

Is Organic Food The Answer? Examining The Benefits And Pitfalls For Modern Living

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ABSTRACT

Having accessibility of high-quality food is becoming more difficult for everyone as the world's population increases. In India, the organic food manufacturing industry is only getting started. Consumers demand for organic food has grown domestically because of the rise in disposable income and increased health consciousness. Organic food refers to food that's made with using organic farming methods. Food which are environmentally friendly are grown without the use of synthetic chemicals like pesticides and fertilizers, and it doesn't include any type of GMOs. Organic food is preferred by consumers for a variety of reasons, including environmental, health, and animal welfare concerns, as well as perceptions of superior taste compared to conventional options. Organic agriculture is very much beneficial for the environment. Certified organic agricultural methods limit the use of synthetic fertilizers and pesticides, reducing chemical runoff and pollution of soils and waterways. According to the finest and most current research in systematic evaluations and meta-analyses, there are notable and nutritionally significant variations in the constituents of conventional and

organic foods. This includes elevated proportions of omega-3 fatty acids in dairy and meat products deemed organic, and additionally higher antioxidant levels in organic vegetables but lower levels of cadmium and pesticides. Overall, it seems that organic farming systems, similar to those who preceded earlier of sustainable agriculture, have previously demonstrated their capability to produce foods of superior quality; yet, there is currently not enough of scientific data on the health consequences of organic foods.

Keywords: *Organic food, consumer perception, health consciousness, genetically modified organisms (GMOs), organic farming systems.*

INTRODUCTION

The general public's conviction that food that has been produced organically is safer, healthier, and savours better than conventional food has played a significant influence in the advancement of the organic food industry. There are multiple motives that's why different demographic groups find organic food appealing. In this paper, we examine the information that is accessible regarding the connections between human health and farming systems (conventional vs. organic) (Axe et al. 2017).

The widespread use of traditional farming methods that align with organic agricultural practices in underdeveloped nations presents a significant opportunity to boost organic production. Out of the 143 million hectares of agricultural land in India (Varghese et al. 2016), only 5.2 million hectares (3.64%) are certified organic.

The Indian government launched the Paramparagat Krishi Vikas Yojana (PKVY) to encourage organic farming. Five lac farmers will benefit from the two lac hectors set aside for organic farming. In 179 nations worldwide, more over 50.9 million hectares including areas undergoing conversion were grown organically in 2015. The European Union's organic retail market grew by 107% between 2006 and 2015, reaching €27.1 billion (Helle Raun et al. 2017).

When considering the demand side of organic food markets, a number of factors influence customer decisions, such as product certification, perceived health benefits, and organic food pricing. The People have been digging at an increasing rate for organic products since they anticipate they provide better nutritional value and have a smaller environmental impact, driven by increased disposable incomes and a greater emphasis on wellness. According to a meta-analysis of 343 research on phytochemical composition, crops cultivated organically had 17% greater amounts of polyphenols and lower levels of pesticide and cadmium residues than crops grown conventionally. Numerous foods, specifically root vegetables and green nutritious vegetables, demonstrated to have a reduced nitrogen concentration when cultivated organically as in comparison to conventionally (Anne Lise et al. 2016). Compared to men, older age groups, persons of various political affiliations, and those with less education, research conducted in the United States has shown that women, young adults, liberals, and College graduates have a considerably greater chance of consistently purchasing organic food. Organic food may also be more appealing to adherents of other restricted diets. According to one research, disciples of vegetarian, vegan, or pescetarian diets consumed significantly more organic foods than omnivores. Organic agriculture has higher cost implications as a result of shorter yields and higher labour expenditures, resulting to strategic customer pricing. Since 2002, On a global scale purchases of organic food have increased by almost 170 percent., reaching over \$63 billion in 2011(Stefan et al. 2017). The cost of organic items is generally twice as higher than that of comparable conventionally produced goods, ranging from 10% to 50%. However, the real scenario of organic food manufacturing is far more nuanced.

In light of contemporary living, this paper seeks to critically analyse the multifaceted nature of organic food, examining both its possible advantages and disadvantages. For the purpose to figure out whether or not organic food can actually be a sustainable and equitable alternative of the difficulties facing contemporary food systems, it will examine the environmental benefits and drawbacks of organic farming

practices, examine the scientific data regarding the dietary variations between conventional and organic foods, and evaluate the economic and social possibilities of widespread manufacture of organic food (Crystal Smith et al. 2012).

MATERIALS AND METHODS

A comprehensive investigation was carried out using PubMed, PubMed Central, Google, furthermore published research and overview paper from various countries. The primary objective of this review was on the environmental pollutants that were brought forth by the leather industries and the microbial bioremediation strategy to eliminate these pollutants. We removed statements of exposure that were too general and only looked at published data. Based on these inclusion requirements, we have contained data acquired from credible sources of relevant publications. Other than English, no other languages were considered in the study.

DISCUSSION

Chemical composition

Depending on the food group, organic and conventional alternatives differ in composition. According to an analysis published in February 2016, which published 15 research studies or meta-analyses examining the nutritional variations between conventional and organic products, 12 summarized those organic foods had enhanced vitamin C levels, total antioxidants, and total omega-3 fatty acids (Anne Lise et al. 2016). Due to variations in the tests conducted and the testing procedures, as well as the fact that the whims of agriculture impact the chemical makeup of food, these studies typically have confounding variables and are challenging to generalize. The chemical makeup of a particular food item is further influenced by the conditions of transportation and storage, a duration between harvest and inspection, and the handling of the food items afterwards the initial harvesting (Baranski et al. 2017).

Nutrients: A prevalent myth is that organic foods are higher in nutrients and are therefore nutritious than those developed in the conventional manner. However, because to varying

findings from field studies, specialist have not been 100% certain that this is the case.. According to reviews and meta-analyses, the amount of dry matter in organic fruits and vegetables is more severe, minerals (such as iron, magnesium, phosphorous, and zinc), vitamins C, and other bioactive substances like carotenoids and tocopherols, and lower levels of nitrate (Anne Lise et al. 2016). Alpha-tocopherol in beef and pork and the concentration of vitamin A (retinol) in beef turned out to be the same in the few studies that examined vitamin composition of meats. In contrast to conventional feed, which consists of soy, palm kernel cake, and cereals with lesser omega-3 content (Smith-Spangler et al. 2012), organic livestock husbandry states that a significant portion of the feed for milk and dairy products be locally grown grass and clover, which are high in omega-3(Średnicka-Tober et al. 2016). As stated by systematic review and analysis, organic livestock had much amounts of good fats like omega-3 and omega-6 (Magkos et al. 2003) but lower levels of monounsaturated and saturated fat than conventional meat.

Nitrogen and phosphorus: When analysing organic to conventional, previous systematic evaluations have consistently revealed a higher phosphorus content (standardized mean difference) and a lower total nitrogen level (Magkos et al. 2003). One United Report has been examined that Arsenic levels in chicken might be lower that are organically nurtured when assessing environmental pollutants such heavy metals. However, given the variations in fertilization techniques and the essential role that N, P, and the N:P ratio play in plant development (Dangour et al. 2009), this could provide some credibility to other outcomes of the production system that have been seen.

Phytochemicals & polyphenols: During a meta-analysis of research on phytochemical composition, crops cultivated organically had 17% greater amounts of polyphenols and lower levels of pesticide and cadmium residues than crops grown conventionally. There are many limitations in research on the phytochemical makeup of organic crops, including the lack of standardized measurements, insufficient explanation of variability measures, selective or redundant data reporting,

publishing bias, and insufficiency of rigidity (Barański M et al.2014).

Meta-analyses demonstrating that the manufacturing technique has a minor impact on the overall phenolics content, such as a 14–26% rise. All of the available meta-analyses point to a somewhat increased phenolic component content in organic food, for certain particular phenolic chemical classifications, significant relative concentration variations of both conventional and organic crops have been documented (Smith-Spangler et al. 2012).

Pesticide residues: In 7% of samples of organic produce and 38% of samples of conventional produce, detectable pesticide residues were discovered. In contrast with conventional produce, organic produce was 30% less prone to contamination with any measurable pesticide residue. By establishing a limit on the maximum quantity of residue from pesticides that may be found on or within any certain food, the Agency of environmental management upholds stringent regulations for the management of pesticides (Lesueur et al. 2007).

Bacterial contamination: Organic produce had a higher risk of contamination, according to four of these five investigations. In sensitivity analysis, when we eliminated the 1 study (of lettuce) that revealed higher contamination among conventional food, we discovered that organic product had a 5% higher chance of contamination than conventional alternatives (Smith-Spangler et al. 2012).

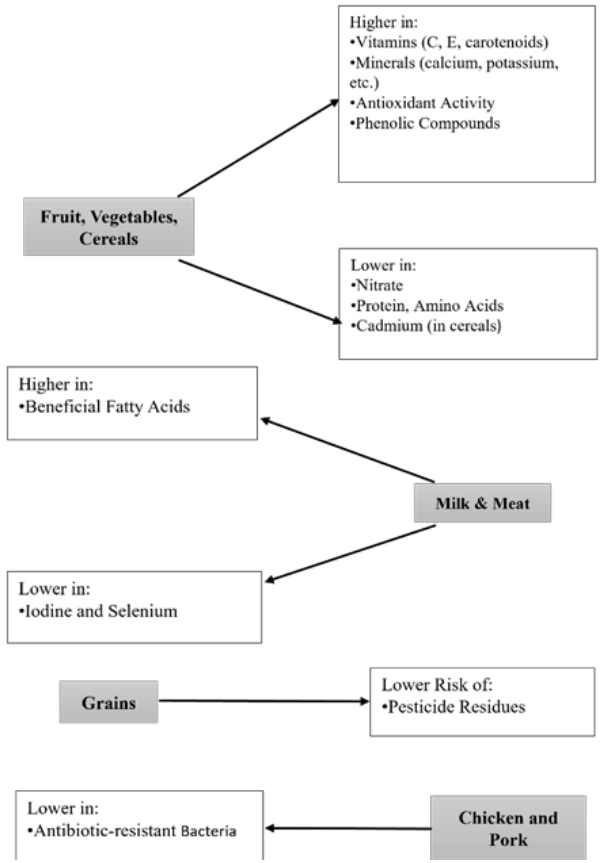


Fig. 1. Organic vs. conventional food composition (Anne Lise et al. 2016).

Consumer perception and attitudes

Taste: There hasn't been any official research conducted to confirm the idea that the texture of organic food is superior

to that of conventional food. There is proof that certain fruit grown organically is drier than fruit farmed commercially (Bourn et al. 2002). Because of the larger concentration of tasting compounds, a fruit that is a little drier might taste stronger. In fact, a lot of chefs and food specialists think that organic foods taste better, giving credibility to the soil care practiced by organic farmers, also substances that plants create to cause their own ripening; as ripening alters the fruit's flavour and texture, this technique might have effects on those characteristics (Axe et al. 2017).

Environmental sustainability: Following years of reliance on chemical inputs and extensive monoculture, agricultural soil will deteriorate to the point that farmers report tougher soils, making farming more challenging and labour-consuming. In most cases, organic farming has lesser of an effect on the environment than conventional farming. Strategies for organic farming can aid in the restoration of species abundance and richness by 30 to 50% as well as the restoration of the ecosystem services that go along with them.

Health and safety

Few scientific studies in humans or animals have investigated whether eating organic food is actually related to better health than eating the corresponding conventional food, Even though numerous studies have analysed the nutrient, antioxidant, and pesticide residue composition of conventional and organic meals (Anne Lise et al. 2016). Specifically, there aren't many long-term clinical trials looking to find possible correlations between health and consuming organic food, mostly because of its high cost. Although herding behaviour also plays an amplifying role, The primary element influencing the consumption of organic food is health consciousness, as seen by the net effect of health awareness being significantly greater than that of herding behaviour (Hurtado et al.2017).

A specific concern with observational studies is that people who frequently purchase organic food typically have healthier eating habits overall and pick more fruits, vegetables, and wholegrain items while consuming less meat (Arvanit et al. 2006). The initial potential trial examining

how weight changes over time regarding the consumption of organic food comprised high purchasers of organic food reported a slower rate of BMI increase over time than low consumers also decrease in the likelihood of obesity was reported. In the Nutrient-Santé study, Organic food consumers, both constant and irregular reported a reduced prevalence of cardiovascular disease however a history of carcinoma, high blood pressure, adult-onset diabetes, and hypercholesterolemia in both genders than nonconsumers (Wang et al. 2023). Many consumers associate food safety with the risk of contamination from disease-causing microbes (such as *Salmonella* sp. and Coliform) and residues of agrochemicals, primarily pesticides, during the production stage. Conventional and organic farmers both need to follow the same safety standards.

Economic and social benefits

The growing consumer demand for organic products in the industry products is one of the main financial advantages of organic farming. As the number of consumers increases, organic foods are growing and gaining more ecologically conscious popularity and health conscious (Adarsh & Anil. 2022). Preserving the general economic sustainability of farming and ensuring a high enough income to keep farming families in business are two of agricultural policy's top priorities (A. Häring et al. 2001). Another important benefit of organic farming is rural development. Small-scale and family farms, which are essential to preserving the social cohesion and financial stability of rural communities, are typically supported by organic farming. Organic farming supports the creation of robust regional economies that are less dependent on external resources and changes in international markets by promoting sustainable agricultural practices. This fortitude can make the community stronger (Adarsh & Anil. 2022).



Fig. 2. Motives behind purchasing organic goods. (Anubhav & Chidanand. 2022)

CONCLUSION

The recent survey shows that customers are aware of the advantages of the term “organic.” Customers congregate in this market not just to purchase food goods but also to brighten and cheer up their days. The findings indicate that people are becoming more conscious of organic food trends and awareness, and farmers are happy to have more clients. Farmers claim that they welcome two to three new families to their market each month.

Future directions

New organic farming practices and technology, including sophisticated pest management and soil fertility increases, can increase yields and reduce sensitivity to environmental pressures.

Conflict of Interest

There is no conflict of interest related to the study.

Author contributions

Acquisition and interpretation of data is done by Arpita Das and Archita Dhara. Conception, design and revising of the article are done by Rupesh Dutta Banik.

Acknowledgement

I would like to express my special thanks of gratitude to the higher dignitaries of Swami Vivekananda University for allowing me to carry out the study.

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