



COMPARISON RESEARCH  
**Organic versus  
Non-Organic Bakery**





## **CHAPTER 1**

### **What is organic and what is not organic?**

#### ROMANIA

The terms bio, eco and organic are actually equivalent. They mean one and the same thing and each manufacturer chooses one of these terms for the label of the product in question. The only difference is that it may depend on where you come from. The term BIO is used in countries like Germany, France or Italy. The term ORGANIC is used in English-speaking territories: USA, Canada, Great Britain. In Romania, the term was adopted as a standard: ECOLOGICAL.

A certified eco, bio or organic product comes from an organic farm where organic farming is practiced. This process involves conserving biodiversity and promoting biological balance. The use of insecticides, pesticides, antibiotics, growth hormones or accelerators, fertilizers and artificial fertilizers is not permitted. The cultivation of genetically modified organisms (GMOs) is not permitted. However, certain special certified organic substances may be used. Also, an organic food does not contain synthetic additives or solvents and is not sterilized by irradiation. It takes two years to move from a classical culture to an ecological one.

Any organic farm or crop shall be certified by an authorized and regulated certification body that complies with both European and national legislation. Frequent and rigorous checks take place and the whole process is recorded in detail. The certification process is annual. Organic Agriculture is the organic certification body belonging to the Romanian Ministry of Agriculture and Rural Development.

An ecological product has the EU logo on the label, the leaf with 12 stars on a green background or the AE logo (in Romania). The term eco, bio or organic, the code of the institution that carried out the control and the area of origin are also mentioned.



In Romania rural population still grow their own fruit and vegetables in their gardens and almost each family in the villages have their own chickens for eggs and meat, many people grow their own pigs and some even have cows, sheep and goats for milk and meat. They grow these animals, fruit and vegetables for their own use and try to produce organic products for their families, feeding their animals with also organically grown seeds, grass and cereals.

In this way population in Romanian villages are more consumers of organic food and use the following organic ingredients in the household:

- Eggs
- Milk
- Meat: beef, chicken, pork, mutton and goat meat
- Fruit like cherries, plums, apples, apricots, peaches (they grow very well on Romanian territory)
- Veggies like onion, garlic, potatoes, tomatoes, carrots, various species.

The products mentioned above are not certified as people use them only in their own household and only for their own use, but they still organic.

But this is the case in Romanian villages. In the towns and cities, Romanians do not use many organic ingredients or products as they are much expensive than the others. But such products can be found and bought from the supermarkets, bakeries and little local shops.

Producing organic ingredients and food is a very expensive process and most of the farmers and entrepreneurs cannot afford to do it. And as a consequence, most of the farms treat their crops with pesticides to make sure they get bigger profit, treat their farm animals with antibiotics and vitamins to make sure they do not lose them, and the animals will produce



more milk, eggs or meat. And this kind of farms are the biggest source of non-organic products and ingredients which turn on the Romanian market.

## ITALY

The trend to a market increasingly attentive to the search for the health aspects of food quality has increased in recent years the exponential growth of organic products all over the world.

Generally speaking, when we talk about organic production we mean a type of production based on environmental protection, animal welfare, rural development whose objective is to safeguard the environment, climate, natural resources, biodiversity and animal welfare, promoting short supply chains and local production.

Organic products are therefore products of natural or animal origin, respectively coming from crops and farms guaranteed by traditional and non industrial methods; free of gmo products, industrial, dyes,

artificial organic additives, which guarantee high quality food for the benefit of health.

In Italy, as in other European countries, the definition of “organic” is strictly linked to the regulation on the subject which, at European level, took shape in 2007 with the EC regulation n. 834/2007, repealed and replaced on 14 June 2018 with the new EU regulation 2018/848, applicable from 1 January 2022. The text must be read in conjunction with the relevant Commission Implementing Regulation (EU) 2021/279 regarding controls, traceability, compliance and labeling of organic products.

Briefly, the scope of application of the aforementioned legislation concerns all live or unprocessed agricultural products, those processed for food purposes, feed and plant reproductive material, originating from agriculture, breeding, aquaculture and beekeeping; it also applies to some products specifically listed in Annex I of the regulation including yeasts, sea salt and other salts, natural gums and resins, essential oils, herbal preparations and others.



In Italy, various organic ingredients can be used for the production of baked goods, in addition to those already indicated above such as sea salt and yeast, ideal for rediscovering the typical flavors of Mediterranean cuisine, simple and genuine.

In particular, the "Gargiso Bakery", in the production of its products, created following the typical recipes of the territory handed down from generation to generation, often uses organic flour from the milling of grains grown with organic farming methods and certified as such through a strictly checked and documented from seed to flour sack. Another ingredient used by the "Gargiso Bakery" for the preparation of baked goods is organic extra virgin olive oil, together with virgin olive oil, as it is produced in full. Finally, although in the production of baked goods, water and sugar are often used in the "Gargiso Bakery" these foods do not always have the connotation of organic ingredients.

In Italy the demand for organic ingredients is growing strongly and so it is possible to buy these ingredients through different options: from the producer (for example at flour mills and oil mills), or in the markets, in specialized organic shops but even more generally in supermarkets or on specialized websites. Naturally, alongside the sale of the single organic ingredient, there is also the sale of the product created from a combination of several organic ingredients as happens in the specific case of baked goods that require their use.

## MALTA

Farming will produce organic foods when fresh and authentic foods are created for the benefit of consumers. For this to be achieved, the farming employed needs to include wide crop rotation that will make it possible to have an efficient use of on-site resources. To reach this level there are strict limits on the use of chemical synthetic pesticide and synthetic fertilizer. Farmers who grow organic produce insist that the environment is to be respected because this is vital for all living organisms, be it human or other species. Similarly, there is limitation of livestock antibiotics, food additives and processing aids. The use of genetic modified organisms is prohibited.

Another important factor to keep in mind is that of choosing plant and animal species that are completely resistant to disease and well-adapted to local conditions. Similarly, the



livestock will have to be raised in free range open air systems and given organic feed. Farmers who grow organic products, show respect to the environment by ensuring that the health and wellbeing of living organisms. They do this by making sure that the needs of animals are respected.

In Malta we have an approved list of Plant Protection Products (PPP) which may be used for organic production. If a product is not listed, operators should first confirm with the Malta Control Authority (MCCAA) in view that Malta’s list of approved PPPs is continuously being updated.

In Malta, where it comes to selling of organic produce, this is the exception rather than the rule – yet this is changing slowly but surely to increase the selection of organic produce. On the Maltese islands, products that are grown in an organic manner are either produced in Malta or they are brought to Malta from Sicily. Organic produce is defined from the rest by means of its green EU organic label. In Malta we have four main farmer shops that specialize in organic foods. Customers may go there in person where they can view the adjacent fields. People can also shop online or call with an order and have it delivered to their home.

Other than all kinds of vegetables and fruits, edible produce may also incorporate tasty foods such as sun dried tomatoes, oils, pastas and other similar products. Sweets are also other popular products that are made.

Water and salt are both common ingredients used in a bakery. Water cannot be organic, since it consists of two hydrogen and one oxygen molecule. It has no carbon molecules and is not alive. The same thing goes for salt, which consists of sodium and chloride molecules. Therefore it can be said that products of a bakery can never be one hundred percent organic. Next to that, minerals can also be seen as non-organic.

“Organic” claims the food is at least 95% organic material. “Made with Organic Ingredients” claims at least 70% organic ingredients and can display three organic ingredients on the food label. The term non-organic is applied to products where the organic content thereof is of less than seventy percent. The latter products result from production that would have implemented chemicals that are synthetic in nature, whereby this is applied to the products as a catalyst to enhance the growing process. Foods classed as non-organic include pre-



cooked/ready to cook meals, processed foods, commercial food, baked goods, and frozen foods.

This implies that bakery goods cannot be seen as organic. However, it can still contain organic ingredients. Depending on the product, it can contain fruit, vegetables or grain products that are organic. This will lead to less pesticides, chemicals, preservatives and so on. This will in return have better benefits for both the emotional and mental health of consumers.

## PORTUGAL

Organic products are the result of organic farming techniques or organic animal production that advocate a mode of production that promotes sustainable practices with a positive impact on the ecosystem and the environment. In this production method, agriculture does not use pesticides, herbicides or chemical fertilizers, nor genetically modified organisms (GMOs) in order to produce high quality and healthy food. In organic animal production there is a philosophy of ethics and respect for animal welfare, respecting as much as possible its natural habitat, food and natural behavior. Not resorting to hormonal treatments, antibiotics or growth factors. In Europe, organic production is subject to specific legislation and control, and all products that meet all standards are accompanied by a certified Organic product seal or logo. Thus allowing to guarantee the quality and integrity of these products. In essence, the designation organic product has the same meaning as the organic product – respect for the environment and the ecosystem, not using pesticides, synthetic fertilizers, hormones, antibiotics and GMOs, but it can be extended to articles such as clothing, hygiene products, cosmetics etc... As it is a term not legislated in Portugal, products are sometimes called "organic" despite the fact that only a tiny part of their ingredients are. In this way, the best way for us to be able to interpret and guarantee the quality of the product is by reading the labels. Although we often associate these same products with organic ones, in fact, natural products refer to all those products that appeal to the natural and to those that come directly from nature, regardless of the use of pesticides, additives or chemicals. Natural products seek to use “in natura” ingredients and avoid the use of processed or artificial ingredients. However, like organics, it is not a legislated term,



nor does it have an official certification, which can lead to confusion or use of brands. Fortunately, we have several supermarket chains that bet on products considered organic and organic, such as LIDL, which has a range increasingly present in Portuguese supermarkets, “BIO ORGANIC”. Betting on organic products is more and more a sure and frequent bet in Portugal, with local producers who make organic production standing out more and more and that we can find in all weekly markets across the country. There are still numerous markets in Portugal that only sell organic products, and I will mention the most important by area of the country: Brio in the center of the country, in Lisbon; Quental Biologico in Coimbra; Naturocoop in the north of the country, in Porto, Biobrassia in Braga and here in Ponte de Lima we can find Biodiversus, Mercearia Biológica Etnoglamour and even, as mentioned earlier, we can find it in the weekly markets that take place in the municipal market and on the streets of Ponte de Lima. And even as a national reference, you can find in “Celeiro” supermarkets all the organic products you need and you can even shop online and be delivered directly to your home. In this supermarket you can find everything from food, cosmetics and even fresh products, all based on organic products.

Regarding pastries, there are several pastries that use organic products, breads are produced with organic ingredients and natural fermentation and we can find several pastries and bakeries that use this process. In Ponte de Lima, we also have a patisserie based on organic products, the Bakery “A Antiga”, which is governed exactly by natural fermentation and only uses organic products in its design. There are also sites in Portugal for selling organic pastries, delivering directly to your home: [www.organicos.pt](http://www.organicos.pt) , this site is a cooperative of farmers, producers and companies that are committed to selling totally organic products.

Unfortunately, our patisserie and bakery is not 100% organically produced, we only have a weekend line with organic products, so our patisserie is based on non-organic products, our choice in these products is by price issues as they are cheaper products and allow us for mass production of bread and cakes. Our main ingredients are:

For bread, corn bread and rye bread, which is our biggest production, we use:

↳ Wheat flour type 65



- ↪ Type 70 and type 85 rye flour
- ↪ Type 75 corn flour
- ↪ Yeast (yeast)
- ↪ Salt
- ↪ Improver
- ↪ Water

For our non-organic pastry production, we use:

- ↪ Type 55 flour
- ↪ Eggs
- ↪ Milk
- ↪ Sugar
- ↪ Salt
- ↪ Yeast
- ↪ Honey
- ↪ Chocolate

## GREECE

In recent years there is an increased demand in the market of organic food. The EU organic sector is growing rapidly. Over the last decade, agricultural land used for organic farming in the EU has grown by an average of half a million hectares per year. Today there are over 186,000 organic farms across the EU. The concerns of the average consumer stem both from the fear about the food provided to us and from modern technological developments, such as genetic modification and irradiation of food. Organic foods are those that comply with the procedures described in the European Organic Production Regulations. Organic products come from crops, where the use of any chemical pesticide, fertilizer and hormone is strictly prohibited. Instead, organic substances are used, such as manure, straw, etc. In organic production, the control of various diseases is based on the exposure of pests to their natural



enemies, so insects, fungi, bacteria and other microorganisms (non-pathogenic to crops) reduce or even eliminate pests. In addition, organic livestock uses mainly organically produced feed and the use of pesticides and herbicides in their feeding areas is prohibited. The living conditions of the animals must also be different. Everything must have a living space, move freely, while drugs and preventive treatments are prohibited during their development.

In Greece there are 15 approved agents of control and certification of organic agricultural products. Such agents are DIO (ΔΗΩ), A-CERT, Q-CERT, BIOHELLAS (BIOΕΛΛΑΣ), PHYSIOLOGIKE (ΦΥΣΙΟΛΟΓΙΚΗ ΕΠΕ), IRIS, EUROCERT, COSMOCERT.

In November 2021, 6,390 Greek farmers approved for the organic product certification grant.

The benefits of organic products can be summarized as follows:

- They have an average higher amount of antioxidants (British Journal of Nutrition). Antioxidants are important because they protect the body from molecules that are harmful to health.
- They are cultivated with more environmentally friendly methods and do not pollute the aquifers. Organic food is more environmentally friendly because organic farming can bring natural balance and higher soil fertility, protect ecosystems and reduce pollution.
- They have a reduced concentration of nitrates, components of which increased intake has been associated with the occurrence of stomach cancer.
- They are healthier because no hormones, fertilizers or antibiotics were used in the cultivation, i.e. interventions that are outside their normal life.
- They have a more authentic and richer smell and taste.
- The intake of nutrients is done in full without the additional intake of chemical residues.
- Agricultural workers are not exposed to pesticides and other harmful substances, such as cadmium, which are associated with cancer and infertility.



- Pesticide residues will not be absorbed into foods that have often been found above safe limits for humans.

There is a wide variety of organic products, fruits, vegetables, meat, dairy products, bread, pastries and cereals, baby food and desserts.

The preference for organic products is especially important for newborns, infants and children, as they need a safe and nutritious diet for their proper development.

Also, pregnant women and the elderly are vulnerable groups of the population and it is preferable to choose organic products. Pregnant women, preferring organic products, will avoid substances that will invade their body and which are eliminated very slowly from it.

The deterrent to many consumers is the increased cost of organic products. Let's look at the reasons that make them more expensive than conventional products:

- Crop yields are much lower (> 30% lower production).
- The cost of their production is higher.
- The offer is smaller and does not meet the needs.
- There is the additional cost of inspection and certification.
- Organic farming or animal husbandry is discouraged, unlike conventional farming or animal husbandry, which subsidizes field clearing.

However, in recent years the price difference between organic and conventional products is constantly decreasing, and this is because there are organic markets, in which organic farmers themselves participate, without intermediaries. Supermarkets, which mostly have imported products, have a significantly small price difference compared to organic markets.

In conclusion, organic food is safer and more beneficial for the environment, but also for the consumer.



## **CHAPTER 2**

### **Advantages of using organic ingredients in bakery.**

#### ROMANIA

Organic food pollutes less: it is a well-known fact that there are a number of pollutants derived from agriculture and that cause major damage to the environment. Groundwater in these agricultural areas is often heavily polluted with various pesticides and fertilizers. This is not the case with organic farming, as it drastically reduces any risk of water pollution and can also prevent soil erosion.

They have better nutritional values: organic crops tend to have a higher concentration of nutrients and antioxidants. They are essential to protect us from some diseases such as Alzheimer's, oncological diseases and cardiovascular diseases.

Interestingly, several studies have found that organic milk and eggs contain 2 times more omega-3 than the standard version.

Organic meat is safer: because it is grown without hormones, it is considered to be much safer in terms of consumption. Antibiotics or pesticides are also not used, which is another significant advantage.

#### ITALY

One of the main characteristics of organic baked goods is the return to the taste of tradition deriving from the commitment to healthy and "naturally tasty" foods because they are produced with organic ingredients subjected to tests and controls that guarantee not only the denomination but also the taste.

There is no doubt that an organic product even inside the oven represents an added value because it also aims to satisfy the expectations of a certain type of clientele attentive to the use of flours and what they produce by human hands.

The use of organic products in the complex baking process mainly entails a double advantage both for the producer-baker and for the consumer.



Naming an organic product means a healthy, balanced, tasty product that entails an immediate benefit as in common parlance the "organic" product is synonymous with "health protection" and this allows the entrepreneur to be able to create balanced products, more tasty and at the same time conforming to the traditions which in Italian cuisine certainly represents an added value.

A very widespread aspect in Italy should not be underestimated: it is a must in schools, starting from childhood, to teach a correct diet and to make the child acquire the awareness of which are the healthy ingredients at the base of their diet, fundamental for growth and health and consequently becomes for the baker a continuous search for organic ingredients for its production, especially when he is aware that for the little ones (but not only) to be the masters at the table are precisely the bakery products. start with bread.

This is why an organic bakery is a successful business if not immediately but certainly in the future also because countless researches on various diseases believe that good health starts with the food we consume at the table every day and that we must prefer organic foods.

## MALTA

The manner in which products are made will influence and determine the person's wellbeing, both on a physical as well as on the emotive level. There is a similar impact also on the environment as a whole. Where bakeries use organic substances, this will lead to numerous beneficial results. Examples may include decrease or elimination of health issues such as allergies where one eats certain products. Indeed, this is because products that are grown in an organic way, will have less pesticides. On the other hand, where this is not practiced, the repellents used in farming will be found on the foods that we consume.

Moreover, when food is grown in an organic way, it is found to be more fresh than those that are not grown in this way. This is the result of lack of pesticides on the products. It may be ascertained that products that are grown in an organic way will produce benefits for the environment and nature as a whole. In addition, we can see that benefits will be found also in the area of pollution where this is minimized, furthermore it leads also to conservation of



water, decrease in erosions of farm land and similar benefits. In general, such products will be farmed close by to the area where they are also purchased by consumers.

Where animals are concerned, in order for produce to be considered as organic, it is important that such animals are not given particular medications such as growth stimulants. Where this is not observed, hazardous outcomes may result such as dangerous diseases, and spread of bacteria. Alternatively for organic farming to be successful, it is important that livestock is cared for in a natural manner like being fed appropriate food and having adequate areas that can accommodate them.

An EU study in 2016 has shown the amount of beneficial nutrients in products that were grown organically, was more than fifty percent of a higher level when compared to products not grown organically. It is notable to say that products that are genetically engineered cannot be considered as naturally grown and would have been made in this way in order to subsist even in conditions where pesticides are employed.

Organic farming is a process where one may take advantage of on-site resources, such as livestock manure for fertilizer or feed produced on the farm. This implies that less importation is needed from other countries.

Organic farmers respect the environment through a multitude of ways which include being responsible for the use of energy and natural resources. In a similar manner there must also be respect for biodiversity as well as stability within the locality where the farming is conducted. Here it is important for the land to be fertile, and that the water is of a quality that is as superior as can be.

When using organic products, the maintenance of the Maltese fertile soil and environment is better taken into account. This makes it easier to have a long-term vision for Maltese agriculture.

## PORTUGAL

Ponte de Lima, is located in the Alto Minho region in the Northern and is characterized by its nature and its traditional customs. Here, we can find numerous projects in the field of



organic and biological agriculture, vegan restaurants that bet on local producers and even pastry shops and bakeries that defend the natural fermentation of their products without adding chemicals or additives to the product.

**One of the first advantages** of betting on patisseries/bakeries with organic products is the fact that it helps local producers, as we mentioned earlier, Ponte de Lima is an area that is increasingly committed to organic agriculture and the municipality even offers courses and presents several projects of organic agriculture, creating the [mercadoagrolimiano.pt](http://mercadoagrolimiano.pt) platform where you can find all the organic products of the region.

**The second advantage** will be the fact that it creates greater diversity in the region's pastry offering. Having something innovative, healthier, supporting local producers and maintaining all standards of being organic is always something that attracts people.

**The third advantage** of betting on an organic pastry/bakery in this region is the fact that more and more people are concerned with healthy lifestyles, this concern leads people to look for organic foods that are a beneficial factor for their health.

**The last advantage** that can be mentioned is the fact that the organic bakery can be associated with local tourism, betting on the recovery of old mills for the production of its own flour and can also be associated with organic markets, encouraging organic production and bringing even more tourism to our region.

There are several advantages to the use of organic products in your pastry and bakery, from advantages for the consumer's health to a service to a differentiated public. All the ingredients of an organic bread are naturally grown; therefore, they are free from pesticides or any product that could harm your health. This is also true of its fermentation process, which naturally can take anywhere from 10 hours to five days. For health, the consumption of organic bread is beneficial because it has a higher nutrient content. Among the benefits of an organic pastry, we can highlight:

1- The highest nutrient content, wholemeal products rich in fibre and nutrients

Industrialized breads and cakes have a very high glycemic index. In addition to causing little satiety, they affect low-calorie diets. On the other hand, the trend towards the use of



natural fermentation and production of differentiated and healthier products, takes a different approach with a greater variety of recipes, including whole grains and their higher fiber content, which promotes satiety and prevents damage to health.

### 2 – A higher content of antioxidant substances and additive free

In addition to fermentation without the aid of artificial additives, the recipes do not require products such as dyes and preservatives. The absence of these artificial compounds in artisanal products makes the pasta healthier, avoiding the consumption of substances that are harmful to health over time, such as high levels of sodium, associated with hypertension and other problems.

### 3 – The fact that it has more flavor and aroma

As the bread is made only with natural, biological and organic resources, the flavor becomes more authentic and tasty.

### 4 - Avoid health problems caused by the ingestion of toxic chemical substances, it has a superior nutritional quality and keep the characteristics preserved

This positive point is based on the natural ingredients used in the recipes, which add a much higher nutritional value. The shelf life of a traditional bread and cake is a few hours. After that time, they lose their softness and crunchy skin. So much so that, at the end of each day's work, the units that are not sold cannot return to the shelf. The natural fermentation process provides greater durability due to the slower preparation of the dough, which has enough time to stabilize before being baked.

### 5 - Encourages small producers and it has a service to a differentiated public

In addition to encouraging local producers to invest in organic products and produce locally without resorting to agropharmaceuticals, the large number of consumer profiles to which this category of product can be well accepted is also visible, such as: diabetics; people looking to lose weight; vegetarians and vegans (many recipes are rich in vegetable protein); people who seek healthy food.



## GREECE

Bread is a commodity that is hardly missing from the table and few people can resist it. It does not get you fat if it is properly integrated into a healthy diet, but care must be taken with the way we consume it and the choices we make.

White bread definitely falls lower on the list, as it may have almost the same calories as black, but it has a higher glycemic index. The glycemic index is an indicator that ranks different foods in terms of how quickly they raise blood glucose once consumed and white bread seems to have a similar effect to sugar, with a low fiber content.

In terms of bread types, wholemeal bread is definitely a better choice than white, as it has more fiber due to its preparation with the whole grain of wheat (endosperm, bran, germ), has a lower glycemic index, which means that its consumption does not increase blood sugar sharply, while it is richer in minerals and vitamins and is recommended in cases of diabetics, but also in general, as it seems to reduce the risk of obesity and cardiovascular disease. A slice of it reaches about 60 calories, which means that only when consumed in excess or in combination with a lot of oil greatly increases the daily calorie intake. Many consumers are now more aware of the choice of baked goods, as there is also a great demand for gluten-free products whether they are the usual (wheat, corn, barley that have been processed) or alternative seed and fruit flours (almond, oat flour, quinoa, coconut, millet, zea, dingel, carob flour, chickpea flour, etc.).

However, flours due to their increased production are often very heavy due to the use of pesticides, or are genetically modified or have been irradiated in their processing. This pushes many consumers to choose organic bread and other pastries, which have many benefits over conventional ones.

Specifically:

- They contain wheat and other raw materials that have been produced without the use of chemical and synthetic fertilizers, automatically reducing our exposure to them through diet.



- It is richer in vitamins and minerals, nutrients and antioxidants, precisely because of the non-use of chemicals. They contain more vitamin A, magnesium and iron.
- They do not contain preservatives and genetically modified microorganisms.
- They are made with natural yeast, which benefits the stomach and intestines thanks to specific bacteria and yeasts found in natural yeasts.
- They are usually darker in color due to the longer fermentation time and have a nicer smell.
- They can be prepared with filtered water, which means avoiding harmful substances, heavy metals and so on.
- With a slice of organic bread a day, our body is filled with 22g of carbohydrates, 258mg Sodium, 144mg Potassium and consumes 80 calories without a trace of cholesterol.

Durum wheat, widely known as Zea, is one of the oldest types of wheat in Greece.

It is a grain ideal for mild form and sustainable agriculture, while it does not need fertilizers and pesticides, being an excellent food as its processing gives products of high nutritional value.

It has been cultivated in Greece since the Paleolithic period – before even the beginning of the agriculture.

According to findings in excavations in Asia Minor, grains of this species were discovered from 12,000 BC.

In antiquity ze wheat was cultivated mainly for animal feed.

It was also used to produce porridge - a nutritious drink - made with ground fruit and water or milk, but also to produce a kind of beer. Relevant reports from Homer in the Iliad but also from various classics consider this wheat basic ingredient in the diet of the ancients. Later, in the Bronze Age, other grains such as monococcus, dinkel and later mutations such as soft and hard appeared.

For most Greeks, a few years ago, ze was an unknown food. Not unjustly, since for many years cereal had disappeared from the country. The most likely correct theory for this was the appearance of more profitable types of wheat, such as whole-grain crops, requiring less



post-harvest processing than coated, with better yields. It is the usual phenomenon, when the agricultural sector is evolving and acquiring new know-how.

Zea is a hard quadruped wheat with "coated" and "stuck" in two grains.

Today, agriculture with its sustainable ecological form seeks the quality and quantity production of healthy products and the preservation of the traditional species and varieties. Quality production of healthy foods is also a primary goal for the science of healthy eating. Also consumers in our days become more and more healthy-diet conscious. This very trend of the consumer public helped in the re-emergence and promotion of the cultivation of that cereal.

Its cultivation is even more important because it adapts easily to barren, dry, poor even in stony soils, in contrast to the bare grains that are grown today, but also because it is resistant to many fungal diseases such as rust, especially in wet areas. For this reason it can very easily be grown as organic.

In Greece, durum wheat is cultivated in lowland, but also in mountainous or semi-mountainous areas and at an altitude of up to 1,600 meters.

The cultivation of durum wheat is done as it is done in other cereals. It is sown with durum wheat seed, which is usually a seed kept by the producer himself from the previous year's crop and thus is not dependent on seed or fertilizer companies.

Because this plant tends to create many shoots (brotherhood) from its base, it very quickly fills the entire surface of the field, thus preventing the growth of weeds and not needing pesticides, because this wheat suffocates weeds and does not allow them to grow.

Its nutritional value is indisputable.

Due to its chromosomal structure, hot wheat tends to contain less gluten than regular wheat, which make it more tolerable by people with gluten sensitivity.

It contains fiber and minerals but especially high percentage of magnesium that activates the enzymatic processes of metabolism.

It contains 40% more magnesium than other cereals and high levels (20%) of the essential amino acid lysine that the human body cannot synthesize on its own. This amino acid is



rarely found in high content in food and contributes to the absorption of calcium, the maintenance of nitrogen balance, the enzymes, hormones and antibodies production.

The amino acid lysine it contains, is the component of proteins that increases their digestibility, strengthens the immune system and is the key element in the biochemical function of the brain.

It suppresses inflammation and cancer cell enzymes.

Compared to regular wheat and other grains, zea contains more antioxidants and complex carbohydrates.

After all, it is no coincidence that the etymology of the word "zedoros" (the one who gives life) comes from this cereal.

For all this, this cereal forgotten for decades returned dynamically to the forefront making its products (flour, rusks, bread, pasta etc) expand their market share every year.



## **CHAPTER 3**

### **Disadvantages of using organic ingredients in bakery.**

#### ROMANIA

In Romania most of the people see the following disadvantages in using organic ingredients:

The cost: if you want to buy organic food you know for sure that it costs much more than any other standard option. The high prices are due to the fact that there are lower crops compared to agriculture that uses fertilizers and pesticides, and there is a relatively high demand. In addition, as organic food production requires more labor, this contributes to higher product prices.

Shorter expiration date: both organic vegetables and fruits expire faster than conventional ones. The reason is that they are not treated with the same preservatives that are commonly used, so that the food has a longer expiration date.

In our area a lot of people uses organic ingredients and products, but all of them are not certified. This is the main disadvantage in Romanian countryside – people do not obtain certifications for the products.

The main weak point of the organic food industry is currently the processing, packaging and marketing of products. This handicap of the profile industry is mainly determined by the high costs of industrial installations and packaging that correspond to the standards of organic agriculture. Romania has an acute shortage of channeled processors in this field.

The growing demand and lack of processors in the country determine the raw organic product to follow external routes, only a small part of this type of food finding its place on the domestic market.



## ITALY

While there are natural advantages in the use of organic ingredients in the production of baked goods, it is undeniable that their use also involves some "disadvantages" mostly related to their entirely intense production line.

Organic products are subject to deterioration more quickly:

making a comparison between conventional foods and organic foods, the former have a process of maintaining freshness through the use of preservatives.

On the contrary, the latter, ie organic foods, cannot receive the same conservation treatment.

Consequently, organic products delivered late or badly preserved may undergo rapid deterioration with the consequence that they will never reach the final consumer with serious economic losses for the producer.

Furthermore, although in recent years there has been an exponential growth in the sale of organic products in the bakery sector, to date there has not yet been a regulation of their cost, which is much higher than products not designated as organic.

Of fundamental importance in relation to the cost of the organic product is the aspect relating to market price competition; there is a strong cost discrepancy between the various organic products due to the use for some producers of raw materials which, although defined from the legislative point of view as organic, in some respects are not and this entails a low price of the finished product compared to others greedy.

Although it cannot be considered a real "disadvantage", in Italy organic production is subject to rigorous controls and certifications that affect the entire production chain.

The difficult conservation of the organic product, the high cost of the organic product and following all the regulatory part for the concession of organic production, make the baker a courageous entrepreneur in Italy.



## MALTA

Organic food is more expensive to produce, so the baked goods will be more expensive, which causes less baked goods to be bought. Besides, organic food easily goes bad. The latter is a result of the fact that no additives would have contaminated the product. Similarly it would not have been subjected to any form of radiation. The popular opinion is that products that would have been grown in an organic way, would not contain any form of chemicals whatsoever. Instead, it is pertinent to point out, that on the other hand, for the product to be considered organic, there may be traces of chemical substances that would have been included in order to assist production.

Next to this, it is often a popular belief that organic food has a lot of health benefits compared to non-organic products. That said, no definite reports exist to substantiate this fact. This may mean that a doubt may be cast on how true it is to believe that organic food provides a healthier option when compared with non-organic produce.

Following studies conducted in Britain and Sweden, it has been found that organic food is not necessarily a safer option and that there are no solid results that show the contrary. With this in mind, it may therefore be said that non-organic food may be considered on the same level of safety as that of organic food.

Besides, pesticide contamination from the plant might end up going into your drinking water. This will certainly cause a hazard where it comes to safety within the area of consumption.

Lastly, the levels of bacteria have been found in the production of organic foods. Therefore in consuming foods that are organic, one would be subjecting himself to hazard that may result in disease of the system of digestion. This certainly causes concern for women who are pregnant and for young children since their immunity is weaker and they are more susceptible to catch an illness.

Malta produces very little to none organic food. That means that if the country wants to use organic food in bakeries, they will have to import the products. Importing the products will give extra transport costs in comparison to producing it at the island. Besides, organic



products go bad faster. The time it takes for the food to reach the island will therefore give the food a chance to go off when it has not reached the island yet.

Besides, baked goods made by bakeries in Malta will get more expensive, because organic food is more expensive to produce, and the people will buy it less. Bakeries will therefore have less income.

## PORTUGAL

The disadvantages of using organic products is just a market view, it does not make the business as profitable as that using non-organic products, that is, the organic product makes the product more expensive and the profit margin is smaller. It is also no longer possible to mass produce the products as natural fermentation is a long and time-consuming process. It is also mentioned that this market captivates a small part of the population, that is, it is a market niche with a very specific target audience, so the choice of the bakery's location is crucial.

We live in a small village where organic products are not accessible, unfortunately, there is little competition which makes the value of the products more expensive. The fact that the products are more expensive and as we live in an area where most people earn the minimum wage, they may not have the same adherence, for example, we buy a cake for 70 cents, if it is organic the price will double what does not appeal to all types of customers. So, the price increase is an unattractive factor for attracting customers which can be a disadvantage when choosing only organic products, your profit margin will not be as high as a conventional bakery.

## GREECE

Organic food costs more than produce grown through traditional methods.

Organic flour is more expensive than regular flour. Part of the cost increase is due to higher actual production costs for organic wheat and flour.



Growing a ton of organic wheat generally requires more man-hours than growing a ton of conventional wheat. Some communities don't always offer organic food. Availability today is higher than ever.

There are still places where you can only find these items in health food stores. Many local grocery stores are stocking more items with the label, but areas struggling with food shortages are still struggling to roll them out.

A big disadvantage is the absence of distribution channels in the market. While in the conventional distribution networks are established in the biological ones, they are not as widespread as in other countries, although Greece has a long tradition of own production and self-consumption. Organic products and organic stores are available in large urban centers, while in the province there is no access to organic products except through some supermarkets, but even these are few.

Namely, there are 3 big chains of supermarkets in Greece: Sklavenitis, MyMarket and AB Vassilopoulos.

MyMarket is the most organic-oriented one with a big section devoted to organic products. AB Vassilopoulos has released organic products with their label. Sklavenitis which is the biggest has only a small corner of organic products.

Small groceries that either have exclusively organic products or have included organic on their shelves have also multiplied in recent years. There are also many organic open markets. One good thing about the province is that in the provincial open markets there are small producers who have pesticide-free products but are not certified. In Greece there is a large production of honey. In honey, for example, the tests that must be done are numerous in order for the certification to come out, but the majority of the honeys are by definition free from pesticides and harmful substances. The same happens in the production of olive oil. Greece is the 3rd olive producing country in the world with over 450,000 families producing olive oil. Most of them are free of pesticides, even if they are not certified, since the biggest enemy of the olive is the Dakus fly, for the control of which drones are now being used.



**Organic foods have a shorter shelf life than other items.**

Many people think that the preservation of organic bread is the same as the traditional bread. But its biological properties lead to a shorter expiration date. The "key" to achieving a longer time until its expiration is the healthy atmosphere of its packaging. The seal of the package retains air and moisture, thus removing the growth of bacilli on the bread.

Organic foods are very sensitive to environmental changes.

Grocery stores need to limit sun exposure, reduce damage from equipment and technical failures, and store items at the proper temperature. Overhandling can cause a lot of damage to some items and even shorten the shelf life of some foods.

Producing organic food requires more work. Since the focus is on natural farming methods for farmers who grow organic food, the amount of manual labor required to bring items to market is much higher, as less automated processes may be required.

Natural fertilizers like green manure may need to be spread by hand to eliminate the environmental impact of tractors and other equipment. Weeding is usually done by hand. While these measures improve soil conditions, they also increase the cost of household purchases.



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