many different factors, which include: the goods of the appropriate variety, agrotechnical factors, protective treatments and growing conditions, the maturity at the time of harvesting, the method of preparation for storage or transport. Each of the above-mentioned factors has an impact on the final evaluation of the quality of fruit or vegetables on the market. These factors generally do not act individually, but are related to each other.

### Italy - characteristics of the fresh products market

Italy is the leader in the production of kiwi and artichoke (1st place), olives, peaches, backs and truffles (2nd place), cauliflower, broccoli and grapes (3rd place). The profit from the export of fresh products in Italy exceeded 4.8 billion euros in one year. Italy has a cultivated area of up to 420 thousand ha, or 19.8 percent land intended for the production of vegetables. Thus, today the fruit and vegetables sector is the second largest in value in the Italian agri-food sector. Below is a table of the largest importers of Italian fresh products:

Major importers from Italy	
<b>Germany</b>	43%
<b>France</b>	14%
<b>Austria</b>	8%
<b>Spain</b>	8%
<b>Poland</b>	8%

Source: GUS

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



# Erasmus+



**AGROPLUS**

---

Co-funded by the Erasmus+ programme of the European Union

6

Germany and France are Italy's main trading partners in Europe, the United States in North America, Argentina in South America, Turkey and Croatia in the Mediterranean, and Japan and Indonesia from Asia. Most Italian food products are exported to Germany, France, Great Britain, the United States and Spain. Polish consumers are increasingly buying original Italian food products and are ready to pay more for the quality guaranteed by certificates. The Italian Trade Agency (ITA) estimates that the value of food imports from Italy from Poland will amount to EUR 933.6 million in 2021.

In the year of the pandemic, exports of citrus fruits (+ 7.8% in value), fresh fruit (+ 7%) and vegetables (+ 1.4%) were recovering. Citrus fruits are also a leader in imports (+ 20.4% in value, + 6.1% in volume), while there is a sharp decline in imports of vegetables (-13.1% in value). Among the main exported products, apples stand out for a value of over €833 million (+ 13.4%), followed by table grapes which do an exploit both in quantity (+ 7.25%) and in value (+9, 95%). The low content of chemicals (0.3%) also contributes to the success of selling Italian food products, equated with high quality. The amount of these substances in Italian food is five times lower than the European average (1.5%) and 26 less than in food from outside the EU (7.9%)



The Italian marketplace for fresh fruit and vegetables is becoming increasingly globalized and interconnected. This, in turn, is changing the way fresh produce is carried from its origin to its destination. The fruit and vegetables supply chain is in continual flux as it is shaped and reshaped by the emergence of new markets and changes in consumer demand. Actors right along the supply chain – from growers to retailers – are expanding and consolidating. Their advances coincide with a notable drive towards greater efficiency, a trend that is assisted by seemingly unstoppable technological advance, which becomes an advantageous tool in fresh fruit and vegetables logistics in Italy, as well as all around the globe.

We live in a time of great and far-reaching change. Supply chain of fruit and vegetables has long been commoditised. As a result, in the past this supply chain has been characterised by an overwhelming focus on cost reduction; until recently, it has been considered to be of limited strategic value. Many of the previous certainties of business are now under question: globalisation and new technologies continue to impact the fundamentals. These are only the most obvious

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



# Erasmus+



**AGROPLUS**

---

Co-funded by the Erasmus+ programme of the European Union

7

megatrends; many other forces, ranging from the changing demographic make-up of our societies to the impact of climate change, as well as our increasing focus on health and wellbeing, are shaping not just what is consumed, but how and where it is consumed. Moreover, the global pandemic situation has also shaped the logistic trends as well as consumers' habits.

In Italy, the fruit and vegetable supply chain is in transition. The situation is already changing and these characteristics are likely to become less dominant over time, as consumers' requirements evolve and the supply chain responds to these changing demands. This evolution will be led both by increased demand for higher-quality produce and by a broadening of the produce range. This presents a strategic opportunity for everyone in the fresh fruit and vegetable supply chain – growers, suppliers and retailers. Already, a number of actors have started to recognise the emerging value, and have taken the first steps to gain control over their fresh produce supply. While cost and efficiency will continue to play a significant role in driving the fruit and vegetable supply chain in the coming years, the chain will also be characterised more and more by four key developments that meet emerging which contributed in shaping new logistic and supply chain trends:

- more rapid supply;
- more flexible supply;
- more precise supply;
- more transparent supply.

New trends are coming into food logistics and in supply chain like the importance of short supply chains, green logistics, and digitalized logistics.



## **Consumer aspects of supply of fresh fruit and vegetables to consumers in the context of the European Union**

The European Commission ensures the safety and quality of agricultural and food products, supports businesses, communities and promotes sustainable practices.



---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

## Objectives of organic farming

Organic farming is an agricultural method that aims to produce food using natural materials and processes. This means that organic farming usually has a limited impact on the environment by encouraging:

- responsible use of energy and natural resources;
- to preserve biological diversity;
- to maintain the ecological balance of the regions;
- increase soil fertility;
- maintain water quality.

In addition, organic farming rules promote high animal welfare standards and require farmers to meet specific animal behavioral needs. The European Union's organic farming regulations aim to create a clear structure for the production of organic goods throughout the EU. This is to meet consumer demand for reliable organic products and to ensure a fair market for producers, distributors and sellers.

## Increasing confidence in organic farming

For organic farming methods to benefit farmers, consumers need to have confidence that organic production rules are being followed. The EU therefore continues to apply this strict control and enforcement system to ensure proper compliance with organic production rules and regulations. As organic farming is part of a larger marketing chain covering the food processing, distribution and retail sectors, these sectors are also inspected.

- each EU Member State designates control bodies or authorities to inspect operators in the organic food chain. Producers, distributors and sellers of organic products must register with a local inspection body in order to be authorized to market their food as organic.
- after the inspection, they will be issued with a certificate confirming that their products meet the ecological standards.
- all operators are inspected at least once a year to ensure that operators continue to comply with the rules.
- imported organic food is also subject to control procedures to ensure that it has also been produced and dispatched in accordance with organic principles.

## Ecological control system

Each Member State of the European Union designates a so-called competent authority, which has the ultimate responsibility for ensuring that EU organic production rules are complied

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)





---

Co-funded by the Erasmus+ programme of the European Union

with. These are usually departments of agriculture or public health. This competent authority may delegate its role to:

- one or more private inspection bodies;
- one or more public control authorities;
- a mixed system of private control bodies and public control bodies.

Whatever system is chosen, the competent authority assumes the ultimate responsibility for auditing the inspection system for which it is responsible. Once a year, EU Member States report to the European Commission on the results of controls on organic production operators and the measures taken in cases of non-compliance.



### Organic farming after 2022

Organic farming is a fast-growing area of EU agriculture, the growth of which is directly driven by greater consumer interest in organic products. In response to the challenges of this rapid development and in order to create an effective legal framework for industry, the EU has adopted new legislation. Due to the complexity and importance of the draft secondary legislation, its entry into force has been postponed for one year - it will not enter into force until 1st of January 2021, but 1st of January 2022. This postponement has been requested by EU countries, the European Parliament, non-EU countries and other stakeholders.

Examples of future changes under the new organic production legislation:

- a stronger control system, helping to further increase consumer confidence in the EU's organic production system;
- new rules for producers to help small farmers switch to organic production;
- new rules on imported organic products to ensure that all organic products sold in the EU meet the same standards;

---

### *„AGROPLUS” (2020-1-PL01-KA202-081540)*

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



# Erasmus+



**AGROPLUS**

---

Co-funded by the Erasmus+ programme of the European Union

- a wider range of products that can be sold as organic.

The new organic legislation will be complemented by the EU Organic Action Plan announced by the European Commission in March 2021.

**Organic production** is a common system of farm management and food production, encompassing best environmental practices, high biodiversity, conservation of natural resources, application of high animal welfare standards and production methods, taking into account the preference of certain consumers for products using natural materials and processes. The organic production method therefore plays a dual role in society: it creates a specific market that meets consumer demand for organic products, and it also benefits society by contributing to environmental protection and animal welfare and rural development.

**Organic production farm** - a farm controlled by a certification body and complying with the requirements of legal acts regulating organic production.

**Organic certification** is the procedure by which a certification body certifies compliance with the requirements of organic production legislation for the production of organic agricultural products and foodstuffs in a given production area and for the collection of wild plants. Certification of organic production begins when the operator submits an application to the certification body for control of the organic production unit and organic production and ends when the organic production control contract signed with the certification body expires.

### **Supervision and ensuring of compliance standards of organic fruits and vegetables in Lithuania**

Fresh fruits and vegetables are a very important element of the organic food chain. In Lithuania, the control of the compliance of fresh fruits and vegetables with the marketing standards is ensured by the information system Vaiskoris. The Ministry of Agriculture of the Republic of Lithuania, authorized to coordinate the implementation of controls on the compliance of fruit and vegetables with trade standards, the activities of control authorities in this field and liaising with the competent authorities of the European Union and other countries. State control institutions - (hereinafter - control institutions) State Plant Protection Service of the Republic of Lithuania (hereinafter - State Plant Protection Service) and State Food and Veterinary Service of the Republic of Lithuania (hereinafter - State Food and Veterinary Service), authorized to inspect in accordance with the legislation of the Republic of Lithuania, whether fresh fruit and vegetables placed on the market comply with marketing standards.

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agropius.project@gmail.com](mailto:agropius.project@gmail.com)



# Erasmus+



**AGROPLUS**

---

Co-funded by the Erasmus+ programme of the European Union

11

The purpose and main objectives of the Vaiskoris information system are to record, collect, systematise and process data of control authorities on the compliance of fresh fruit and vegetables placed on the market with marketing standards, to form relevant documents, to group controlled objects according to their risks and to report to controllers and coordinating authorities, thereby increasing the efficiency of the staff of the control authorities, reducing the likelihood of errors and ensuring the security of the data processed.



### Sources of data collected by the information system "Vaiskoris"

Objects providing data to the information system "Vaiskoris":

- growers;
- sorting-packaging companies;
- suppliers to the market;
- carriers;
- exporters;
- importers;
- warehousekeepers;
- wholesale companies;
- natural and legal persons engaged in retail trade;
- supermarkets;
- shops;
- markets;
- street vendors;
- other establishments supplying the market with fresh fruit and vegetables.

A very important aspect in the process of supplying humanity with organic fruits and vegetables is their proper presentation to the consumer, while maintaining the unaltered nutritional values, appearance and quality of fruits and vegetables. Therefore, the carriers of these products must meet the requirements of the country and the countries of the whole European Union, ensuring safe and high-quality delivery from the farmer - the grower to the direct consumer - the person. The Lithuanian State Crop Service under the Ministry of Agriculture raises and maintains quality requirements for fresh fruits and vegetables supplied to the market.

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

12

## **Quality requirements for fresh fruit and vegetables placed on the market**

The quality control procedure is regulated by legal acts and other quality assurance documents adopted and approved by the Ministry of Agriculture of the Republic of Lithuania. The quality of fresh fruit and vegetables is inspected in accordance with the rules for checking the conformity of imported, exported and supplied to the domestic market fresh fruit and vegetables to the marketing standards, approved by the Minister of Agriculture of the Republic of Lithuania in 2009. July 10 by order no. 3D-488.

## **General requirements for the quality of fresh fruit and vegetables**

The general quality requirements apply to all fresh fruit and vegetables. Fruit and vegetables must be intact, undamaged, clean, free from pests or damage, free of excess external moisture, free of extraneous odor and / or taste, and sufficiently ripe. Each lot may contain 10% by number or weight of products not satisfying the minimum quality requirements. However, of these products, rot may not exceed 2%.

## **Special requirements apply to the quality of fresh fruit and vegetables**

The specific quality requirements apply to the preparation and packaging of fresh fruit and vegetables (citrus fruits, kiwifruit, peaches and nectarines, pears, apples, strawberries, table grapes, lettuce, curly and broad-leaved chives, sweet chives, sweet chives). They must be intact, undamaged, clean, free from disease and pests, without flesh substantially free of pests, free of excess external moisture, free of extraneous odor and taste, and sufficiently mature.

## **Fruits and vegetables are divided into quality classes:**

- Extra class - the highest quality products. For example, strawberries in this class must be characteristic of the variety and the berries must be free from defects.
- Class I - good quality products. For example, strawberries in this class must be characteristic of the variety, the slight defects allowed, the slight defects in shape must be unearthened.
- Class II - products meeting the minimum quality requirements. For example, this class includes strawberries that do not qualify for inclusion in the higher classes. Permissible defects in shape, slight dry bruising, berries may be slightly grounded.
- Fresh fruit and vegetables of lower quality than Class II are for processing only.

The marketing requirements shall not apply to the following fresh fruit and vegetables:

- cut, sliced or otherwise processed and intended for the manufacture of dishes;
- intended for processing, when appropriately marked;

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

13

- for other non-food purposes;
- grown in Lithuania and transported to the place of preparation or temporary storage;
- fruits and vegetables grown in Lithuania and sold directly to the final consumer by farmers and gardeners;
- sold for personal consumption directly from the holding.

### **Tolerances in respect of quality of fresh fruit and vegetables**

Tolerances in respect of quality and size shall be allowed at each stage of marketing for each lot of fruit and vegetables not satisfying the requirements of the class indicated:

- for the "Extra" Class, 5% by number or weight not satisfying the requirements of the class, but meeting those of Class I;
- for Class I, 10% (by number or weight) not satisfying the requirements of the class, but meeting those of Class II;
- Class II: 10% (by number or weight) not satisfying the requirements of the class, nor the minimum requirements. Of this tolerance, not more than 2% in the produce may be affected by rotting.

### **Controlled objects**

The following operators engaged in the supply of fresh fruit and vegetables to the market are controlled:

- growers;
- packers;
- wholesale companies;
- traders;
- importers;
- exporters.

The listed economic entities must be registered in the database of the information system "Vaiskoris" managed by the State Crop Service under the Ministry of Agriculture according to the field of activity. Operators handling fresh fruit and vegetables must also be registered in the Register of Food Operators maintained by the State Food and Veterinary Service. All traders in fruit and vegetables must comply with marketing standards, food safety regulations and other relevant legislation

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)





Erasmus+



AGROPLUS

---

Co-funded by the Erasmus+ programme of the European Union

(2)

**Analysis of the current state of transport organization in the trade of fresh fruit and vegetables on an example Poland, Lithuania and Italy.**



PERFECT PROJECT

Food transport is one of the greatest logistical challenges, primarily because the health of consumers depends on the properly organized transport of these products. The transport of this type of goods must be carried out quickly and taking into account many legislative requirements regarding its quality.

Food transport is a real challenge because it concerns a wide variety of products: fresh, dry, frozen, packaged, plant, animal, liquid, loose, etc. Each of these groups requires different conditions of carriage. This, in turn, requires the use of appropriate equipment and various solutions that - firstly - protect them during transport and - secondly - facilitate loading and unloading. We are talking primarily about suitably designed and made of wood or plastic boxes or pallets.

Another extremely important issue in the transport of food is time. The vast majority of these types of items have short expiry dates. To maintain all the advantages of the transported products, it is required to ensure the shortest possible delivery time to the final recipient. The applied solutions should minimize the risk of any delays. Any failure in this may result in the loss or significant reduction of the value of the entire valuable cargo.

For these reasons, road transport is most often used to transport food. It is an extremely flexible and functional, and the least demanding solution in terms of organization. Appropriate organization of order transport allows you to adjust the fleet and routes in a way that allows for the optimal use of resources at the carrier's disposal. The great popularity of road transport in the food industry is confirmed by the data showing that approximately 162 million tons of goods are transported in this way each year, most of them are fruit and vegetables.

Fresh fruit and vegetables are live products in which life processes still occur after harvesting. The two most important are respiration and transpiration (evaporation).

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

15

Let's start with respiration. Under normal conditions, the amount of oxygen absorbed during it is equal to the amount of carbon dioxide released. It has been found experimentally that if we limit the amount of oxygen and keep the right amount of carbon dioxide, we will slow down the maturation and aging process of the plant. The easiest way to reduce the intensity of the respiration process, and thus aging, is to store fruit and vegetables at a temperature close to their freezing point. At the same time, care should be taken that the temperature drop does not cause the local products to freeze. Storing fruit and vegetables in a cold room allows you to extend their freshness up to several dozen days.

In the case of the second process, transpiration, under natural conditions it protects the plant from overheating, and also contributes to the creation of negative pressure, which plays a key role in the conduct of water and minerals inside the plant. For fruit growers, however, the transpiration process is associated with losses - long-term storage of fruit causes them to lose their weight, which translates into a decrease in profits. In addition, fruits lose their quality and appearance. The speed of the transpiration process is influenced by many factors, fruit size, covering them with a layer of wax (which slows down the process of water loss), air humidity, and temperature. In the latter case, the transpiration process is slower when the storage temperature is lower. So this is another reason why you should keep your fruit and vegetables cold.

It is worth remembering that different fruit and vegetables require different storage conditions. This mainly applies to temperature, air humidity, and storage time.

Poland and Italy have been close trading partners for decades. The value of trade between our countries is growing every year. In 2020, Italy was the fifth largest trade partner of Poland in terms of the value of trade in goods on a global scale. The value of mutual trade turnover exceeded EUR 20 billion, Polish exports - EUR 10,160 billion, and imports - EUR 11,331 billion. Italy remains in 5th place among Poland's trade partners in terms of exports (4.6% of total Polish exports), while in the case of imports - in 4th place (5.0% of total imports).

**From September to April, Poland mainly imports from Italy: broccoli, cauliflower, lettuce, and spinach, while from November to March, fruits such as mandarins, oranges and kiwi. The spring-summer period mainly imports peaches, nectarines, strawberries, figs, while vegetables are dominated by zucchini, eggplant, cucumber, although both in the case of strawberries, zucchini cucumbers, these are minimal amount because Poland is famous for its crops in this period.**

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

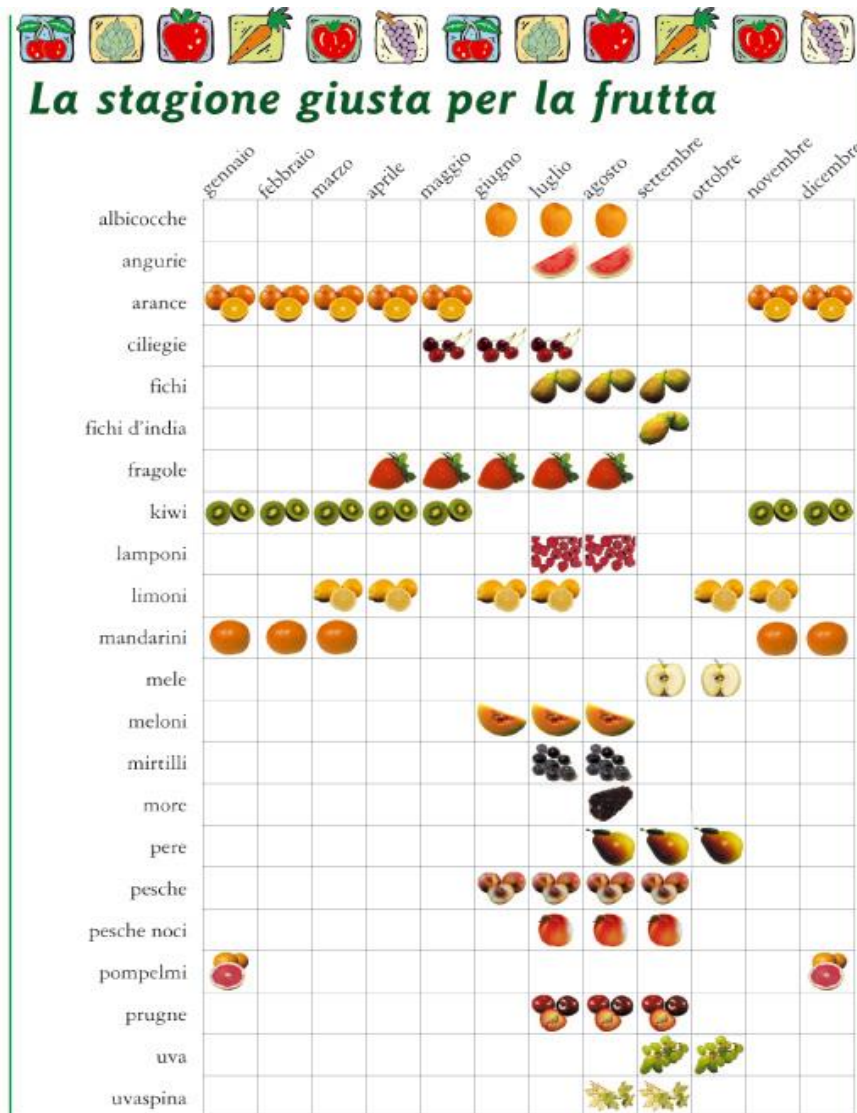
[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



Co-funded by the Erasmus+ programme of the European Union

The main fresh product exported from Poland to Italy throughout the year is apples - considered the best in the entire European Union. In addition, Poland can boast about the export of potatoes, beans, chicory, the sale of which increases by an average of 30% each year.

Fruit import calendar from Italy:



„AGROPLUS” (2020-1-PL01-KA202-081540)

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

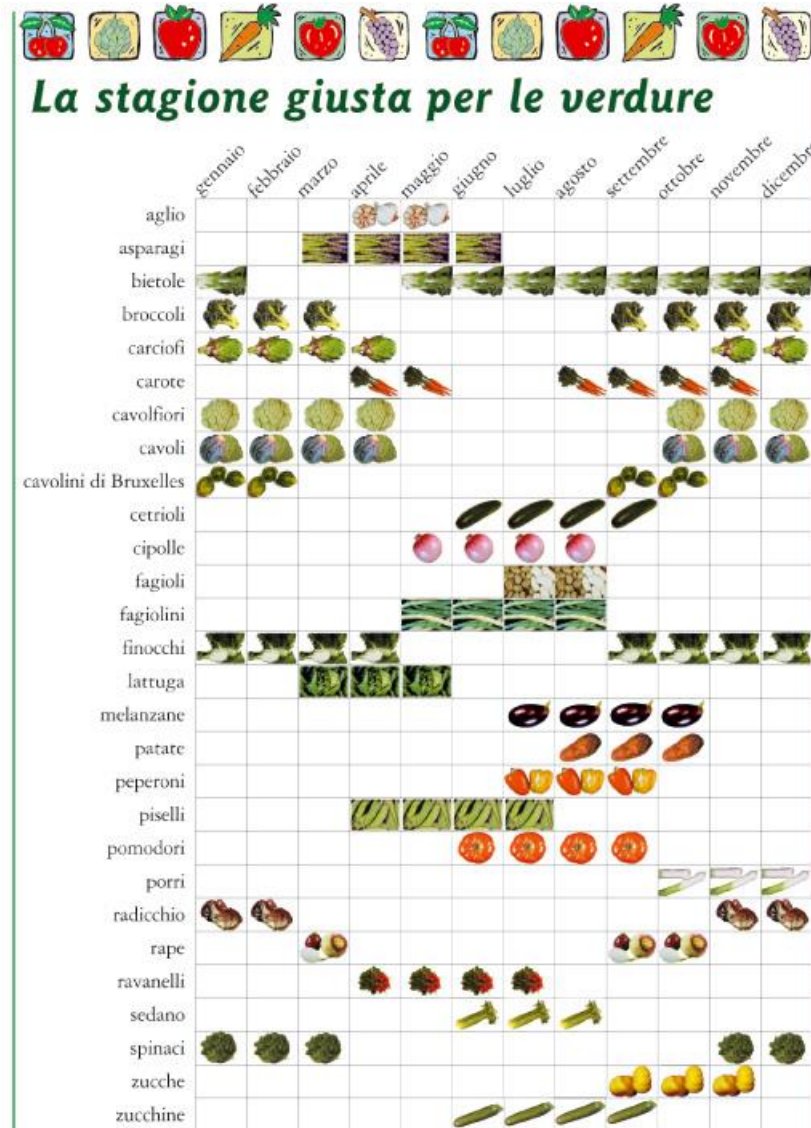
[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)





Co-funded by the Erasmus+ programme of the European Union

Calendar of vegetable import from Italy:



Efficient refrigerated transport is of paramount importance for both producers and consumers. Any irregularities in the transport of goods may affect their quality - food transported in inappropriate conditions spoils, which is a serious threat to health and life, and also loses its market value. Both Poland and Italy are among the world leaders in the sale of fresh fruit and

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

vegetables, having an established reputation for their key products. Today it is hard to imagine the economy of the European Union without these two markets.

18



## Requirements for Issuance of Declaration of Conformity of Fresh Fruits, Vegetables, Berries and Potatoes Grown in the Republic of Lithuania

1. For each consignment of vegetable, fruit, berry and potato products delivered to the market of the Republic of Lithuania, the supplier shall issue a declaration of conformity in the prescribed form specified in the Minister of Agriculture 2003. September 30 order no. 3D-402 (Official Gazette, 2003, No. 97-4374) in Annex 6.
2. In the case of consignments, the VAT invoice must indicate the number of the declaration of conformity, the date of issue and / or a copy of the declaration.
3. Farmers, gardeners, small growers who sell products and have documents certifying the management or use of the land must guarantee that the products supplied are safe.
4. Laboratory tests for heavy metals and pesticides grown on fruits and vegetables grown in the Republic of Lithuania are not necessary (the supplier declares "pesticides have not been used") if the amount of products intended for sale is small (potatoes, cabbage, tuber vegetables - up to 1000 kg, other vegetables - up to 500 kg, green vegetables - up to 50 kg, fruits - up to 500 kg, berries - up to 100 kg). In cases where the buyer requires laboratory tests, the supplier must also test the products sold in small quantities in the laboratory and record the test data in the declaration of conformity.
5. The responsibility for the safety of vegetables, fruits, berries, potatoes and compliance with the mandatory quality requirements rests with the supplier who has issued the declaration of conformity.

## Requirements for vehicles

The following requirements apply to a vehicle used for the transport of fresh fruit and vegetables:

- must be airtight (safe from any contamination) and clean;
- there must be a temperature control device;
- only fruit and vegetables can be transported in the same load compartment (other goods can only be transported behind a continuous partition).

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

The use of a vehicle carrying toxic or volatile chemicals **is prohibited**.

19

### Transport and retail conditions

The transport of sensitive fruit and vegetables (perishable products) must be marketed under certain conditions of temperature, humidity and, in some cases, atmospheric composition. This is particularly true of transportation and retail, the so-called refrigeration chain. The way in which the products are placed inside the vehicle is important because it determines the intensity of the air movement around the packages. During transport, the products must be protected against mechanical damage.

Means of transporting juicy products may include isotherms, freezers, refrigerators and heated means. In isothermal transport, the existing thermal insulation body limits the heat exchange between the interior and the exterior. Freezers (ice cream parlors) are isothermal vehicles that use refrigerants to reduce the temperature: natural ice with or without the addition of salt, electric plates, dry ice and liquefied petroleum gas. The refrigerator is also an isothermal vehicle equipped with refrigeration equipment capable of maintaining an appropriate temperature of about 30 ° C in the environment. The heated vehicle shall be equipped with a device capable of maintaining a constant internal temperature of not less than 12 ° C for not less than 12 hours. without additional heating at an outdoor temperature of -10 ...- 20 0 C. Fruit and vegetables already put up for retail sale must be stored in such a way as to ensure their longest quality. However, the time between preparation and delivery to the consumer must be as short as possible.

### Packaging requirements

Fresh fruit and vegetables must be packed using clean materials (packaging) to prevent injury and damage. When reusable packaging (wooden and plastic boxes) is used for this purpose, they must be lined with clean materials. Only the information about the transported products may appear on the packaging. The use of reusable packaging intended or used for the storage of non-foodstuffs and other used packaging **is prohibited**.

Products can be packaged in different ways, described as follows:

- MAP (Modified Atmosphere Packaging) - packaging with modified air;
- EMA (Equilibrium Modified Atmosphere) - constant modified air;
- MIP (Modified Interactive Packaging) - modified interactive packaging;
- APS (Active Packaging System) - active packaging system;

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

- IPA (Intelligent Packaging) - packaging that shows the expiration date according to the color change.

It is recommended to use environmentally friendly biodegradable packaging materials for modern packaging. Researchers are looking for a variety of ways to convert synthetic, virtually non-degradable packaging into biodegradable polymers, a new generation of packaging materials. Biodegradable polymers can change their chemical structure under certain environmental conditions. Polymers can decompose when exposed to sunlight (photooxidation), bacteria (microorganisms), macroorganisms (invertebrates and insects) by reacting with chemicals. Degradable polymers are more accessible to macroorganisms due to "food stimulants" (e.g., starch, which is a natural food source for insects with specific amylase-degrading enzymes). "Biodegradation" produces carbon dioxide, water, inorganic compounds and biomass. Biodegradable packaging materials can be made from natural materials and using a biotechnological process.

The most commonly used natural materials are:

- chemically modified cellulose - cellulose esters and ethers (methyl, ethyl, carboxymethyl and hydroxypropyl), collagen and gelatine - for the production of foil;
- cellulose-rich - for the production of disposable tableware;
- pure and modified starch;
- alginin;
- pectin;
- chitin.

After the entire product preparation cycle, the fruit and vegetables to be transported are packaged in accordance with the relevant regulatory requirements. Different equipment is used to assemble packaging into individual product packages, depending on the type of packaging and the required capacity. The following examples of unit packaging can be mentioned:

- filling bags;
- wrapping fruits and vegetables in an elastic film;
- packaging in thermal film;
- netting.

Packaged products are weighed and marked.

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

21

## Packaging requirements

*The markings on the package and the immediate packaging must be the same:*

- country of origin;
- variety;
- quality class;
- size (if sorted by size);
- uniformly ripe fruit;
- Extra Class fruit must be of the same color;
- according to the consumer sales contract in packages not exceeding 3 kg;
- apples sold do not have to be of the same variety. If the said packages contain apples of different varieties, they need not be from the same country of origin;
- the visible part of the contents of each package and the immediate packaging must correspond to its entire contents;
- extra class apples and pears packed in layers;
- apples and pears must be packed in such a way as to protect the produce properly;
- the packaging and general packaging must be clean and the materials used inside the packaging to protect the fruit must be new, clean and in accordance with hygiene standards;
- the packaging and the immediate packaging must be free of any foreign matter.

## Labeling provisions

Each package must be marked in such a way that it appears on one side or on a label attached the following legible particulars:

- name and address or identification code of the packer and / or dispatcher;
- product name \*;
- country of origin \*;
- quality class (when classification is necessary) \*;
- size indication (when sorting is necessary);
- other information where required by the marketing standard.

\* this information must also be indicated in the documents confirming the purchase (sale) of products.

## Labeling requirements

- Marking in accordance with the procedure established by the legal acts in force in the Republic of Lithuania. Each package and the immediate packaging must bear, on the same side, legible, indelible and visible inscriptions stating:

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

22

- name and address or identification code of the packer and / or dispatcher;
- name of the product: 'apples' or 'pears' if the packaging is opaque;
- name of the variety or varieties;
- country of origin;
- where apples sold in small packages under a consumer sales contract are of different varieties and countries of origin, they must all be indicated;
- quality class;
- size or number of units if the fruit is layered.

***if the fruit is not layered, its size, indicating:***

- minimum and maximum diameter of the fruit, if uniformity requirements are mandatory;
- the minimum diameter of the fruit and the indication "and more" or "+" if the maximum diameter is not required;
- if the packaging is reusable, the information must be given on a card placed in a visible place inside the packaging;
- when selling apples and pears under a consumer sales contract, the information is provided in a place visible to buyers next to the apples and pears.

**Conformity of fresh fruit and vegetables**

Fresh fruits or vegetables should not obviously differ in maturity and size. They must be:

- healthy (without deterioration);
- clean;
- pest-free and undamaged;
- not damaged by cold or heat;
- fresh looking;
- without excess moisture;
- without foreign smell and taste.

**Liability for infringements**

Violations of the procedure for production, processing or placing on the market of agricultural products (according to Article 139 of the Code of Administrative Offenses of the Republic of Lithuania) are punishable by:

- natural persons - up to 140 euros in fines;
- managers of companies - up to 1,200 euros in fines.

***Specific marketing standards apply to:***

- strawberries;

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)





---

Co-funded by the Erasmus+ programme of the European Union

23

- citrus fruits;
- kiwifruit;
- pears;
- apples;
- sweet peppers;
- peaches and nectarines;
- tomatoes;
- salad;
- grapes.

The specific marketing standards are set out in European Commission Regulation (EU) No In Part B of Annex I to Regulation (EU) No 543/2011. The Common Marketing Standard for fruit and vegetables not mentioned shall be as set out in Regulation (EU) No 182/2011 of the European Commission. In Part A of Annex I to Regulation (EU) No 543/2011. In addition, national potato quality requirements apply in Lithuania.



## Short Supply Chain

**In Italy, short supply chains becoming dominant in the fresh fruit and vegetables logistics.** Short supply chains typically serve a local area, reducing the energy costs, transportation costs, and CO2 emissions used to transport goods in longer supply chains. Because of this, these supply chains have a greater potential to be made sustainable and to remain sustainable over the long term.

Short supply chains in Italy have the wind in their sales. In contrast to the current decline in overall sales witnessed by foodstuffs, there has been a marked increase in the direct sales of fruit and vegetables in the recent years. Launched in 2009 by Coldiretti, the “Campagna Amica” network attracted millions of Italian customers who, in looking to be environmentally-friendly and looking for quality products, chose to shop with local producers. Significantly, the Italian peninsula is the leading producer of organic fruit and vegetables in Europe.

The markets and direct sales outlets of “Campagna Amica”, which are open to some 25,000 local producers and farmers, generates a turnover of around €320 million a year. More than half

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

of these markets (out of close to one thousand in total) are to be found in the north of Italy, with the Piedmont region having the highest concentration. “Campagna Amica” has established itself as the most important direct sales network for agricultural produce in Europe according to Coldiretti.

This enthusiasm for short supply chains and local produce can also be seen in initiatives such as that of the Piedmont-based group T18 (which is the leader in distribution of fresh fruit and vegetables uniting 600 producers of different Italian regions). With a presence at every stage of the fruit and vegetables supply chain, from production and processing through to logistics and distribution, the group has signed an agreement with the hypermarket canteen in Turin to set up a direct sales stand within the store selling its regional fruits and vegetables.

Another initiative is the agreement signed between the Nord Conad distribution network (130 distribution points in Piedmont, Liguria and the Aosta Valley) and the Piedmont-based cooperative Ortofruit Italia (500 local Piedmont growers producing 20,000 tons of fruit and vegetables per year), to sell fruit and vegetables “born and bred in Piedmont” via short supply chains.

Although short supply chains may aim to reduce the number of intermediaries and enable producers to receive a fair income whilst at the same time offering consumers lower prices for quality produce, they do not remove all the logistics needs, they modify them. Thus, within urban centres, direct sales are often made through online orders either by individuals or, more often, by organised groups of individual buyers.

### **Changes in fresh food and vegetable logistic trends due to Covid-19**

What has Covid-19 done to the fresh produce business? As the world continues to fight the virus and uses everything at its disposal to bring the pandemic under control, the fresh produce business is also adapting to a new reality, as well as coming to terms with the longer-term impacts of this unprecedented global crisis. There is no doubt that consumers in many markets are showing more interest in healthy food, for example. There is also no question that online retail has become a far bigger part of the market. Sustainability, both social and environmental, is being talked about more than ever before. And supply chains are coming under greater pressure as a result of the economic downturn and the increased cost of growing fruit and vegetables, harvesting those products, and delivering them safely and securely to market. The most important characteristic was to adapt, not just to endure. For so many in the business, in fact, a capacity to adjust according to market demand was always assumed, a thread already woven into the very

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)





# Erasmus+



**AGROPLUS**

---

Co-funded by the Erasmus+ programme of the European Union

25

fabric of most fresh produce companies. Those organisations already had to contend with the unpredictable nature of fluctuating demand for products that are highly perishable. So although Covid-19 was a new kind of challenge, and different to previous problems like trade embargoes or food safety crises, all the same it was just one more thing that required a determined and resolute response. Not the kind of crisis anyone expected, of course, but also not a situation that undermined the basic need to deliver food to market. Italian fruit and vegetable suppliers are doing a great job of making the right changes to keep up with those new trends.

The pandemic's impact on fresh produce supply has unquestionably been widespread, even if some in the industry have been able to continue trading almost as they did before. Supply chains appear to have emerged stronger from the pandemic, mainly because they have been able to meet growing demand from supermarkets and deliver products into their rapidly expanding physical and online ways.

There were no big changes in agricultural production in Italy, but surely the control of the processing and logistics chain has been critical. Moreover, a clear long-term market strategy has been crucial to have some solid ground during the crisis. Numerous spot sales had problems as consumers referred to supermarket, which are bigger, chains. Still numerous consumers preferred fruits and vegetables of quality because organic food and farming can provide the resilience that will keep future pandemic outbreaks under control.

During the pandemic, a dramatic reduction in the number of refrigerated containers available worldwide, plus an overall increase in the number of strict administrative rules. Yet despite those additional challenges, the earning potential of that business seems to have remained remarkably strong through the pandemic. Italian logistic companies presume that it will be crucial to sustain greater consumer demand for healthy food including fruit and vegetables as people started to realise the importance of fresh produce. Though huge reduction of airfreight capacity to export our products that normally travel by air, due to a reduction of airplanes and at the beginning of the pandemic, orders could not reach their final destinations and consumers on time, Italian logistic companies have adapted to new situation with the help of technology assisting to get more sustainable and more traceable supply chains likely to be at a clear advantage in the new postpandemic global market.

After analyses of logistics and fresh fruit and vegetable market after pandemic's five major long-term trends emerging from the Covid-19 crisis in Italy. Firstly, a growing interest in the concept of healthy eating of consumers, fruits and vegetables in particular. Second, professional

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



Co-funded by the Erasmus+ programme of the European Union

improvements across every link in the supply chain, from the field, through harvesting and packing, due to the greater demands placed on worker safety. After that, a greater awareness among consumers of the value of local production, followed by greater consolidation within the fresh produce sector. Then, finally, a hugely encouraging sign of the industry’s rejuvenated status in agricultural sector, that means more attention and more investments.

### (3)

#### Size and structure of food logistics, costs, methods of reducing losses in supplies on an example Poland, Lithuania and Italy.



#### List of perishable goods in Lithuania

Director General of the Customs Department under the Ministry of Finance of the Republic of Lithuania in 2004 May 17 by order no. 1B-517 (wording of Order No. 1B-680 of 4 September 2012 of the Director General of the Customs Department under the Ministry of Finance of the Republic of Lithuania) (extract from the common list for fruit and vegetables).

No.	Product code*	Product description
28.	0702 00 00	Tomatoes, fresh or chilled
29.	0705	Lettuce ( <i>Lactuca sativa</i> ) and chicory ( <i>Cichorium spp.</i> ), fresh or chilled
30.	0707 00	Cucumbers and gherkins, fresh or chilled
31.	0709	Other vegetables, fresh or chilled
32.	ex 0803	Bananas, including plantains, fresh
33.	ex 0804	Dates, figs, pineapples, avocados, guavas, mangoes and mangosteens, fresh
34.	ex 0806	Grapes, fresh
35.	0808	Apples, pears and quinces, fresh
36.	0809	Apricots, cherries, peaches (including nectarines), plums and sloes, fresh
37.	0810	Other fruit, fresh

#### „AGROPLUS” (2020-1-PL01-KA202-081540)

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



Erasmus+



AGROPLUS

---

Co-funded by the Erasmus+ programme of the European Union

27

\* Commodity codes are given in accordance with the version of the Combined Nomenclature of the European Community approved in 2011. September 27 Commission Regulation (EU) No Amending Council Regulation (EEC) No 1006/2011 Annex I to Regulation (EEC) No 2658/87 on the tariff and statistical nomenclature and on the Common Customs Tariff (OJ 2011 L 282, p. 1).

\*\* The list of perishable goods is based on the 1970 September 1 United Nations Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP) (Official Gazette, 2011, No. 104-4870). NOTE. The load of a vehicle is considered to be perishable if the goods specified in this list make up at least 30 per cent of the weight of the load of the vehicle.

### **Methodology for verifying the conformity of fresh fruit and vegetables placed on the market with the marketing standards**

In order to ensure the quality of fresh fruits and vegetables supplied to the market, the Order of the Director of the State Crop Service of the Republic of Lithuania under the Ministry of Agriculture and the Director of the State Food and Veterinary Service approved the methodology for checking compliance with marketing standards. The objectives of this methodology are:

- to establish the procedure for registration, deregistration and exchange of information on traders of fresh fruit and vegetables (hereinafter - traders) in the database of the Information System for Control of Compliance with Marketing Standards of Fresh Fruit and Vegetables (hereinafter - IS "Vaiskoris");
- to establish the procedure for the performance of inspections of the conformity of fresh fruit and vegetables to the Republic of Lithuania and the European Union from non-European Union countries with the marketing standards (hereinafter - compliance inspections);
- to establish the procedure for the performance of conformity checks of fresh fruit and vegetables transported in the Republic of Lithuania on the road;
- to establish the procedure for the performance of conformity inspections of fresh fruit and vegetables supplied to the market of the Republic of Lithuania;
- to establish the procedure for the performance of conformity inspections of fresh fruit and vegetables exported from the Republic of Lithuania to non-European Union countries.

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union



## Requirements for transport documents for organic products

According to Article 38 of the Road Transport Code of the Republic of Lithuania. Item 1, "A carrier who carries goods belonging to him in his own vehicles and on his own account must have a bill of lading or other document proving that he is carrying goods belonging to him."

According to Article 38 of the Road Transport Code of the Republic of Lithuania. Item 2: "If a consignment note is issued for the goods carried, it must indicate:

- place and date of the consignment note;
- name and address of the carrier;
- name of the cargo;
- weight or quantity of cargo;
- place of loading;
- place of unloading of cargo;
- vehicle make and registration number;
- the signature and the stamp of the carrier, where the obligation to have a stamp is laid down in the carrier's memorandum and articles of association;
- for the transport of dangerous goods, its class and assigned number;
- the serial number and number of the consignment note or only the number enabling the consignment note to be identified."

In the compulsory consignment note, the certification body shall, in accordance with Commission Regulation (EC) No 889/2008 requires:

1. The transport of non-prepacked organic products for sale (at a fair, market, to the processor) must be accompanied by a consignment note or other document (eg invoice, sales contract, etc.) which can be indisputably linked to the vehicle and which must indicate:
  - name and address of the economic operator;

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

- the name of the product accompanied by an indication of the organic production method;
  - name and / or code number of the certification body (LT-EKO-001);
  - where applicable, a batch identification mark which allows the batch to be linked to accounting.
2. The transport of prepacked organic products for sale (at a fair, market, processor) must be accompanied by a consignment note or other document which can be indisputably linked to the product's packaging, containers or means of transport and which must indicate:
- name and address of the economic operator;
  - the name of the product accompanied by an indication of the organic production method.

In accordance with Commission Regulation (EC) No Article 31 of Regulation (EC) No 889/2008:

1. Operators shall ensure that organic products are transported to other units, including wholesalers and retailers, only in appropriate packaging, containers or vehicles sealed in such a way that their contents cannot be altered without tampering or without breaking the seal and with a label stating, without prejudice to any other indications required by law:
- the name and address of the economic operator and, if different, of the owner or seller of the product;
  - the name of the product or a description of the compound feedingstuff accompanied by an indication of the organic production method;
  - name and / or code number of the control body or authority that certified the operator; and
  - where applicable, a batch identification mark in accordance with a marking system approved at national level or agreed with the inspection body or authority which allows the batch to be linked to the records referred to in Article 66.

The information referred to in points (a) to (d) of the first subparagraph may also be provided in an accompanying document, provided that this document can be indisputably linked to the packaging, container or means of transport of the product. This accompanying document shall include information on the supplier and / or carrier.

2. Packages, containers or vehicles need not be closed if:
- are transported from one operator directly to another and are both subject to an ecological control system, and

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

- the accompanying product document contains the information required under paragraph 1, and
- both the consigning and the receiving operator shall keep documented records of such transport operations available to the control body or control authority.

According to the Description of the Procedure for the Labeling of Organic Agricultural and Food Products and the Use of the Label of Organic Agricultural and Food Products, approved by the Order of the Minister of Agriculture no. 3D-2, point 6: "The labeling of products with the organic product label is not mandatory for those operators who, when placing organic products on the market, have a farmer's farm registration certificate or agricultural management or use approval documents, the organic farm certificate and organic products themselves".



PERFECT PROJECT

Types of logistics costs - for the purposes of strategic management we distinguish the analysis of service of individual market segments:

- costs of transport and forwarding service of cargo movement,
- costs of warehouse maintenance and service,
- inventory maintenance costs,
- costs of unavailability - stock depletion and other costs of inefficient service,
- administrative costs

Logistics costs are a detailed category of costs denoting the monetary representation of the consumption of the company's property substance caused by planning, execution and control of non-technological processes of movement in time and space of all forms of materials.

Logistics costs can be divided into:

- direct costs (transport, warehouses, inventories, manipulations, communications and indirect costs),
- fixed and variable costs,
- procurement, production and distribution costs,
- tangible and intangible costs,
- costs of logistical development and recommended projects,
- strictly logistical costs,

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)





---

Co-funded by the Erasmus+ programme of the European Union

1. Logistics costs in the production phase - are determined by internal factors of the company resulting from the production processes in accordance with the production schedule. They concern production enterprises, as there is no production phase in a trading enterprise. The costs of this phase are influenced by transport services for production:
  - operations related to the manipulation of materials,
  - warehouse processes,
  - data synchronization,
  - inventory control,
  - changes in production plans.
2. Logistics costs in the distribution phase - covers the entire cost of the physical flow of materials from the producer to the customer. Their height is influenced by factors such as:
  - stock maintenance,
  - information processes,
  - completion and preparation of cargo for shipment,
  - handling of goods,
  - coordination of activities within the logistics system.
3. Transport costs depend on the size of the technical infrastructure and they are shaped by:
  - depreciation costs of fixed assets involved in transport processes,
  - freight planning costs,
  - ancillary services (customs clearance, insurance),
  - transport management,
  - employee wages.
4. Inventory costs result from the need to collect and maintain inventory in the enterprise. This is often the result of the implementation of assumed logistic processes aimed at ensuring the continuity of production. Therefore, these costs arise in all warehouses in every phase of the material flow. Their size is influenced by:
  - inventory costs,
  - inventory maintenance costs,
  - costs while stocks last.
5. Costs of information processes - related to the handling of all logistic processes in a given company. They are often invisible, and have a huge impact on the correct performance of tasks. We include among them:

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

- depreciation of IT hardware and software,
  - costs of consumption of materials and energy used in information processes,
  - labor costs with overheads,
  - costs of external services.
6. Material costs include:
- depreciation of fixed assets,
  - consumption of raw materials, materials, packaging, spare parts and perishables,
  - consumption of energy supplied from outside,
  - external services (transport, repair),
  - expertise,
  - teleinformation fees.
7. Intangible costs include:
- labor costs,
  - intangible services (employee education),
  - costs of engaged foreign capital,
  - taxes, rent, lease
8. Variable costs - these are those that change as a result of the conducted activity. The level of these costs depends on:
- material structure of the product,
  - complexity of the production plan,
  - prices of raw materials for production,
  - operating and transport costs.

When speaking of ways of reducing losses in supply of fresh fruit and vegetables, we need to specify what kind of losses in the supply may occur. We'll write here about road transportation, but this is quite similar to any branch of transport.

The basic losses may include:

- damage of the goods,
- damage of the packagings,
- spoilage of the goods,
- significant delay in delivery of goods affecting the supplier's image.

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)





---

Co-funded by the Erasmus+ programme of the European Union

33

Damage of goods or packagings occur in situations when:

- goods are not packed properly by the sender,
- ways of loading or securing goods is not proper

As a result of the above errors, during road transport, pallets with transported products may shift or tip over. This results in damage to packagings, pallets or goods on pallets.

Fresh goods spoilage occurs when the refrigeration conditions required by the sender / recipient of the goods are not maintained. As a result, goods such as fruit and vegetables are exposed to mold, overcooling, spoilage etc.

In the event of a significant delay in delivery, the value of the product or production capacity may be lost. Vegetables and fruit are perishable commodities, and as we all know, they all have a short shelf life. As a result of the delay in the delivery of the goods, the buyer incurs losses in the form of stoppage of the production line, delays in the distribution of goods, or the use-by date is shorter than the recipient requires, which is some way a loss not only for the buyer but the final customer as well.

### **How losses in the supply can be prevented?**

The basis for preventing the above-mentioned losses in supplies is, above all, the transfer of information and access to it. It is one of the most important elements of the transport process. When the supplier has all the requirements specified, namely all information on the terms of delivery of the purchased goods, he should immediately send it to the sender / shipper of the goods. Then, the sender of the goods is obliged to provide loading and delivery instructions to the transport company that transports the goods. As a final point, the driver should also have such information. Such process of transferring information and verifying that everything has been completed and checked helps in the correct reception and delivery of products to their destination.

A large role in the flow of information have integrated management systems such as:

- applications installed on drivers' phones to transmit information,
- transport mapping,
- equipping drivers with tablets synchronized with the operating system of the transport company.

These systems allow you to speed up the information process between all parts of the transport process from collection to delivery.

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

34

A driver equipped with a tablet, integrated with the company's transport system, receives all necessary instructions on how to load the goods, number of pallets, its weight, required transport temperature, and how to handle the goods before and during loading, which security measures he should take etc.. Then he takes pictures of the loaded goods, the results of temperature measurements or any other documents he receives. All information appears in his company's system immediately. This way, the forwarder carrying out a given transport can assess whether the driver has completed all pickup procedures and send this information to the client and everything is OK.

Of course, even when all conditions are fulfilled, there may also be irregularities related to the compliance with transport conditions. Always something may happen by an accident, however good transfer of information can largely prevent the frequency of losses incurred during any transport, especially the refrigerated transports of fruit and vegetables.

Summing up, the smooth transfer of information leads to the minimization of the risk of losses, and the combination of early response to it allows to maintain the quality of deliveries and eliminate situations that cause losses.

#### (4)

### Pro-ecological trends in logistics and food transport in agri-food sector on an example companies from Poland and Italy.



#### Green Logistics/Sustainable Logistics

Green Logistics, which can be used as a synonym for Sustainable Logistics, is a process dedicated to minimizing the impact of logistics operations on the environment. These operations include the transport phase, but also those of procurement, inventory management, warehousing, and order fulfillment. The sustainability and profitability of fresh produce supply chains are contingent upon several risk factors. Sustainable logistics is also to avoid a loss of fresh fruit and vegetables during the transportation. As fresh products are perishable, their transit time must be strictly controlled. The transportation of fresh produce demands cold chain logistics with high

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



Erasmus+



AGROPLUS

---

Co-funded by the Erasmus+ programme of the European Union

35

requirements. Bad fresh-keeping management and bad technology use cause produce loss, generating waste in transit, and creating challenges to realize sustainable development goals.

A perfect example of the logistic company is Trans Isole. We can analyse this company as the case study. Sustainable logistics plays an important role in improving sustainability for a company. For the company the concept of "sustainable logistics" includes a series of technologies, procedures and activities that aim to reduce the environmental impact of the various links in the logistics chain, without penalizing the quality of the service and economic profitability. In this sense, Trans Isole - which is already born from an idea of transversal service focused on the search for alternative roads through the intermodal that guarantee the continuity of flows and the movement of goods with the utmost respect for environmental sustainability, but also with attention to cost reduction - is converting its operating logic from the type of container transport to "trivialization". In fact, the use of traditional containers is slow and inflexible and for this reason Trans Isole is increasingly moving towards trailers. Goods, of whatever type they are, thus move by ship, no longer inside containers but on semi-trailers, which guarantee more certain and contained costs, greater safety for the transported product and flexibility in loading and unloading operations.

It is well known that road transport services contribute to compromising the quality of the environment. Precisely for this reason, in addition to the company's growth and development objectives, every time the managers of Trans Isole make investment decisions, they try to pursue the goal of a low impact on the environment and its resources. Thus, the Company keeps its fleet of machines and its systems constantly updated on the technical level, to minimize harmful emissions and the level of noise pollution, and favors the choice of a type of intermodal maritime transport over the exclusive road one. to reduce CO2 emissions into the environment.

Trans Isole has great consideration for the recovery of water, a resource that is increasingly scarce in our area, by integrating a system for the recovery and reuse of water resources. The water resource system has been carefully planned and designed in relation to the company and the washing activity, in order to have the degree of elasticity commensurate with the demands, even immediate, of water. This system is based on a process of decantation, purification with an activated sludge system and filtration, intended for the treatment of industrial wastewater, more specifically for the purification of wastewater with low organic load (such as those deriving from car washes).

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



Erasmus+



AGROPLUS

---

Co-funded by the Erasmus+ programme of the European Union

The company has also installed the solar batteries on the roofs of its warehouses, so it could use alternative energy resource at its daily activities.

36

### Digitalized Logistics

Risk identification and evaluation during transportation aim to identify potential risks and take appropriate measures to avoid or minimize food losses. For this reason numerous Italian logistic companies refer to technologies which help in this area. Italian logistic companies have noticed that adopting advanced technology (e.g., advanced precooling facility, air-wet packaging, intelligent temperature control equipment, and modified atmosphere packaging, etc.) or management measures (e.g., scenario analysis based on IoT) can reduce produce (and, therefore, monetary) losses in each link of the supply chain and help to realize the sustainable development of the fresh food supply chain. The support vector machine as an artificial intelligence learning method is used to assess and predict risks on credit scoring, healthcare, and network security assessment. As it has been demonstrated to be more accurate than traditional methods in developing big data and cloud computing, a support vector machine (SVM) algorithm was used to evaluate the green logistics risk.

Agro Grisser srl another logistic company transporting strawberries could be taken in consideration for the case study. The company had to emulate the situations of a strawberry transportation firm which may not be aware of the potential risk threats such as preservation technology and unexpected disruptions of transport. The increasing demand for fresh food brought opportunities and challenges to the fresh logistics company. Owing to the lack of advanced cold chain equipment, skilled employee, and experienced managers, the freshness of strawberries transported by the company cannot meet the requirements of consumers. To deal with this problem, firstly, the company invested in new technologies, such as 5G, big data, cloud computing, and the IoT, etc. Meanwhile, the introduction of equipment and professional staff is also necessary, such as advanced fresh-keeping equipment and skilled staff who can operate new equipment, as well as managers who are proficient in fresh food supply chain management. So the company little by little has invested in these resources which with the time have shown their benefits. At the same time, there are still some problems to be solved, such as unstable equipment operation, uncertainty traffic accidents, bad weather, and incomplete emergency plans, etc. We built a fresh food logistics risk assessment model, which aims to provide a theoretical basis and management method for managers to monitor food quality during transportation. Meanwhile, consumers can also obtain detailed data about fresh food when they buy it, to improve consumer satisfaction. The proposed methodology was then applied to a strawberry supply chain as a simulation and numerical analysis to evaluate the risks incurred during transportation. Although

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



Erasmus+



AGROPLUS

---

Co-funded by the Erasmus+ programme of the European Union

37

strawberries are preserved optimally from 0 to +4 °C, the company has adopted cold chain technologies and still transport strawberries and other fruits at room temperature; thus, the temperature range was set from 0 to +22 °C. The precooling time is determined by the advanced degree of equipment, but advanced machines lead to high costs. So the company has invested in the machine which guaranteed not so quick precooling as logistics enterprises have different optimal decisions to purchase precooling equipment depending on the size and economy of the business, so the precooling time varied from 0.2 to 2.55 h relying on the efficiency of equipment. The temperature uniformity of the transporting van body also has a significant effect on the quality of fruits and vegetables: a lower vibration frequency and acceleration indicate a more stable vehicle and thus less damage to the produce. The vibration frequency and acceleration of the truck during the transportation range respectively to guarantee a good quality of the fruit. Resistant to carbon dioxide, strawberries can be kept fresh in an environment with a concentration of up to 20% carbon dioxide. As such, high carbon dioxide and low oxygen levels are always adopted by the company during air conditioning while keeping and transporting.

**To sum up, the technologies help a lot in assessing the transportation risks of fresh products and to guarantee the quality for the consumers.**



PERFECT PROJECT

Trucks, ferries, airplanes - broadly understood transport began to be mass produced, developing countless alternative technologies and at the same time driving the economy. Within a few hundred years, man has increased the average travel speed several dozen times. Unfortunately, without looking at the consequences of using fossil fuels and the devastation of the natural environment. Only at the beginning of the twenty-first century, the European Union became interested in the so-called climate policy and the global "fashion" to reduce emissions of pollutants thrown into the atmosphere or the hydrosphere has begun. Controversial climate packages, BAT conclusions and colorful energy certificates have started to draw sleep from energy industry people, industrialists and oil tycoons. Increasingly restrictive sanctions related to non-compliance with international agreements to reduce greenhouse gas emissions not only accelerate the development of low-carbon production and transport solutions, but also contribute to the EU budget and entities responsible for introducing new "green" technologies.

Why is it worth reducing CO<sub>2</sub> emissions? The greenhouse effect takes place and the concentration of carbon dioxide in the atmosphere is closely correlated with changes in the annual average temperature. Moreover, other gases and toxic dust in the air, especially in large cities,

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



# Erasmus+



AGROPLUS

---

Co-funded by the Erasmus+ programme of the European Union

38

contribute to the increased incidence of lung cancer, cardiovascular disease and periods of general bad mood in people. It is necessary to consider how we can limit the negative human impact on the condition of the Earth's biosphere. Efficiently planned transport means less CO<sub>2</sub> in the air. The first aspect to improve - the least resource consuming - is logistically efficient travel planning. **The creation of a global system managing the exchange of goods on the way between different carriers and between different rolling stocks would have a beneficial effect on reducing unnecessary overlapping courses - which directly affects the environmental pollution.** The solution here is to create a public, European internet platform, connected to a satellite navigation system, associating groups of carriers, suppliers and drivers of trucks, passenger cars, trains - that is, all means of transport used to transport goods from one place to another. The concept would be to manage the time and route of delivery in the most optimal way, taking into consideration not only the customer's requirements for the quality of the service, but most of all the condition of the used vehicle, the type of fuel that supplies it, the working time of a single driver, traffic restrictions, etc. When a customer orders a given product from a courier, the shipping company would register the operation in the portal, and the computerized system would search the database for routes currently supported by all carriers and select the most optimal one, taking into account all relevant parameters. However, there is a lack of interconnection between other companies, which is blocking progress. This solution would revolutionize the way the supply chain works and contribute to reducing environmental pollution by eliminating the unnecessary use of too many motor vehicles in road traffic.

Another category where improvements can be made is the transport fleet. Its modernization is associated with high financial outlays, but large international concerns are able to spend more funds on such a goal that will pay off after some time, as the use of new technologies drives economic development. The older the car, the more you have to pay for it - ecological standards introduced by the EU make the rate for a public road section dependent on the amount of exhaust fumes emitted by a given type of vehicle. Newer cars are more expensive because they have to comply with legal emission standards and therefore consist of valuable components such as platinum catalysts and better engineered engines. Road transport releases 30% of pollutants into the atmosphere, which mainly consists of nitrogen oxides causing allergic diseases and asthma, as well as carbon monoxide that can inhibit the work of the circulatory and respiratory systems and, consequently, lead to death. Ecologists say that cars emit up to 15 million different compounds called pollutants. In conclusion, we will either pay more for the ride or for a new car. Who benefits from it? Certainly not the carrier. After all, exhaust gas is directly related to combustion - the composition of which contains many chemicals undesirable by ecologists. Additionally, it would be possible to implement a technology that uses the pressure of passing

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)





---

Co-funded by the Erasmus+ programme of the European Union

39

vehicles on the road to generate energy, using piezoelectric materials that produce electric charge carriers under tension. Conceptual work is ongoing and the effects would be of the same type as for PV panels. As we can see, the links between ecology, energy and road transport in the coming decades may become stronger than ever and contribute to increasing energy security, reducing the level of pollution in the atmosphere and increasing public awareness of environmental issues.

The last, but the most promising proposal to solve the current situation in road transport, is the use of alternative fuels. The automotive industry is currently focusing on combining the benefits of using classic diesel engines alternating with electric motors, but the eyes should also be focused on fuels such as hydrogen, which can be used for direct combustion (which is, however, ineffective), and for direct production electricity in a fuel cell that can power an electric motor. If a road transport management system could be combined with hydrogen powered vehicles, could be created a traffic program where the cars would run back and forth on specific routes between hydrogen charging stations and during that time they could transport both people and shipments. It is the cleanest and most cost-effective solution due to the lack of consumption of fuels producing harmful compounds in the combustion process and the use of vehicle traffic optimization.

In summary, the transport industry is facing important decisions. In order to reduce the emission of pollutants to the biosphere, each road user should limit the use of fuel-powered vehicles and modernize those they use. Entrepreneurs and large corporations can support the development of new technologies developed by scientists, using renewable energy sources and fuel cells to eliminate the harmful impact of transport on the environment. The future is at our fingertips, and success this time depends on everyone individually and together - we fight not only for our own comfort and health, but also for a clean environment and the development of technology for future generations. **As an old Indian proverb says: "We do not inherit the Earth from our ancestors. We only borrow it from our children."**

### References:

1. Mike Knowles. A fresh start? A special report about the long-term effects of the Covid 19 pandemic on the international fresh produce business.
2. Oliver Wyman. Fruit Logistica Trend Report: global megatrends are changing the fresh produce trade.
3. Oliver Wyman. Surprises in Store: Fruit Logistica Trend Report 2019
4. Article "Trasporti e Logistica ortofrutta in Italia. Lo scenario e la realtà presenti a Macfrut 2017.

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)



---

Co-funded by the Erasmus+ programme of the European Union

5. <https://www.myfruit.it/mytech/2017/04/trasporti-logistica-ortofrutta-italia-lo-scenario-le-realta-presenti-macfrut-2017.html>
6. <https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.265098?jfwid=-hobqcegun>
7. <http://www.vatzum.lt/uploads/documents/fitosanitarija/lankstinukai/svieziu vaisiu ir darzoviu kokybes reikalavimai 2017.pdf>
8. <https://vmvt.lt/maisto-sauga/maisto-produktai/negyvuninis-maistas/vaisiai-ir-darzoves/reikalavimai-svieziu-vaisiu-ir>
9. <http://vhost.asu.lt/nm/l-projektas/aug mp kokybe s/78.htm>
10. <http://www.linava.lt/greitai-gendanciu-prekiu-sarasas-lietuvoje/>
11. <https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.224568>
12. <http://www.vatzum.lt/uploads/documents/aruno vaisiai/proceduros su vmvt 2011.pdf>
13. <https://www.ekoagros.lt/ekologisku-produktu-gamybos-sertifikavimas>

---

**„AGROPLUS” (2020-1-PL01-KA202-081540)**

**Project Leader:** Perfect Project Sp. z o.o. (Poland)

**Project Partners:**

Vilniaus agroekologijos mokymo centras (Lithuania)

HumaCapiAct (Italy)

[www.perfect-project.eu](http://www.perfect-project.eu)  
[agroplus.project@gmail.com](mailto:agroplus.project@gmail.com)