



# INDUSTRIAL VS. TRADITIONAL FOOD

## Different ways to process food

In this lesson the idea is know the differences between industrial and tradicional food processing. It aims to valorize the traditional food process and know different ways in each continent.]

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# INDUSTRIAL VS. TRADITIONAL FOOD

## WHAT IS FOOD PROCESSING?

Food is essential for human survival and food process is a useful technic to long the shelf life of food products. Nowadays nearly all food is processed in some way because of its important benefits to reduce the food waste and increase the varied food supply. The goal of processed food is stop the growth of or destroy pathogens. Some conservation technics like refrigeration, dehydration, use salt or fermentation stop them, despite of heal process like pasteurizing or cooking kill them. However, food-processing techniques has sometimes improved and sometimes degraded the quality and nutrition of food. Therefore, certain aspects of food processing raise concerns over food safety, nutritional quality or environmental impact.

## CHARACTERISTICS OF FOOD PROCESSING

Food processing involves all the steps since plant the seeds until eat at home/restaurant the final meal. This means, agriculture, food transformation or conservation, food package and storage, food transport, cook and eat the food.

The first step, a preliminary phase, is characterized by the primary sector –agriculture, farming and fish. The farmer is responsible to prepare and maintain the land and water for growing the desired crops, seeding, fertilizing, applying pesticides, harvesting crops and storing them. As well as, the farmer also provide animals home protection, promote the animals health and safety to ensure they will gain weight, give birth produce milk or lay eggs to then milking and collecting eggs. Other actions in the phase are slaughtering livestock or catching and killing game or fish. Without forgetting that he/she also transport animals or crops, or sell them directly for human consumption or to be used as raw ingredients in food processing industry.

The first processing phase means cutting, cleaning, packaging and refrigeration of these raw foods make them practical to use for the consumer while preserving moisture content, and preventing microbes. The idea on this step is preserve the original test, smell, look and feel of food and preventing food spoilage. To do so, the packaging is essential.

Food package guarantee the food preservation and safety because maximize shelf life by acting as a barrier against water humidity, air, microbes and external odors'. As a barrier, it also preserve the product intact and its aroma. Carrying essential information on the label like the name of the product, ingredients, sell-by date and ways to conserve and consume them.



The secondary processing phase is all the methods to transform the food in ready eat meal or semi-ready eat meal. As for example, biscuits, canned or frozen vegetables, bread, cheese or convenience meats. The main methods of this food-processing phase are:

- **Heating.** It is a pasteurization technique of high contrast temperature. The food is heating to 72°C for 15 seconds to kill most foodborne pathogens and then quickly cooling to 5°C to in a post step refrigerate the product. However, the sterilization technique increase more significantly the shelf life of the product. This heating process consists in cooking the food at 120°C or more for a couple of seconds followed by rapid cooling. The advantages of this process is that kills most microbes and reduces the need for refrigeration as long as the package remains unopened.
- **Cooling.** This method consist in maintain food at controlled to low temperatures to keep enzymes and microbes inactive. To be effective, refrigeration and freezing in general must be between 4°C and -18°C constantly through transport, retail sale and storage at home.
- **Drying.** It pretends to reduce the food water content, which is the environment needed for microbes reproduction. Some food products where this technique is used are soups, pasta, meat, fish and cereals.
- **Smoking.** This method both dries the food and adds extra flavour.
- **Fermentation.** The micros produce alcohol or acid that act as preserving agents. This happens in the yogurt, cheese, beer or wine.

#### TRADITIONAL FOOD PROCESSING

As we are saying the food process is essential not only for the food conservation but also allows us to eat them without intoxicating ourselves. On the past, the product process was deeply influenced by the climate conditions, geography, available tools and technics. For it, each continent have one food process that characterize it. On the North Europe, stockfish had high popularity because during the months of February and June the weather wasn't too cold or too warm. This conditions had possible dried the fish in a natural way in the sun and wind. This technic is the oldest Norwegians and Vikings method of conservation, which the fish can be stored for several years.

The conservation technic consists in hangs the fish on the rack for almost 4 months. The dried fish is then matured for 2-3 months indoors in a dry and airy environment. During drying, 70 % of the water in the fish evaporates. The stockfish still has the nutritional content of the fresh fish, only more concentrated. The dried fish has low weight and volume and is easily transported to the markets.

In Latin America, the Inca ethnic dry the potatoes in a method called chuño. It was a way to preserve potatoes by exposing a frost-resistant potato variety to the very low night



temperatures of the Andean Altiplano, freezing them, and subsequently exposing them to the intense sunlight of the day. In North America tribes were the first ones to eat pemmican, a mixture of dried meat and tallow. It was widely adopted as a high-energy food by Arctic and Antarctic explorers as it is a concentrated mixture of fat and protein.

In Asia, in Mongolia are concretely, the aaruul is a traditional cheese make it outdoors. It is one of the oldest process method to make cheese.

The process to make aaruul is as follows. First the milk is poured into a pot. Boil it until thickened. Let it cool and drain it with cheesecloth. The cheesecloth is taken outside and pressed with stones. The next day, the aaruul is cut into thin strips and left to dehydrate again. After a few hours it is ready.

In West Africa the garri is produced by traditional food technics. It is made with fresh cassava root. The cassava skin has to be removed. Then, cut the root into smaller pieces. Rinse off the pieces multiple times with cool water until they're completely clean. The mill reduces the cassava root to a watery, pulpy mash. Store the pulp at room temperature so it ferments properly. Use baskets made of cane, bark, or palm branches. Give the pulp 24-48 hours to complete the fermentation process. Scoop the watery pulp into the porous bags and close up the ends. After a 1-2 days where the bags had been under heavy weights, press separates the powder and removes fibers and lumps. Transfer the powder to a shallow frying or cast iron pan and heat it up over high heat. Stir the powder constantly to prevent burning. Remove the pan from the heat once the powder is completely dry and brittle. This usually takes 20-30 minutes. Let the flour cool to room temperature after you fry it.

## **TRADITIONAL HOMEMADE OF FOOD PROSSESING BUTTER**

**Ingredients:** With 1 liter of cream at 35% fat, we obtain 360 grams of butter.

The necessary instruments to carry out the procedure are: 1 electric mixer, two containers (1 for the mixer and another with cold water and ice cubes), and a clean and sterilized cotton cloth that will be used to strain the whey and separate the fat part from the milk.

**Steps to make homemade butter:**

1) Put the cream in the glass of the mixer and start beating, slowly at first and progressively increasing the speed. In a few minutes, the first thing that will happen is that the cream will whip, but if we continue beating, about 15 minutes, the buttermilk will separate from the milk fat (the butter). At this point, they will be clearly differentiated (liquid and solid).



2) Once we have the butter separated, we start working with it. To do this, it is best to use a cotton cloth. Thus, we remove the butter from the mixer, which at this moment is soft, and we transfer it to the cotton cloth.

3) Drain the butter well to remove any liquid. We will take the butter, inside the cotton cloth, to the container with cold water and ice so that it solidifies.

### **PRESERVING TOMATOES IN OIL**

In preserving in oil, food does not change its organoleptic structure, nor the taste of food. Preserves in oil should be consumed within 3 months of the preparation of the preserve.

The oil to be used is extra virgin olive oil because it contains large amounts of fatty acids and thus prevent the passage of oxygen.

Foods suitable for preservation in oil: tomatoes, artichokes, mushrooms, peas, peppers, beans, tuna, mackerel, anchovies, salmon, eggplant, zucchini, onions, turnip greens, chilies, garlic.

1. Sterilize the glass jar. Leave them in boiling water for at least 30 minutes, then drain and dry them.

2. Cook the tomatoes. The tomatoes that will be placed in the jar must be cooked to remove any bacteria. This is not a long process, usually taking only a few minutes. To do this, you use mainly water, but you can also boil them in other liquids such as vinegar with more acidity.

3. Dry the tomatoes on a tea towel. This will help avoid too much liquid.

4. Place the tomatoes in the previously sterilized glass jar.

5. Cover the tomatoes with oil. The tomatoes should be completely covered with oil and that no air bubbles have formed.

6. Sterilize the jar again. Once the jar for preserving tomatoes in oil has been hermetically sealed, it is important to further sterilize the jar and perform pasteurization. This will also create a vacuum.

7. Conserve the tomatoes in oil in a cool, dry place away from heat sources. The tomatoes will keep for about 3 months.

### **STRAWBERRY JAM**

Ingredients: 5 cups of chopped strawberries and 3 cups of sugar.

Steps:

1. Mix the strawberries with the sugar in a bowl; allow them to macerate overnight.

2. The next day, boil the mixture for 40 minutes.

3. Turn off the flame and carefully pour immediately into airtight containers and boil for five minutes. Allow to cool.



## INDUSTRIAL FOOD PROCESSING

Demographic and social changes have also contributed to the food industry's evolution. The fast pace of modern lifestyles, the increase in single-person households, one-parent families and working women have lead to an increasing demand for convenient and enjoyable foods, in addition to their nutritional value. Nevertheless, while there is more awareness of the connection between food and health, there is less time available for cooking.

The food industry in Europe is totally different: three per cent of the population produces three-quarters of the region's food. The rest is imported from all over the world. The food processing industry strives to meet consumer expectations for food that is safe, unspoiled, nutritious, convenient, enjoyable, available in a wide variety and affordable.

Some benefits of the food industry in Europe, which explain its expansion in recent years, are:

- **Nutrition.** Processing techniques preserve natural nutrients or increase the nutritional value of some products such as vitamin-enriched cereals, breads and dairy products.
- **Convenience.** Food products that are convenient to prepare at home is an increasingly important function of the food processing industry. Products include complete meals for almost instant serving from freezer to microwave to table; frozen pizzas ready for the oven; special mixes for pastries and breads.
- **Variety.**
- **Affordability.** In the most developed countries in Europe where the widest variety of processed food is available, consumers spend between 12 to 20 per cent of household budgets on food and drink; in other European countries, food spending accounts for as much as 40 %.

Besides, the characteristics of the animal are the concentration process with larger livestock farms with a greater number of animals. Specialization in the food industry is concentrated on the issue of animals in the breeding of more productive breeds obtained through genetic improvement techniques, whose optimal performance goes through the consumption of a certain technological package that includes housing in adequate facilities for breeding and fattening, as well as a nutritional model based on the consumption of specific feeds. All this is what allows the genetic potential of these animal breeds to be expressed. Production in stabling conditions requires the supply of medicine cocktails to avoid health problems in the animals, derived from the overcrowded conditions in which they are raised.

A similar situation happens with industrial agriculture, where the selection of seeds and their optimization through chemical fertilizers or pesticides on the one hand favors agricultural productivity, but on the other hand degrades and pollutes the soil.



Furthermore, despite the spread of drip irrigation agriculture, there are problems with water management.

## IMPACT OF THE FOOD INDUSTRY

The high and quick development of food industry in Europe and around world had create positive and negative impacts in society, health or environment. In this sense, the food industry is under heavy criticism, a fact that reflects the sector's need to improve its sustainability, animal welfare, reduce intensive or transgenic agriculture, and ensure affordable and accessible nutritious food.

Some positive impacts of the food industry are that foods make it to the marketplace faster because of factory farming and the capacity to place a factory farm almost anywhere. It can improve arid soil with the use of additives and fertilizers to produce local cross as well. Even if the outdoor conditions are a struggle, the construction abilities can create acres of usable space indoors with irrigation and sunlight.

Some negative impacts are the significant greenhouse gas emissions in the factory farms. Nearly 13% of the total greenhouse emission each year. In addition the animals have their movements restricted, a situation that as we explained before, boost the use of medicaments, especially antibiotics. This create bacteria resistance. When humans eat animals with high levels of medicaments also the bacterium on our bodies create resistance. Nowadays the bacterium resistance is a world health problem. Soil is contaminated and degraded due to excessive use of chemical fertilizers and pesticides as well as the massive concentration of animals on factory farms.





PROPOSAL ACTIVITY
<p><b>TRADITIONAL VS. INDUSTRIAL FOOD PROCESSING</b></p> <p><b>OBJECTIVE:</b> Raise awareness on the different between traditional and industrial food processing to valorize the traditional processes.</p> <p><b>KEY WORDS:</b> food processing, traditional, industrial, conservation</p>
<p><b>Knowledge and ability to develop:</b></p> <ul style="list-style-type: none"> <li>- Know the importance of valorize the traditional food processing.</li> <li>- Design an alternative communication tool.</li> </ul> <p><b>Course content:</b></p> <ul style="list-style-type: none"> <li>- Design a fanzine</li> <li>- Design an advertisement to promote the traditional food processing.</li> </ul> <p><b>Learning activity and methodology:</b></p> <p><b>Activity 1: Fanzine about food processing</b></p> <p>The class will be divided in groups of 4 or 5 people. Each group will be design a physical fanzine to compare industrial and traditional food processing. The fanzine will have pictures and tell a story. The fanzine has to encourage the food industry towards sustainability or promote the traditional food processing. Then each group will present the fanzine to the class and discuss about it.</p> <p><b>Activity 2: Alternative advertisement</b></p> <p><b>Step 1:</b> Each group of 4 or 5 people will search and select a food advertisement promoted by a brand or food industry lobby.</p>



**Step 2:** Each group will design an alternative advertisement – video or photo- about the same or similar product –with more or less the same ingredients- with the same visual characteristics –colors, font type, dialogue, slogan etc.

**Step 3:** The results will be presented on class and discuss.

## AUTOEVALUATION

CHARACTERISTICS OF FOOD PROCESSING

▲ Cut and clean raw foods <input checked="" type="checkbox"/>	◆ Packaging raw foods <input checked="" type="checkbox"/>
● Heating <input checked="" type="checkbox"/>	■ Eat the food <input type="checkbox"/>

What traditional food is?

▲ Garri <input type="checkbox"/>	◆ Chuño <input type="checkbox"/>
● Aaruul <input checked="" type="checkbox"/>	■ Stockfish <input type="checkbox"/>

The use of medicaments is a possitive impact of industrial food processing

Find and insert media

or drop an image here to upload

True

False

Faster transport is an advantage of food process in industry sector

Find and insert media

or drop an image here to upload

True

False

The industrialization of the food system has led to greater access to food and to a greater availability of food in EU

Find and insert media

or drop an image here to upload

True

False



<https://repositorio.comillas.edu/xmlui/bitstream/handle/11531/47543/TFG-%20Lopez%20Martinez%20Jaime.pdf?sequence=1&isAllowed=y>

Marina Di Masso Tarditti. 2012. Redes alimentarias alternativas y soberanía alimentaria. Posibilidades para la transformación del sistema agroalimentario dominante. [http://www.socioeco.org/bdf\\_fiche-document-3623\\_es.html](http://www.socioeco.org/bdf_fiche-document-3623_es.html)

Meylin Gabriela Par Gramajo. 2017. Aplicación de los métodos de conservación de alimentos. Revista Ingeniería y Ciencia 2017 Vol. 1 <http://www.revistasguatemala.usac.edu.gt/index.php/riyc/article/view/1009>

#### OTHER LINKS

Lesson Plans about food system <https://www.foodspan.org/>