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Promoting sustainable food systems in the organic industry through an online platform

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Abstract

Growing consumer interest in naturally grown foods has raised the demand for organic food. Because chemical pesticides and synthetic fertilizers are absent from organic foods, they are said to be safer and healthier. However, purchasing organic goods is significantly hampered by high prices, difficulty in identifying genuine organic products, and accessibility issues. Numerous studies have compared the characteristics of traditionally and organically produced foods in connection with customer opinions, preferences, and attitudes toward organic foods. Fruits, vegetables, and milk are among the commodities in high demand, as educated and upper-middle-class Customers are prepared to pay more for organic goods. It is important to provide farmers with a financial incentive to produce more organic goods to address the demand-supply imbalance. In this study, we will perform a thorough literature analysis on buyer behavior and organic foods with an emphasis on customer attitudes and preferences as well as the advantages of organic food for the environment and health. We will also examine the latest research papers from the previous year to generate theories for promoting organic food through online platforms and changing consumer preferences and viewpoints on organic food. This study aims to help farmers obtain better prices for their organic products through online platforms and develop strategies to promote sustainable food systems by raising consumer awareness towards organic food.

Keywords: Organic food, awareness, consumer behavior, preferences, online organic store

Introduction

The rising need for foods produced organically has become more and more understood by both developed and emerging countries, including India. Organic grocery store has been hastily growing in India. The maximum essential component on multiplied production & intake of natural merchandise is the alternate in purchaser preferences. Consumers are turning to natural ingredients due to fears for meal safety. Consumers are inclined to pay a 5-7% top rate on natural meals for protection. Concerns about the environment, food safety, animal welfare, and human health are just a few of the problems that have led to this focus. This has also created a rising interest among many stakeholders, including policymakers and consumers, in integrating and assessing the various experience data in order to determine the degree to which claims promoting organic food have a scientific foundation refer to Figure 1.

Healthy Food Habits: Healthy eating practices are crucial for long-term health outcomes and have a significant effect on mental and emotional wellbeing. Organic foods not only offer more beneficial nutrients than conventionally grown foods, but are also better for the environment. To guarantee that dietary needs are fairly understood, modernized lifestyles are crucial^[1].

Importance of organic food: Organic farming strictly prohibits the application of artificial fertilizers, pesticides, and genetically modified organisms (GMOs) in their agricultural practices. Organic farming may be financially advantageous for farmers due to the higher prices they can usually obtain for their goods as a consequence of the alleged environmental and health benefits of organic meals. Organic farming may need more labour than conventional farming since natural pest management strategies may require more attention and care from farmers. Additionally, organic crops may yield less than crops grown conventionally, which could result in lower farm income. The greater cost of organic products, which may make them unaffordable for low-income consumers, limits the possibility for organic farming to become a generally adopted strategy for sustainable agriculture.

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Fig 1: Home Page of GreenSFS

COVID-19 and Organic Food Consumption: Consumer behaviour has changed as a result of the epidemic, creating location restrictions, restrictions on imports and exports, and a mobility deficit. But because organic foods high in protein are good for your health, consumption has increased. The demand for organic food has consequently unexpectedly grown.

“Organic agriculture is an ecological manufacturing control machine that promotes and complements biodiversity, biological Cycles, and soil organic activity,” says the USDA National Organic Standards Board (NOSB). Organic farming is based on employing management strategies that promote the restoration, preservation, and enhancement of ecological balance while minimizing the reliance on external inputs [2].

The term "organic" refers to food that has not been grown with artificial pesticides, insecticides, herbicides, fungicides, hormones, fertilizers, or other dangerous chemicals. Artificial tastes or colors are not used in the production of organic foods [3].

Literature Review

Organic food has grown in popularity in recent years as a result of its supposed health and environmental benefits. Customers are becoming more concerned about the quality and safety of their food, and they are ready to pay a premium for organic items. In this review, we look at the most recent studies on awareness and preference for organic food items, with an emphasis on publications released after 2020 [4].

During the COVID-19 epidemic, Akram *et al.* (2021) performed an empirical research in Pakistan to evaluate consumer behaviour and attitudes towards organic foods. The study discovered that during the pandemic, consumer awareness of organic foods grew, and consumers were more health-conscious and concerned about food safety. To capitalise on this trend, the authors urge that organic food producers and merchants expand their marketing efforts [5].

Al-Obaidi *et al.* (2020) studied consumer knowledge, perception, and attitude towards organic food in Saudi Arabia. While consumers had a moderate level of awareness and knowledge about organic food, they were still hesitant to purchase organic products due to the high cost and limited availability, according to the study. To increase organic food consumption, the authors urge that organic food producers and merchants focus on improving consumer awareness and education.

Sutanto and Dewi (2021) performed a comprehensive assessment of factors influencing organic food product purchase decisions by consumers. Several factors influencing consumer behaviour were identified in the study, including product quality, trust, price, and availability. To make organic food more accessible to a larger spectrum of customers, the

authors recommend that organic food producers and merchants work on enhancing product quality and availability while also lowering pricing [6].

Fatma *et al.* (2021) investigated the impact of product information and customer knowledge on organic food purchase intentions in Indonesia. According to the findings of the study, product information and customer understanding have a strong beneficial influence on consumer intention to purchase organic food items. To boost customer trust and confidence in organic products, the authors urge that organic food producers and merchants publish more extensive and transparent product information.

Mahmud *et al.* (2020) investigated consumer knowledge and perception of organic food in Bangladesh. While consumer awareness of organic food was low, there was a high level of interest in organic products among those who were aware of them, according to the study. To increase organic food consumption in Bangladesh, the authors propose that organic food producers and merchants focus on improving consumer knowledge and education [7].

Technology Used

HTML: It's referred to as hypertext. The primary domain is where all referral links and the data component are specified for making up the crucial information on a webpage. Markup Language, or HTML, is a programming language used to define and build the information structure on a webpage to be delivered on the internet.

CSS: A website's front end is enhanced with CSS, improving user experience. A Website without CSS would be substantially more difficult to browse and less aesthetically pleasing. A CSS is in charge of font color in addition to layout and format refer to figure 2.

JavaScript: A JavaScript is a text-based programming language that enables interactive web pages on both the client-side and server-side. A JavaScript adds interactive aspects to online pages that keep people interested, whereas HTML and CSS give web pages structure and appearance.

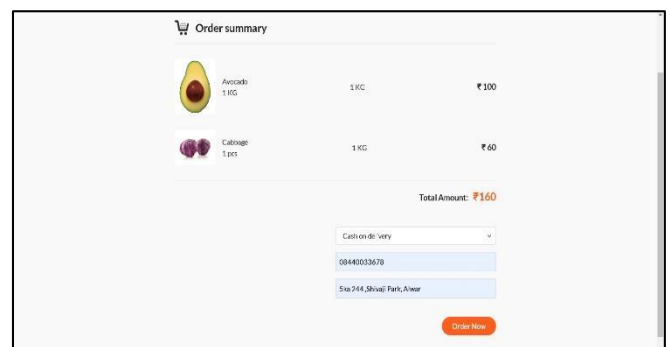


Fig 2: Order Summary of GreenSFS

Node.js: A server-side JavaScript runtime environment called Node.js is open-source, and cross-platform, and enables programmers to create network applications that are quick, scalable, and effective. The V8 JavaScript engine from Google, which converts JavaScript code into native machine code, is the foundation upon which it is based. In comparison to other server-side technologies, this makes Node.js incredibly quick and effective [8].

Express.js: A server-side JavaScript runtime environment

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MongoDB: The most popular document database utilized in the development sector is MongoDB. Comparing document databases to SQL databases, the fundamental concepts of table and row have changed. Here, the term document, a much more adaptable and model-based data structure, has taken the place of a row [9].

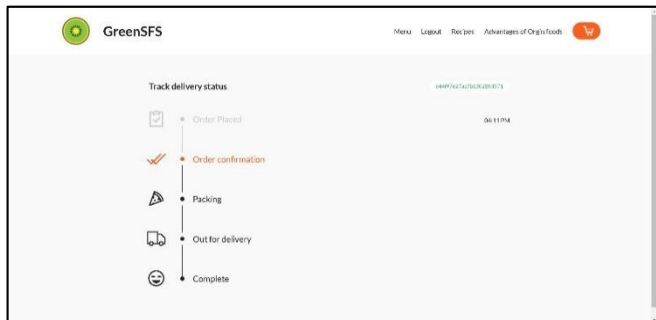


Fig 3: Track Delivery Status of GreenSFS

Organic Vs Non-Organic Product

Products that are classified as organic and non-organic have different farming practices, manufacturing procedures, and nutritional qualities. When comparing organic and non-organic products, keep the following things in mind:

Farming practices: Conventional agriculture utilizes synthetic fertilizers, herbicides, and insecticides, whereas organic farming relies on organic fertilizers like manure and compost as a natural alternative. To maintain soil health and biodiversity, organic farming practices also include crop rotation, cover crops, and organic pest management methods. [10].

Production procedures: Organic products must adhere to high standards established by certifying organizations and are produced without the use of genetic alteration or irradiation. To extend the shelf life of non-organic items, they may be genetically modified, exposed to radiation, or given chemical preservatives.

Nutritional value: Compared to non-organic products, organic foods generally are thought to be more nutrient-dense because they have higher concentrations of specific micronutrients including vitamin C, iron, and magnesium. The extent of this divergence and its significance for human health, however, are still up for debate.

Cost: Due to the increased cost of manufacture and certification, organic items are often more expensive than non-organic products. This may make it more difficult for consumers on a budget to get organic goods.

Benefits of organic food: Here are the various most important advantages.

Pesticide-free: Organic food is produced without the use of artificial fertilizers, pesticides, and herbicides, all of which have the potential to be hazardous to human health. As a result, there is a lower chance of being exposed to dangerous chemicals and the resulting health impacts.

Rich in nutrients: Food that is organically grown is typically higher in nutrients, such as vitamins, minerals, and antioxidants, than food that is traditionally grown. This is so that nutrient-rich plants may develop more easily. Inorganic farming practices place a major focus on maintaining the health of the soil and using organic fertilizers.

Friendly to the environment: The sustainability of the environment is supported by organic agricultural practices. This entails utilizing sustainable resources, reducing waste, and refraining from using artificial chemicals that can endanger wildlife, contaminate streams, and impair soil quality.

Better animal welfare: Organic food is derived from livestock that has been raised in an ethical and humane manner. They are not kept in cramped quarters, get no growth hormones or antibiotics, and have access to outdoor areas.

Reduced antibiotic resistance: Antibiotic-resistant bacteria are becoming more prevalent as a result of excessive use of antibiotics in traditional farming, which poses a major risk to human health. Antibiotics are not allowed in animal feed while farming organically, which can lessen the danger of antibiotic resistance.

Reduced risk of food contamination: Food safety is prioritized in organic farming practices, which can help lower the risk of food contamination and foodborne illnesses. .

Better Taste: It's generally accepted that food produced organically has a richer flavor than food produced traditionally. This is due to the fact that it is grown in nutrient-rich soil, which can improve the food's flavor and quality refer to Figure 4.



Fig 4: Quality of Organic Food

Status and non-monetary features of organic farming in India

In India, organic farming has become more popular recently. The country had 3.56 million hectares of certified organic land in 2020–21, with a total of 3.85 million farmers engaged in organic farming, according to the most recent information available from the Ministry of Agriculture and Farmers Welfare. When compared to the previous year, there were 3.23 million farmers and 3.28 million hectares of certified organic land, this is a significant increase.

Even though there are more organic farmers and more certified organic land, just a small portion of India's overall agricultural acreage is used for organic farming. Only 2% of the nation's agricultural land is used for organic farming, far below the government's goal of 20% by 2025.

For Indian buyers of organic products, non-monetary attributes are crucial. One of the main causes of this is the widespread belief that organic food is better for your health. Customers think eating organic food is safer and healthier than eating conventionally farmed food since it isn't contaminated with dangerous pesticides and chemicals.

Additionally, organic farming is regarded as being more environmentally responsible and sustainable because it does not use artificial fertilizers and pesticides, which can damage

the health of the soil and cause pollution of water sources. Furthermore, Indian consumers of organic products place a high value on intangible attributes like taste and quality. Many customers think organic food tastes better and is of higher quality than food produced in a traditional manner. This is partially because organic farming frequently employs conventional and organic farming techniques, which are thought to result in higher-quality and tastier crops.

Finally, despite the fact that organic farming in India is still in its infancy, it has been progressively expanding in recent years. The demand for organic food is being driven by non-financial factors such as health advantages, taste, and sustainability that are valued by organic consumers in the nation. More farmers are anticipated to transition to organic agricultural practices as public awareness of its advantages grows, fueling the industry's future expansion.

Development and willingness to consume organic food

With rising demand from people who are concerned about their health, the environment, and animal welfare, the organic food sector is expanding quickly refer to figure 5. Here are some things to think about on the willingness to eat organic food and the level of development.

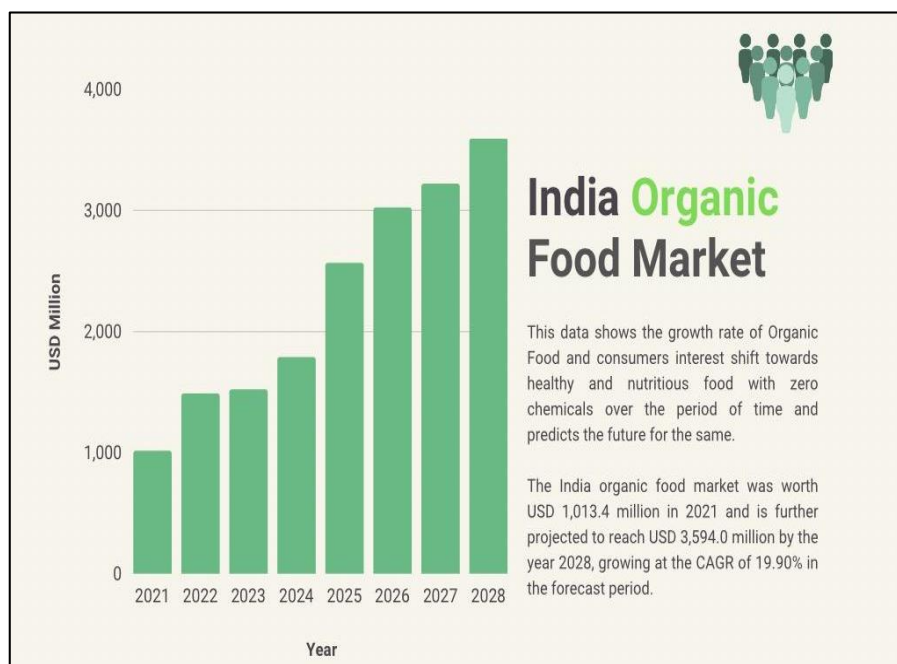


Fig 5: Future of Indian Organic Food Market

Certification and standards: To guarantee that organic food complies with specific regulations for farming methods, food processing, and ingredient sourcing, it must pass stringent certification and labelling requirements. These requirements differ by nation and location, but they typically call for the avoidance of genetically modified organisms (GMOs), the restriction of the use of synthetic chemicals, and the use of natural pest control techniques.

Consumer attitudes: Although opinions on organic food differ by location, there is generally increased interest in it as a healthier and more environmentally friendly choice. The Organic Trade Association's 2020 study found that 59% of Americans claimed they were purchasing more organic goods than they were a year earlier.

Factors influencing consumption: Price, availability, flavor, convenience, and perceived benefits to health and the environment are all factors that affect customers' inclination to eat organic food. Social conventions, advertising, and consumer confidence in the organic labelling and certification system are other elements that may have an impact on consumers.

Willingness to pay

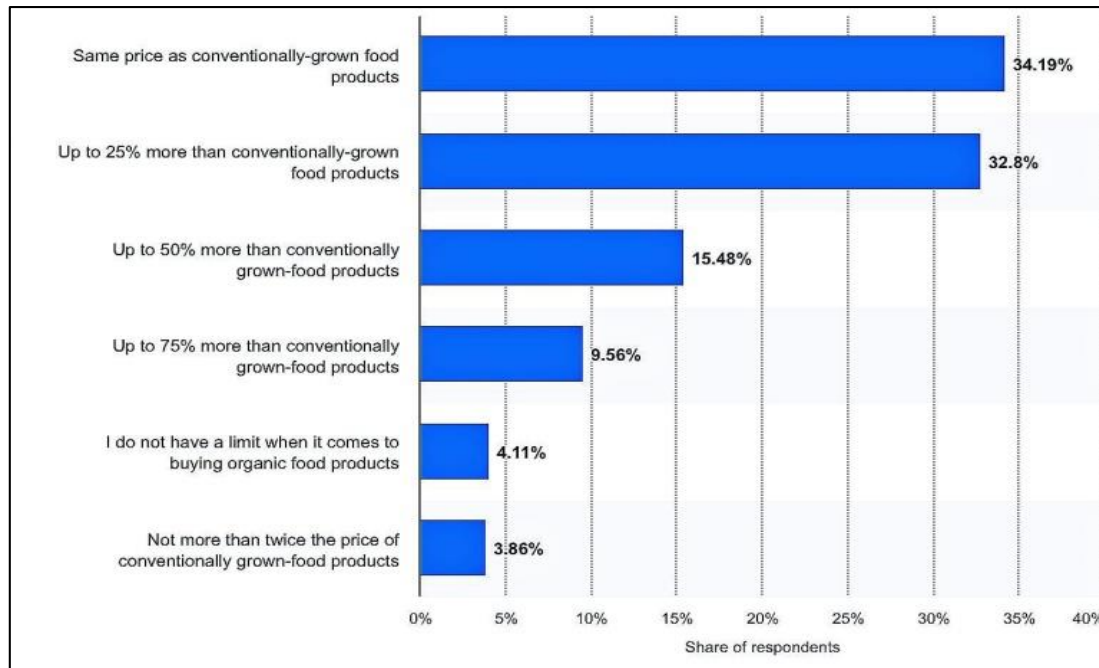
The greatest amount of money that customers are willing to spend on organic products as opposed to conventional ones is referred to as willingness to pay (WTP) for organic food refer to figure 6. Consider the following factors when determining your willingness to pay for organic food:

Factors impacting WTP: A number of factors, including money, education, health consciousness, environmental awareness, and faith in organic labelling and certification processes, influence consumers' WTP for organic food. Customers are more likely to spend more for organic food if they appreciate the benefits to their health and the environment.

Methods of measuring WTP: The WTP for organic food can be calculated in a variety of ways, including surveys,

auctions, and experiments. The most popular technique involves conducting surveys and asking people how much they would be ready to pay for a specific organic product.

Price premiums for organic food: Due to greater production costs, reduced yields, and certification fees, organic food is typically more expensive than conventional food. The price premium for organic food varies by product and location, but for some products it can be as much as 50% or more.



Source: Statista

Fig 6: Pay for organic food in India in 2021

Regional variations in WTP: The WTP of consumers for organic food varies by location and nation. The consumption of organic food varies depending on the economic background of the consumers, as people in developed countries exhibit a greater willingness to pay for organic food than those in less developed nations. For instance, whereas customers in the US were willing to pay a bigger premium for organic food, a study in India indicated that consumers were only willing to pay a minor premium.

Information's effect on WTP: Educating customers about the advantages of organic food, including better health and environmental sustainability, can raise their WTP for organic food. Consumers' WTP, however, may be affected by inconsistent information about the advantages of organic food and skepticism towards the system of organic labelling and certification.

Consumer awareness about organic product

Customers' purchase decisions and willingness to pay for organic products are significantly influenced by their knowledge of and familiarity with these products. A study paper on consumer knowledge and understanding of organic products might include the following ideas:

Definition of organic products: Organic products are characterized as crops that are cultivated without the usage of synthetic fertilizers, pesticides, or genetically modified

organisms (GMOs), while promoting ecological equilibrium and biodiversity. For consumers to be able to discern between organic and non-organic products, this definition must be understood.

Labelling and certification: An organic product must have a certification label that attests to its status as such. The meaning of these labels and how they differ from other product labels like "natural" or "GMO-free" must be clear to consumers. Organizations and certification agencies are crucial in informing customers about organic products and the requirements that growers and processors must meet.

Benefits of organic products: In order to make wise purchasing decisions, consumers need to be aware of the advantages of organic products. Reduced exposure to pesticides and chemical residues, increased environmental sustainability, and improved animal welfare are all advantages of organic products.

Organic product myths: There are a number of organic product myths that may affect consumer awareness and comprehension. For instance, some customers could think that organic products are always more nutrient-dense or that they are pesticide-free. To guarantee that they make informed purchasing decisions, consumers must be educated about these myths.

Consumer education: There are various ways to educate consumers about organic products, including advertising, social media, educational initiatives, and labelling programs. Consumers can gain a better understanding of organic goods and the advantages of organic farming by using the educational materials that certification authorities and organic farming organizations frequently offer.

Consumer attitudes regarding organic Food

Consumer opinions and attitudes towards organic food play a significant role in how willing they are to pay more for it, how willing they are to buy it, and how accepting they are of it as a whole. Here are some details on how consumers feel about buying organic food.

Health Perception: Due to the absence of synthetic pesticides and fertilizers, many believe organic food to be healthier than conventional food. Studies implying that organic food has lower levels of pesticide residues and higher levels of specific nutrients than conventional food corroborate this impression.

Environmental perception: Due to the use of farming techniques that encourage biodiversity, conserve natural resources, and lessen pollution, Consumers hold the perception that organic food is more environmentally friendly than conventionally produced food. Studies implying that organic farming can lower greenhouse gas emissions and improve soil health reinforce this idea.

Consumer perception of quality: Due to the stringent certification requirements that organic growers must meet, consumers believe that organic food is of greater quality than conventional food. Studies implying that organic food may have superior flavor, texture, and appearance than conventional food lend credence to this view.

Price Perception: Due to the greater production expenses connected with organic agricultural methods, consumers believe organic food to be more expensive than conventional food. This opinion might prevent consumers, especially those with lower incomes, from purchasing organic food.

Consumer perspective of labelling: Consumers view organic labelling and certification programs as trustworthy and dependable indicators of an organic status. The stringent requirements that organic growers must meet in order to receive certification bolster this notion.

Perception of knowledge: Consumer knowledge and understanding of organic food and farming practices varies greatly, with some consumers having a profound understanding and others having only a basic understanding. Education programs can aid in raising consumer awareness of organic food options and their advantages.

Consumer preference on organic food

Due to the greater production expenses connected with organic agricultural methods, consumers believe organic food to be more expensive than conventional food. This opinion might prevent consumers, especially those with lower incomes, from purchasing organic food.

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Perception of knowledge: Consumer knowledge and understanding of organic food and farming practices varies greatly, with some consumers having a profound understanding and others having only a basic understanding. Education programs can aid in raising consumer awareness of organic food options and their advantages.

Taste and Quality: Consumers that place a high value on taste and quality may like organic food because they believe it has better flavor, texture, and appearance. Some customers think that organic food is more flavorful and fresher than conventional food.

Animal welfare: Because organic farmers are required to follow stringent animal welfare regulations, consumers that place a high priority on animal welfare may prefer organic food. Organic farming methods forbid the use of antibiotics and growth hormones in the raising of cattle, which may appeal to customers who are concerned about animal welfare.

Ethical and social concerns: Consumers who place a high priority on ethical and social issues may like organic food since it is thought to be more in line with their ideals. Fair labor practices and local community support are prioritized in organic farming, which may appeal to customers who are concerned about social and ethical issues.

Price sensitivity: Consumers may favor organic food but also be price sensitive, especially during rough times financially. The application of organic farming techniques incurs greater production costs in comparison to conventional farming methods, resulting in the comparatively higher prices of organic food. The price premium attached to organic food products may have an impact on consumer preference for organic food.

Conclusion

To determine consumer awareness and impression of organic food items, the case study performed on previous records. According to that, consumers are well aware of the health advantages of eating organic food that are free of dangerous chemicals and hence won't have any adverse effects. Urban residents showed a higher degree of knowledge of organic food items in previous years and it still increasing year by year. The study also showed that a sizable majority of those who responded desired to buy organic food items but had trouble locating them owing to their scarcity. Additionally, participants held the view that eating organic food promotes a stress-free lifestyle. Contrary to expectations, the previous records about this topic revealed that customers were prepared to spend more for organic food items because of their alleged health advantages.

Overall, this study shows how consumers are giving organic food items more consideration, and it concludes that in order to keep up with the rising demand for these goods, producers and merchants must address the issue of supply. Further investigation into the health advantages of organic food is called for in the study in order to better inform consumer choices.

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