



European Association of
Fruit and Vegetable Processors



Towards a Greener Europe: how preserved fruit and vegetables help to sustain our food supply




PROFEL'S ROADMAP TOWARDS THE EUROPEAN GREEN DEAL GOALS

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
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Introduction



The fruit and vegetable processing industry captures and preserves the natural richness of fruit and vegetables. It helps to minimize food waste through the timely processing of seasonal agricultural products, and it provides food security through storage and all-year-round delivery to consumers, even in times of crises, such as geopolitical uncertainty or pandemics. During the COVID-19 crisis, the sector demonstrated its resilience by providing European consumers with safe and nutritious foods throughout, and meeting a sharp increase in demand for healthy long shelf-life products.



Undeniably, climate change is having profound effects on our food systems. The recurring extreme weather patterns of recent years have resulted in crop failures from drought, floods, pests and diseases, all of which have resulted in increased raw material prices that pose an existential threat to businesses. Whilst the fruit and vegetable sector is heavily committed to meeting sustainability targets and reducing CO₂ emissions, it recognises its own underlying need to adapt to the effects of climate change. PROFEL businesses welcome the EU Green Deal and rely on its balanced implementation to ensure the continued prosperity of the fruit and vegetable processing sector.



The availability of high-quality raw material in sufficient quantities at reasonable cost is essential for the sector's integrated supply chains. Equipping farmers with a sufficiently robust and innovative agricultural toolkit is the only way of guaranteeing this. The application of science, with the further development of robotics, New Breeding Techniques (NBT), targeted use of Plant Protection Products (PPPs) and fertilizers, and a further push for the co-existence of organic and conventional farming, are the pillars upon which PROFEL believes that future policy should be built.



Introduction

PROFEL and its members support the ambitions of the European Green Deal, provided that these ambitions support the competitiveness of the industry's supply chain with a sense of realism and with full support for innovation. The industry calls for in-depth impact assessments to evaluate the effect of proposed changes on processors. Also, there needs to be coherence across policies and national borders, as our sector relies on imports and exports of raw materials and final products alike.

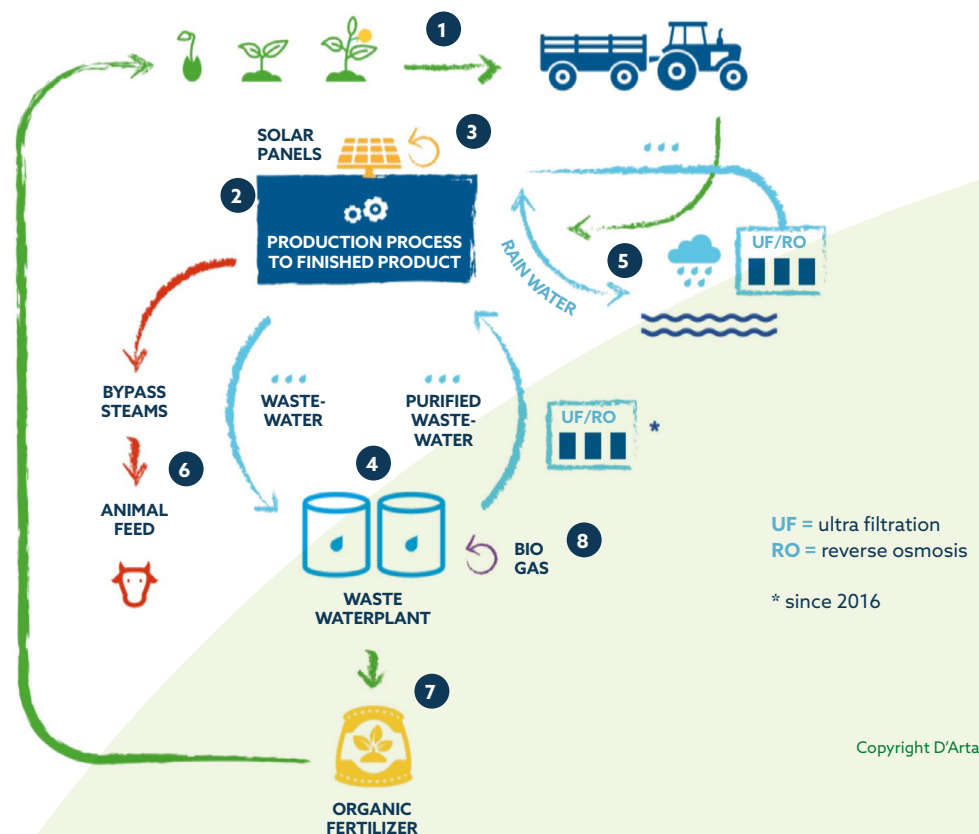
The future also holds many opportunities. **Changing eating habits and increasing awareness of consumers about their health and the environment can be catered for by our products in an ideal way.** More than any other food category, preserved fruit and vegetables are easy to prepare, as well as being of high nutritional value, and their long shelf-life also helps to reduce food waste. A new focus on plant-based diets could be an offshoot of the fruit and vegetable sector's contribution to the EU's Farm to Fork, Biodiversity, Health, and Circular Economy policies.

Looking at the food chain in its entirety, the processed fruit and vegetable sector is calling for the development of adequate and appropriate regulatory frameworks and realistic targets to ensure its continued ability to offer high quality and healthy products, accessible to all.



Introduction

Examples of how the production chain for fruit and vegetables can contribute to the EU Green Deal



1 Fruit and vegetables are harvested at the peak of ripeness and directly delivered to the factory.

2 The fruit and vegetables are washed in internally recycled water before being processed.

3 Solar panels generate renewable energy for the production process.

4 Wastewater is treated to be reused as water for washing, and even can be treated to bring it up to drinking water quality via ultra-filtration and reverse osmosis.

5 Rainwater is collected from the roofs and purified with an ultra-filtration and reversed osmosis unit, and reused in the production facility.

6 The bypass streams of production are 100% recycled as biogas or animal feed.

7 The residues from the wastewater plant are rich in phosphate, nitrogen and potassium, and are the perfect 'organic fertilizer' for fields or other crops.

8 The wastewater plant creates "biogas", which in turn generates energy for the wastewater plant.

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1 AGRICULTURE

How the processed fruit and vegetable sector contributes to the EU's goals on Farm to Fork and Biodiversity



1 AGRICULTURE

A sustainable agricultural toolkit which allows our farmers to provide sufficient, good quality raw materials

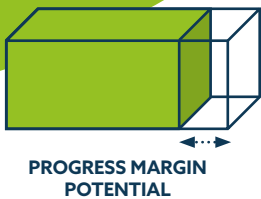
Strong links with the farming sector

The starting point for providing high quality preserved fruit and vegetables is high-quality raw materials, in sufficient quantities, at reasonable prices. Most raw material sourcing in the sector is based on **contract-farming**, which shows how tight the integration is of growers and processors.



To strengthen cooperation on technical subjects, PROFEL set up an **industry-farmers' working group** in 2016. The aim of the group is to create good coordination at European level for topics of concern to both farmers and the processing industry. Topics discussed include: minor use and crop protection challenges, biological alternatives for crop protection, management of toxic weeds, and smart weed applications/robotization. More recently, a subgroup was created to work on seed coatings.

1 AGRICULTURE



Goals set, and measures taken by the industry

For both the **Farm to Fork** and the **Biodiversity Strategies**, the European Commission is setting clear targets, especially with regard to reductions in the use of plant protection products (PPPs) and fertilizers. This is a process which PROFEL supports in general terms and has actively contributed to over the years. For years, companies have supported farming communities in deploying techniques that have a positive effect on biodiversity, such as precision agriculture. Also, farmers already apply Integrated Pest Management (IPM) techniques.

However, **plant protection products and fertilizers** cannot be omitted completely. Without recourse to these tools, yields and crop quality would be reduced substantially. This in turn would have devastating effects on the farming communities, the entire processing industry and, finally, also the consumer.

Thus, combatting the effects of climate change on the ground requires a balanced approach towards plant protection products and fertilizer use on the one hand, and the need to grow sufficient quantities of raw materials on the other:

- Most of the raw materials the industry processes are small acreage crops and the agricultural toolkit for these types of crops is already quite limited. Any regulatory activity with regard to PPPs must therefore be realistic and science-based. Quantitative targets may prove not to be the most efficient tool as they often are unachievable, perhaps even misleading. For example, PROFEL advocates the use of coated seeds to allow for a much more targeted use of PPPs. This limits their use, while still tackling target organisms but having no or little effect on non-target organisms.
- Using soil analysis, expert advice and precision farming, growers are able to use fertilizers in a sustainable way. An interesting technique is the use of coated fertilizer granules that release nutrients very slowly, thus preventing leaking into ground water. This is a R&D based innovation that is more effective than a simple across-the-board reduction of fertilizer use.



1 AGRICULTURE



Considerable investments with regard to **robotics** have generated very positive results, notably for weed control and automatic harvesting, as well as in digital farming. It is crucial for decision-makers to continue creating a framework that facilitates their use even further.

Strict legal interpretations prevent **New Breeding Techniques** from becoming mainstream in the EU. This must be remedied as soon as possible, as existing plant breeding techniques allow only minimal advances in drought resistance. Continued innovation will be key to meeting society's growing demand to further increase sustainability and respect for the environment.

Organic farming needs to be encouraged in order to meet society's growing demand for organic food. Conversion to organic has been fast in some cases (e.g. apples in France and citrus fruit in Italy). Support for innovation and technological progress should enhance the environmental benefit of conventional agriculture, making conventional and organic farming complementary to each other.



2 PROCESSING

**How the sector is reducing
its carbon footprint**



2 PROCESSING

Decoupling industrial activity from environmental impact

The EU has high expectations on further **reducing carbon emissions**, notably industrial ones.

Fruit and vegetable processors are continuously striving to improve their processes through energy savings, water reuse and optimised use of waste streams. Considerable investment into such circular economy projects continue to reduce the sector's **carbon footprint**. After all, becoming more sustainable by saving energy also saves money, so there is a **double dividend** for the environment and businesses. The same goes for food waste. Accurate recording and measuring are both essential for setting and achieving the ambitious goals that the sector has set for itself.

Let's look at some concrete data and examples that illustrate how this can be accomplished. To continue down the road of further reductions whilst delivering high-quality products, the industry needs a clear and realistic regulatory and financial framework that ensures fair competition.

Studies¹ show that the environmental footprint of plant-sourced foods tends to be substantially smaller than animal-sourced; especially in terms of land use, GHG emissions, and water use. A shift in dietary consumption toward predominantly plant-based diets is likely to reduce the global food system's emissions.

Goals set, and measures taken by the industry

Heat and cold preservation techniques like canning and freezing are energy-intense processes. The sector is continuously increasing its **energy efficiency**, and at the same time investing into renewable energy sources – notably solar panels, wind energy and biomass production.

1

(PDF) [Reducing food's environmental impacts through producers and consumers \(researchgate.net\)](#) & [Figures from Environmental impacts of food production - Our World in Data](#)

2 PROCESSING




More energy-efficient freezer tunnels

"Year after year, investments into new, more energy efficient technologies are being made at our freezing sites. This state-of-the-art freezing tunnel is capable of freezing the same volume of vegetables as the one it replaces but uses 10% less energy for cooling."



GOOD PRACTICES

More efficient processing solutions through investment in the latest technologies, warehousing, intermodal transport and logistics have allowed considerable reduction in energy use. For example:

-  Via new means of transportation, e.g. rail, overseas shipping, inland water transport, or a mixture of transportation modes, limiting the CO₂ emissions of our logistics;
-  Automation of various processes in our production chain;
-  Installing high-performance equipment, especially in cooling capacity and in lighting.

Energy efficiency: measures and projects

"We have been using five of our own combined heat and power plants (CHP) in our fruit processing sites since 2016, because compared to conventional ones, their efficiency is significantly higher. We already increased our own power generation from 62% (2016) to 66% (2019), and were able to save 3,500 t of CO₂ each year.

The generated heat is mainly used for hot water for cleaning production installations and stainless-steel transport container. Any excess heat is used to heat one of our buildings, and on production-free weekends to chill the cold storage facilities. In the future, the utilization capacity of our CHPs will be further improved."

GOOD PRACTICES

Reducing means also measuring and monitoring. Our sector has put specific measuring and monitoring systems in place to track energy consumption as well as water use. Production sites are regularly audited and many companies are working with specialists to actively address energy reduction and water consumption.

2 PROCESSING

Measuring and monitoring

"We are a European vegetable freezing company. At one of our sites we called in specialists to analyse our carbon emissions. The investigation revealed total emissions of 345 t of CO₂. This takes into account the site's scope I emissions (fossil fuel combustion of the site and the company vehicles -58%) and scope III emissions (home-work commute and waste processing).



This result is already a great achievement. Without the onsite BWE Biogas facility, emissions would have been more than four times higher. By producing our own green energy, we avoid the emission of 1.000 t of CO₂ per year. In addition, since the biogas facility converts onsite collected organic waste into energy, it also avoids the transportation of waste to external waste processing facilities, saving another 54 t of CO₂."

GOOD PRACTICES

Producing steam from peach pits



"Like all canneries, the peach canning sector depends on steam production for its processes. We set out to find innovative interventions in steam production processes so that by exploiting the biomass of peach pits, we could reduce operating costs and contribute to solid waste reduction. Thus, as the first in our sector, we proceeded to install a biomass combustion system from peach pits to produce steam.



The creation of peach pit biomass is done by a special treatment of cleaning the pit from the residues of peach flesh, in order to obtain the purest form of biomass with the greatest calorific force. The pits are driven directly from production in a pit concentration silo (storage department), from where they are fed on to conveyor belts to the biomass combustion complex for steam production.

The installation is environmentally friendly, with lower emissions of certain pollutants than conventional fuel (like fuel oil). It does not smoke, smell, contain toxic compounds or heavy metals, and creates the minimum amount of ash on the bottom, which is collected and disposed of in a licensed landfill."



GOOD PRACTICES

2 PROCESSING

Demands to policy makers

PROFEL acknowledges that the EU has set ambitious targets for further CO₂ reduction. Each and every food business operator in the sector is making significant efforts towards reducing our carbon footprint. A **level playing field** at the international level between the EU and third countries is equally important. The Covid-19 crisis has shown that food chain resilience is crucial, and also the necessity of keeping viable food production within the EU.

The **carbon border adjustment mechanism** could be crucial for the dried vegetable sector, which relies on a high-energy process. This mechanism must also take into account the high safety, social and environmental standards to which our operators work. EU importers should face the same requirements in order to ensure a level playing field.

The carbon border adjustment mechanism could be an important tool for energy-intensive sectors to ensure a fair level playing field between the EU and third-country producers. Drying vegetables is an energy intense process. Given the differences in ambition between the EU and some of our trading-partners to fight climate change, such a mechanism would contribute to the reduction of global emissions.

Finally, access to the **Just Transition Fund** will be vital to the sector's operators, employees and the farming communities we are so close to, in order to make further investment in our supply chain, and to go beyond excellence.

2 PROCESSING

Solar energy

"We are in the vegetable preserving business and are taking concrete measures to reduce our energy consumption. We started in 2020 with replacing the roofs to install solar panels, so that from 2022 we will have a solar power station with almost 7,000 solar panels operational. In total it covers a surface area of 20,000 m², with which we will meet approximately 35 percent of the total energy requirements of our factory, warehouses and office."




GOOD PRACTICES

Carbon neutral plant

"Since 2018, at one of our new production facilities, we have been processing peas grown by a local growers cooperative, grouping 40 farmers. All the power and heat to run the new facility is supplied by a Biogas company, which in turn collects all vegetable waste produced by the plant to convert it into renewable energy through anaerobic digestion. In this way, we are producing an even greener product with the lowest possible carbon footprint and with the greatest respect for nature."



GOOD PRACTICES



CONSUMPTION

**How preserving fruit
and vegetables positively
contributes to the EU's
Circular Economy and Healthy
Nutrition Policies**

3 CONSUMPTION

Preserved fruit and vegetables excel in retaining nutrients

Preserved fruit and vegetables make a valuable contribution to a **healthy diet**, with nutritional values comparable to those of fresh products.

As a source of vitamins, antioxidants, dietary fibre and phenolic compounds, they help to protect against a range of chronic diseases (e.g. cancer, heart disease and obesity)¹.

In addition, the availability of processed fruit and vegetable products, regardless of season or geography, facilitates healthy eating throughout the year.

A sustainable choice

Preserved fruit and vegetables are **seasonably harvested** and can be eaten throughout the year.

Furthermore, fruit and vegetable processors can often also make use of misshapen and over or undersized fruits and vegetables, thus maximizing a crop's potential to reach the consumer's plate.



The unwanted or inedible parts of the plant (e.g. cauliflower leaves, pods of peas or carrot tops) are separated during harvest and ploughed back into the field to increase soil organic matter. This improves soil health and avoids unnecessary transport. Other parts of the crop that are removed from the plant during processing are collected for animal feed, or to generate energy through bio-methanisation.

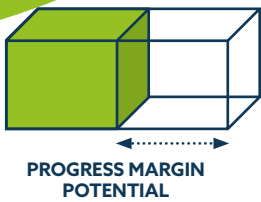
Preserved fruit and vegetables have a **longer shelf-life** than fresh products. This reduces losses from product deterioration or damage during transport. Handy portion sizes, ready-peeled and prepared, allow consumers to plan their meals effectively and reduce food waste.

¹

Bibliographical Study on Nutritional Benefits of Processed Fruit & Vegetables - PROFEL (profel-europe.eu), Gent University 2008; AFFI Foundation Study "Nutrient Profiles of frozen fruit and vegetables", 2013

3 CONSUMPTION

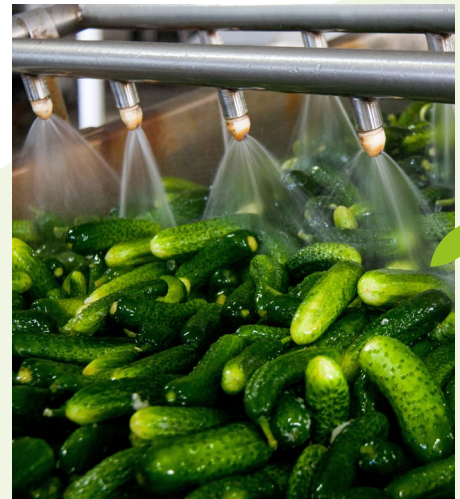
Water use and re-use



Preserving fruit and vegetables requires considerable use of water, notably for washing but also with respect to strict standards of hygiene. In order to reduce water consumption, substantial investments have been made in advanced **water treatment installations** (e.g. purification to drinking water quality). Water scarcity is a serious concern, and further investment into water collectors (rainwater, roof-top water) would allow companies to re-use substantial amounts of water for their plants.

Operators have also developed sophisticated techniques to measure exactly how much water is used in each process. **To measure is to know**, and this is the first step towards water re-use, or simply reducing, water usage. Knowing how precious water is and will be in future, these efforts will be continued to generate even more circularity.

Financial and regulatory support is necessary for projects to further reduce **water use** or allowing further water reuse; for example, techniques guaranteeing adequate water quality. Furthermore, our sector calls for a coherent legislative framework on water quality that allows firms to ensure the microbiological safety of water sanitation.

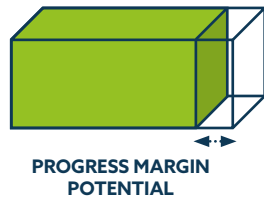


Unique irrigation project

"A cooperative has been set-up to treat waste water from the factory for irrigation purposes. The processed waste water will be stored in a 150,000m³ reservoir and distributed via 32km of underground pipelines across approximately 500ha of land. As well as enabling the waste water to be used more efficiently, the initiative will allow the farmers to respond to future droughts more effectively. An example of a win-win irrigation..."



3 CONSUMPTION



Key differentiators to achieve a reduction in food waste:

- Trimmings and unwanted parts are either: left on the field to deliver nutrients to the soil, go into animal feed, are returned to the field after composting, or are increasingly used to create energy through a biomethanisation plant
- Due to rapid processing after harvest, loss from product deterioration is minimal
- By the time products reach consumers' homes, all unusable parts have been removed
- Products have a long shelf-life, and are ready-peeled and cut
- They can be used as and when required, in easily managed portions, to further reduce food waste at home

Use of fruit and vegetable waste to produce energy and water

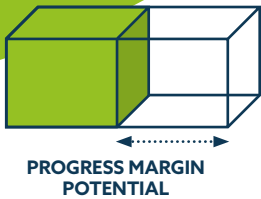
"Our company produces energy, CO₂ and clean water from offcuts and waste streams from the horticultural, food and beverages industry. We specialise in the fermentation of low dry matter biomass. Our production business uses state-of-the-art technology and is expertly run 24/7. We convert any biomass unsuitable for consumption into electricity, natural gas and pure CO₂ (in liquid form for greenhouse horticulture, the cleaning industry, and dry ice for cooling foodstuff). These products are all 100% green."



"We process up to 400 t of wet biomass per day. There are three main components in the production process: thermophilic fermentation, water purification and upgrading the produced biogas into high-quality finished goods."

3 CONSUMPTION

Sustainable packaging



Glass and metal are among the most widely used packaging materials used by the fruit and vegetable processing industry, and they have high recycling rates.

Whilst ensuring quality, food safety, freshness and shelf life of products, the sector is constantly reducing the environmental impact of packaging by:

- adapting packaging to prevent food waste (e.g. smaller portions, resealable packaging),
- using less or thinner packaging, without compromising its strength and protective capabilities,
- reducing the amount of materials we use in our packaging (e.g. replacing multilayer packaging with one recyclable layer)



PROFEL's ID card

PROFEL is the European Association of Fruit and Vegetable Processing Industries, representing over 500 companies in 11 European countries through national associations or direct company membership, producing approximately:



estimated equivalent of 380,000 t raw material

PROFEL's members employ over 80,000 people, and the sector's combined turnover amounts to roughly 22 billion.



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