

Organic Farming and Markets During Covid-19

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Abstract: Over the past decades, the market for organic production and products has grown year on year. This has been true in Hungary, in Europe and elsewhere in the world. The market turnover of the goods produced in this way has also increased year after year, and is even forecast to do so. This was also the case for the areas involved in production. However, the most recent data available for 2020 and 2021 show a decline in organic produce sales markets. The 12.5% growth in 2019-2020 was followed by a 1.3% decline, which was quite unusual. The COVID-19 infection wave has put the issue of health, but the general economic downturn has affected even organic food sector that is supposed to be supporting health. Consumer fears, the economic downturn, the rise of online sales, price sensitivity, higher prices for organic products, and reduced spending have all contributed to this downturn.

Keywords: organic farming; organic food market; COVID-19; crisis

1 Introduction

Following the economic crisis of 2008, the world is back to business as usual, but 2019 has seen a major shift. The first cases of Covid-19 were detected in December in the city of Wuhan, and then the coronavirus started to spread intensively and on 31 December China informed the WHO about the pneumonia outbreak in Wuhan, Hubei province (Zheng et al., 2020; Liu et al., The pathogen was later identified (Bai et al., 2020), and the pathogen, originally named New Coronavirus 2019 (2019-nCoV), was later officially renamed Severe Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) by the International Committee on Taxonomy of Viruses (Lai et al., On 30 January 2020, the WHO declared the spread of SARS- CoV-2 virus, which causes COVID-19, as a public health emergency of international concern (Zheng et al., 2020; Bai et al., On 11 March 2020, the WHO declared the new coronavirus (COVID-19) a pandemic (Cucinotta and Vanelli, 2020; WHO, 2020) and reported that in just two weeks, the number of cases outside China had increased 13-fold and the number of countries had increased 3-fold (Cucinotta and Vanelli, 2020). COVID-19 is very different from other viruses in that it has the highest transmission rate to humans. It can be fatal for the elderly or for those with underlying problems related to a weak immune system.

From samples of Chinese patients, COVID-19 has been found to be caused by the SARS-CoV-2 virus. The live virus was not only present in the respiratory tract but also on the patients' faces, leading them to conclude that the widespread spread of the live virus outside the respiratory and airways may be the cause of the spread of the live virus (Murthy et al., 2020). In another study, it was found that COVID-19 had a higher replication rate compared to SARS coronavirus (Liu et al., 2020). Some researchers have suggested that bats may be the primary source of SARS-CoV-2, as it is closely related to two bats from acute respiratory syndrome, bat-SL-CoVZC45 and bat-SL-CoVZXC21 (Lai et al., 2020; Sheeren et al., 2020). However, there are no confirmed studies on the intermediate source of COVID-19 transmission from bats to humans. At present, the intermediate source of COVID-19 transmission is not known, but it has been confirmed that COVID-19 has halted the world's economic, social and political processes.

Coronaviruses are a type of viruses. any member of the family of large, single-stranded RNA viruses (Coronaviridae), whose lipid envelopes are filled with spike-shaped proteins, infect birds and many mammals, including humans, and include the causative agents of MERS, SARS, and COVID-19 (Webster, 2022). Many different species exist, and some cause disease. The coronavirus identified in 2019, SARS-CoV-2, a respiratory disease called COVID-19, has caused a pandemic. Researchers currently believe that the coronavirus is spread by virus particles in airborne droplets when the infected person's face comes into contact with others. Infectious particles can persist in the air and accumulate indoors, especially where large numbers of people congregate and where there is poor ventilation (Hopkins Medicine, 2022).

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unknown. Although this nCoV has genetic characteristics that are similar to the CoV family, it may have a different gene sequence that is highly divergent from previously sequenced CoVs (Gortázar and Fuente, 2020). This coronavirus infection is typically associated with mild symptoms. These may include cough, fever, muscle aches, shortness of breath and fatigue. In some cases, they cause more severe symptoms. They may include acute respiratory failure, pneumonia, even sepsis, and circulatory or multi-organ failure. Patients with a chronic underlying disease (hypertension, cardiovascular disease, diabetes, liver disease, respiratory disease, cancer) are more likely to develop a severe or life-threatening condition (WHO, 2022; Koronavirus.gov.hu, 2022). Figure 1. shows us the number of cases of COVID-19.

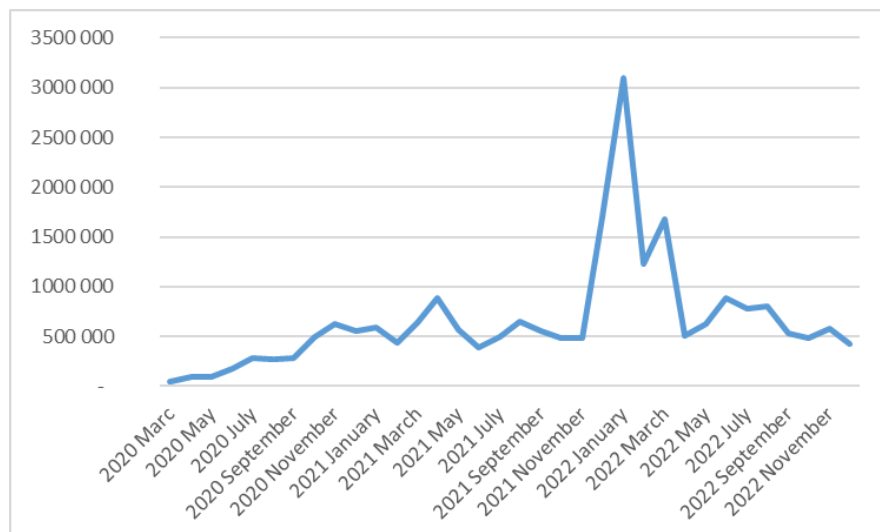


Figure 1. The number of COVID-19 cases 2020-2022
Source: worldometer (2022)

The cases initially caused a lot of fear among both the public and professionals because of the lack of knowledge. The most extreme period was not in the initial year 2020, but in December 2021, the period before Christmas. However, the number of deaths linked to coronavirus disease justified the concerns, as they spiked in early 2021 and then moderated by the summer of 2022.

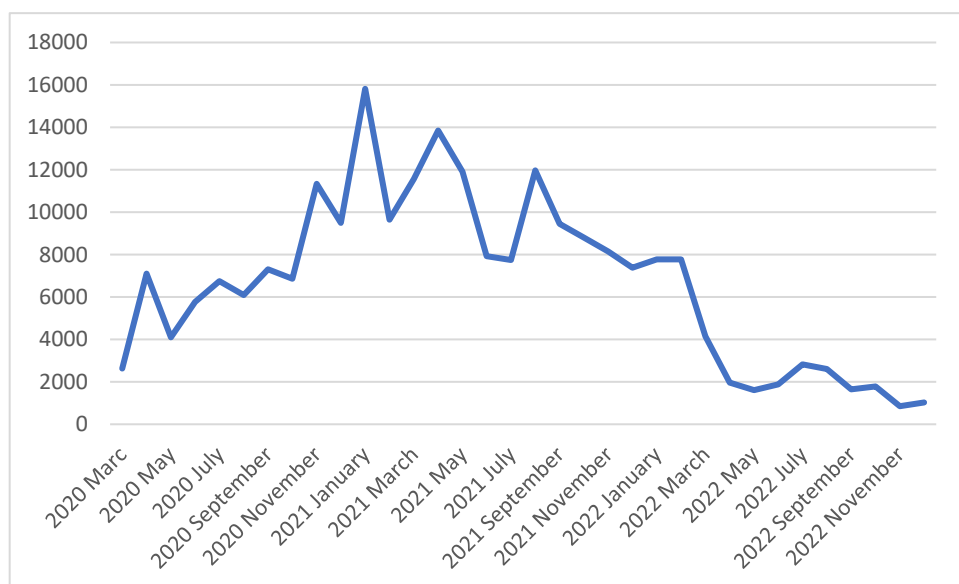


Figure 2. The number of death cases by COVID-19 2020-2022

Source: worldometer (2022)

Countries around the world have taken steps to improve basic facilities, particularly health care, which were called into question by the COVID-19 pandemic, including the developed countries of the world, which had claimed to have the best health care systems in the world. COVID-19 alerted the world to address real human problems rather than fighting each other merely to demonstrate dominance. The crises created by the pandemic brought attention to the health investment policies of states (Hussain et al., 2020).

Table 1: Key data on COVID-19 until 2022.

Country	Total case number	New cases	Death cases	New deaths	Total recovered	New recovered	Active cases	Serious, critical	Total cas/l million pop	Deaths/lm pop	Total tests	Tests/l m pop	number of habitants
World	649 799 405	16 393	6 646 043	301	626 994 443	139 129	16 158 919	37 074	83 363	852.6			
USA	100 796 300		1 106 640		98 257 582		1 432 078	3 541	301 059	3 305	1 141 588 533	3 409 709	334 805 269
India	44 674 459		530 628		44 138 235		5 596	698	3 176	377	906 950 463	644 768	1 406 631 776
France	38 027 968		159 093		36 968 080		900 795	869	579 831	2 426	271 490 188	4 139 547	65 584 518
Germany	36 557 861		158 198		35 869 800	7	529 863	1 406	435 817	1 886	122 332 384	1 458 359	83 883 596
Brazil	35 400 159		690 213		34 262 104		447 842	8 318	164 382	3 205	63 776 166	296 146	215 353 593
S. Korea	27 308 090	46 564	30 729	60	26 326 795	66 539	950 566	460	532 011	599	15 804 065	307 892	51 329 899
Japan	25 220 452	89 566	50 344	151	20 754 250	12 609	4 415 858	353	200 824	401	81 441 509	648 498	125 584 838
Italy	24 488 080		181 733		23 799 178		507 169	320	406 355	3 016	258 382 332	4 287 595	60 262 770
UK	24 024 746		197 253		23 750 288	2 809	77 205	146	350 737	288	522 526 476	7 628 357	68 497 907
Russia	21 617 601	6 598	392 231	55	21 018 980	4 589	20 639	23	148 263	269	273 400 000	1 875 095	145 805 947

Source: wordometer (2022)

Different countries were affected differently in terms of numbers of cases, deaths and cures, as shown in Table 1. About 1% of all cases ended in death. The situation

was worse in Brazil and India, while fewer cases in the welfare states ended in death.

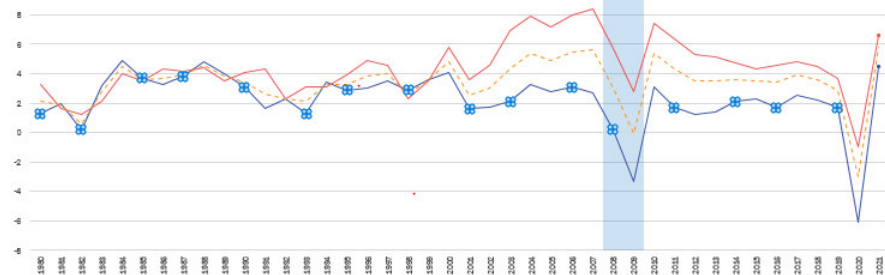


Figure 3. Economic performance in welfare and developing countries 1990-2021

Source: IMF (2022)

In Figure 3, the economic decline in the wealthy countries in blue was more significant than in the developing countries in red. There are several reasons for this. One is that developing countries have a larger share of the population engaged in agriculture, which means that these people are close to nature and work in a healthier environment. Another reason could be that in these countries it is not the covid virus but poverty and low living standards, malnutrition. Because of this, there was not as much fear and austerity as in the welfare states.

Baldwin (2020) argues that this crisis is not a normal recession because it was caused by a reaction to a health phenomenon. It was caused by a policy of containment to try to reduce the number of deaths. In countries where there have been no cuts, the health risk has been taken, but in return economic performance has not fallen. According to econ-core research, businesses were characterised by disrupted supply chains, labour supply, and a drop in sales revenues. For households, it was characterised by falling employment, wages and salaries, and a decline in purchases. However, the burden on the environment has fallen under austerity (Econcore, 2022).

According to the OECD study (2022), economic output fell by around 50-100% during 2020. Within the service sectors, travel-related activities, including tourism, and direct contact between consumers and service providers, such as hairdressers or house purchases, have clearly been adversely affected by restrictions on movement and social distance. Most retail outlets, restaurants and cinemas have also closed, although takeaways and online sales may prevent some businesses from going out of business altogether. Non-essential construction work has also been adversely affected, either by restrictive policies affecting labour availability or by a temporary decline in investment. The direct impact of closure measures is smaller in manufacturing sectors, some of which are less employment intensive. However, complete closures are taking place in the manufacture of transport equipment, often because of difficulties in obtaining the necessary inputs from suppliers in other countries.

GDP growth has been below the long-term trend, with low inflation in most developed countries in the pre-COVID-19 period, often below the 2% target (Macrotrends, 2022). It has also been characterised by low unemployment and high employment rates. In the post-financial crisis decade, nominal interest rates fell close to zero, with very low real interest rates. The debt-to-GDP ratio increased in the aftermath of the financial crisis (2008) and stabilised at the height of 2013 (Econcore, 2022)

As shown in Figure 4, trade flows also declined in most euro area countries and have struggled to recover. Interestingly, there was a big swing in France, which corrected the decline with equal intensity.



Figure 4: % change in trade turnover compared to the previous year. EU, Germany, France and Hungary 2017-2022 Source: Statistische Bundesamt (2022)

2 Data and methodology

Data for the study were provided by the statistics of the Hungarian Central Statistical Office (KSH) and Eurostat, as well as studies, materials and records of various Ecological Agriculture Research Institutes. Materials and articles relevant to the impact of COVID-19 were taken from the Statista database and from the scopus, web of science and google scholar databases. The econ core studies were also used as a source, as well as the worldometer materials. The correlations and underlying causes were drawn from these materials and statistics. I used a simple statistical methodology and looked for correlations between changes in consumption of general products and changes in ecological products. More complex statistical analyses were not possible due to the scarcity of recent data and difficulties of access.

3 Results

Over the past decade, spending on food has increased by 4% on average, as shown in Figure 5. Despite COVID-19 constraints, growth in 2019-2020 and 2020-21 has been higher than growth in 2014-2019. In contrast, average inflation rates in the world over this period ranged between 0.8% and 3.8%, meaning that food consumption increased in real terms.

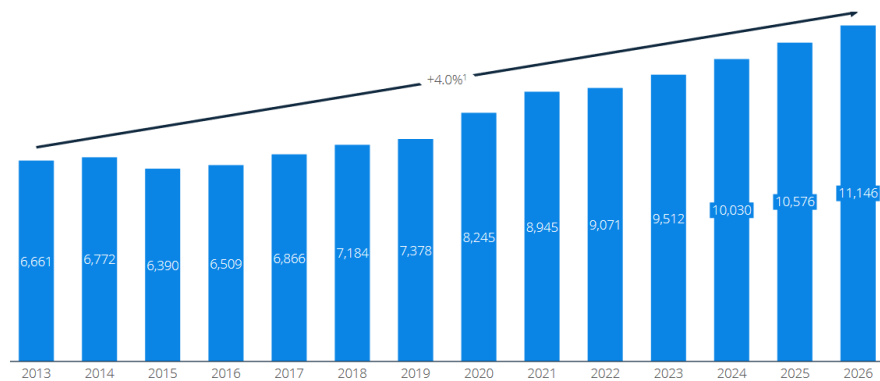


Figure 5 Annual global food sales in USD 1000 billion. 2013-2026 * Estimates 2022-2026 Source: Statista (2021)

For food products, the overall brand awareness of food is relatively low compared to other consumer product categories, i.e. consumers are more brand loyal, familiar and differentiated with non-food products. Among the product attributes that are important to consumers, health and sustainability are the most important. At the same time, a survey shows that Chinese consumers are also more aware of food safety.

Europe and China have the highest proportions of respondents who avoid artificial flavours and sweeteners, while British and North American consumers are less concerned about them. However, North American consumers claim to suffer more from food intolerances, highlighting the importance of free products. In the countries surveyed, those who try to eat less meat (flexitarians), do not eat meat (vegetarians) or do not consume any animal products (vegans) have become a significant target group. Among the mentions of sustainability, the preference for regional foods was the highest, with 44% on average, while 31% and 29% preferred organic and fair trade products respectively (Statista, 2021, Statista 2022c).

Organic agriculture, also known as organic farming, is growing year on year. The area under cultivation is also increasing (Willer et al., 2022), one reason being that organic farming has generally outperformed conventional systems in economic terms. This is largely due to lower production costs and higher market prices. However, organic farms face lower yields, especially in the fruit, vegetable and

livestock sectors. At the same time, organic farming can bring significant local environmental benefits (Durham and Mizik, 2021). The data in Table 2 show that organic production is also price-sensitive and that, in addition to following a philosophy, profitability is also of paramount importance, and sometimes even more important than principles. Moreover, the environmental benefits of this production are clearly higher.

Table 2: Major characteristics of organic and conventional farming

Characteristics	Conventional	Conventional Plus Biotechnology	Organic	IPM
Yield	Normal	Up to 15% higher	At least 10% lower	Comparable to Conventional
Pesticide Cost	Normal	Lower	Much lower	Much lower
Fertilizer Cost	Normal	Normal	Much lower	Normal
Labor Cost	Normal	Lower	Higher (+15%)	Higher
Product Variety	Specialization	Specialization	Diversification	Diversification
Product Price	Normal	Normal	High price premium	Normal
Gross Margin	Normal	Much higher	Generally higher	Higher
Pricing/Business Model	Volume	Volume	Margin	Margin
Environmental Benefits	Normal	Higher	Much higher (at the micro level)	Much higher

Source: Durham Mizik (2021)

While general food consumption grew by 3.2% year-on-year between 2013 and 2020, organic food sales grew by an average of 8.6%, a more significant increase, and thus relatively more than the change in conventional food consumption. The magnitude of the correlation between the two sets of data was 33.5%, i.e. a very slight medium correlation. This means that the change in organic food has a small effect on the change in total food consumption and vice versa. Sales of organic products accounted for 1.9% of total sales. Willer et al (2022) predict a decline in growth from 2022 onwards, i.e. COVID-19 restrictions could mean a decline in sales of organic products. Unfortunately, the latest statistics for organic products are not available, so we cannot be sure until 2020. According to Willer et al (2022), the United States had the highest sales of organic products in 2020. It amounted to €49.5 billion, followed by Germany with €14.9 billion, then France and China (12.7 and 10.2 respectively). In the US, organic accounted for 3.1% to 6% of total food consumption between 2008 and 2020. Organic food sales

Demand for organic food is driven primarily by personal health and environmental reasons, and in the US, organic food sales have increased every year since 2000. In 2021, organic sales in the United States reached approximately US\$57.5 billion. Within the category, yogurt and meat products were the most commonly purchased categories. According to one survey, only 15 percent of Americans do not buy organic food. Per capita spending on organic packaged foods and beverages was just over \$70 US per person in 2021, almost \$20 more than in 2017. By 2025, the consumption value of organic beverages is projected to be around \$2.8 billion. However, the demand for organic packaged food is growing and the projected consumption value for 2025 exceeds USD 25 billion (Statista, 2022a).

The European market for organic products is highest in Europe in Germany and France, with sales of €15 billion and €12.7 billion respectively. Denmark has the highest share of organic retail sales, followed by Austria and Switzerland. The average expenditure per capita in the EU is around €102. Some popular reasons for buying organic food among European consumers include supporting local businesses, health reasons and avoiding pesticides and other sprays. Although many consumers want to support organic food, they may not be willing to pay the higher prices. The majority of respondents would probably pay about five percent more for organic food than for conventional food. However, only about 14 percent indicated that they would be willing to pay more than ten percent more for them. According to a German survey The typical organic food consumer in Germany is female, aged between 30 and 69, according to research. They are typically in a couple and have a university degree. Spends at least €3,500 a year on food, so is wealthy. She likes and respects nature and does something for it. Sustainability and health are the main motives for his food choices and he prefers local food (Statista, 2022b).

According to Willer et al. (2021), a COVID epidemic is expected to change the global organic food industry. The pandemic has highlighted the vulnerability of international supply chains. The supply of raw materials was disrupted when countries started emergency measures. Some countries, for example, stopped exporting agricultural products because they had imposed a freeze. Freight rates and transport costs have risen and delivery times have increased. COVID-19 showed that the winners in the current crisis are those who have kept their supply chains close to home. Operators relying on organic food from other geographical regions have been the worst off. The development of local - if not regional - supply chains seems to be the way forward (Willer et al., 2021). A French study found that local organic dairy farmers experienced a moderate impact on supply chains due to the pandemic. Despite downsizing, supply chains continued to produce sufficient quantities of dairy products to meet consumer demand (Perin and Martin, 2021).

During the pandemic, continuity of supply in the agri-food sector - one of the most important sectors alongside health - was crucial to prevent a food crisis and reduce the negative impact on the global economy (Aday and Aday, 2020). Unlike traditional food supply chains, regional food supply chains were able to adapt their operations quickly. This rapid response has been facilitated by the adoption of best logistics practices, many of which have been based on the creation of new collaborative partnerships and the use of information and communication technologies (Marusak et al, 2021).

Recognising the weakness of supply chains, some national governments have focused on keeping food supply networks moving in times of crisis. The United Kingdom and the United Arab Emirates, for example, have ensured that there is no disruption to food imports during the crisis. Singapore, which imports 90 percent of its food supply, has invested in domestic production. Access to safe, sufficient and nutritious food is likely to be increasingly high on the political agenda. Asian and

African countries that have traditionally focused on export-oriented organic food industries are now developing domestic markets (Willer et al., 2021).

Governments should invest more in organic farming for food security. Countries should aim to reduce pesticide use and improve soil fertility. The EU's 'farm to fork' strategy aims to improve food security in Europe. The strategy aims to reduce the environmental impact of Europe's food system by reducing chemical pesticide use by 50 percent, hazardous pesticide use by 50 percent, fertiliser use by 20 percent and nutrient losses by 50 percent by 2030. Governments must facilitate the movement of workers and agri-food products. They should also provide financial support to small farmers and vulnerable people. Facilities must change working conditions and maintain worker health and safety by changing safety measures. Food protectionist policies should be avoided to prevent food prices from rising (Aday and Aday, 2020; Barman et al., 2021).

A shift towards transparency and traceability in agricultural supply chains is expected to gain momentum. Traceability plays a vital role in the quality and safety of food (Iftekhhar and Cui, 2021). As the supply of organic ingredients/products shrinks, the risk of fraud and adulteration increases. Traceability tools will be used to maintain the integrity of organic products (Willer et al., 2021).

COVID-19 has had the biggest impact on consumers, changing their shopping and eating habits (Śmiglak-Krajewska and Wojciechowska-Solis, 2021). From initial panic buying and stockpiling to less frequent shopping and online shopping, COVID-19 is causing significant changes in consumer attitudes and behaviour. Online shopping has become significantly widespread (Ćirić, 2020). Sales of organic food have increased significantly during the crisis. At the same time, demand for plant-based foods, nutritional supplements and natural products is also increasing. Consumers are turning to health and wellness products as they pay more attention to disease prevention and maintenance. The challenge for the industry is to ensure that the marketing of organic products meets the needs of changing consumer behaviour. Sales of organic dairy products are already being adversely affected by the rise of plant-based products (Willer et al, 2021; Statista 2021b). For example, attitudes in UK households towards food consumption and catering at home have changed. The study reveals the increased frequency and variety of cooking during the closed season as a factor influencing household food waste. Catering service providers are expected to need to adapt their business environment and adopt protective and preventive measures, such as frequent cleaning and routine health checks, to encourage visitation (Filimonau et al., 2022).

4 Conclusions and discussions

COVID-19 has brought a long-forgotten epidemic to the populations of developed countries that has turned our lives upside down. The official reason given for the

cuts was to reduce the risks of disease and death. The consequence was a sharp fall in economic performance and a crisis for the people of the welfare world. As food satisfies basic needs, consumption has not fallen. Only organic products, which are considered premium products, have seen a moderate decline in consumption, while the demand for safe food has increased. In several countries, supply has been disrupted and supply chains have been broken. Local food has become more prevalent. Governments had a major responsibility to manage the difficulties in the new circumstances. Consumer habits have also changed, with health becoming more important to consumers, and more attention being paid to the origin and other characteristics of products. Price remains important to consumers, but quality has become more important. Buying online is becoming increasingly important (Śmiglak-Krajewska and Wojciechowska-Solis, 2021). Distinguishing organic products and presenting their benefits through marketing tools may also be of particular importance. The high price of organic products is a deterrent for the average consumer, especially among the poorer classes. Distrust remains one of the reasons why people do not buy organic food (Rojik et al., 2021). This is because it satisfies several consumer needs.

As the most recent data on organic food and markets for 2021 and this year are not available, it will be possible to conduct more complex and accurate research on this market segment in the future as data become available.

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