International Journal of Innovative Research in Engineering & Management (IJIREM)
ISSN: 2350-0557, Volume-9, Issue-1, February 2022
https://doi.org/10.55524/ijirem.2022.9.1.24
Article ID IJIR- IRP229112, Pages 134-139
www.ijirem.org

Organic Food Processing: A Review

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ABSTRACT: Organic farming and food production is a broad approach to farm management and food production that aims for long-term sustainability, high-quality products, and the use of techniques that do not affect the environment, human, plant, or animal health and welfare Any technology that does not convert modern foods into food products is referred to as a food process. This might include laundering, chopping, pasteurizing, freezing, fermentation, packing, state transition, and a whole lot more. Adding substances to food, for example, to extend the cooking time, is also part of the culinary process. In addition to contributing in environmental defense and preservation by increasing yields and reducing reliance on chemical pesticides and herbicides, genetically modified crops are expected to address a variety of hunger and deficiency disease concerns throughout the world. Though organic food products have the healthiest composition, they come with their own set of drawbacks. However, they are the most popular to eat due to their superior natural composition. The different methods involved in the organic food processing maintain the integrity of organic food products even after they reach home factories to be processed and distributed to customers for consumption.

KEYWORDS: Agriculture, Disease, Management, Organic, Pesticides.

I. INTRODUCTION

Organic farming and food production refers to a comprehensive system of farm management and food production that aims for long-term sustainability, high-quality goods, and hence the use of practices that do not affect the environment, human, plant, or animal health and welfare. Consumers are increasingly concerned about food quality, manufacturing practices, and origin, and organic goods have a greater perceived value. The methodology for making food-related choices is sophisticated, and it is influenced by a variety of circumstances:

1. physical: access, education, and abilities
2. social: family, culture, and dietary habits
3. Mood, tension, and guilt are all psychological factors.
4. personal: attitudes, opinions, and facts about food.

The public conversation on natural horticulture included the public's thoughts on ecological and quality concerns, and revealed a clear need for more solid and consistent natural rules (86 percent), as well as enhanced management frameworks (58 percent). To assist consumers make informed decisions, the European Commission, in addition to existing law, developed an in-depth structure of regulations and requirements for the production, processing, handling, and certification of organic foods, and launched a specific EU organic brand [1].

A. What Is Organic?

Natural could be a way, a propensity and a notice all folded into one. It alludes to some method of developing and cycle food. It's conjointly disturbing the dependence on partner degree natural framework that supports itself on made soil and set up antiquated practices to develop yield and food that opposes irritations and illnesses. Natural conjointly recommends that, the ranchers don't utilize poisonous, steady pesticides, composts that square measure far popular to debase soil, air, water and furthermore the food. Truth be told, natural ranchers and cultivating includes practices of pivoting crops, conveying supportive creepy crawlies, exploitation provincially sharpened ways, adding treated the soil excrement and plant squanders to the dirt. Natural ranchers square measure harmless to the ecosystem. They select answers for the nuisances and illness gives that affect their yields during a way that doesn't injury and annihilate the earth. Their insight is set up hence square measure their practices[2].

II. LITERATURE REVIEW

Agricultural Marketing Service, United States Department of Agriculture The four maps included in the current organic agricultural atlas are visual representations of current global organics data, according to the study: Total hectares of certified organic production (organic agriculture, wild culture, forestry, and aquaculture); certified organic producers In terms of organic agricultural hectares, Australia leads the globe, while Europe is well-represented and Africa is underrepresented. Finland is the global leader in organic wild culture, with a significant African presence and a large Asian presence in Zambia and India, respectively. In terms of total organic production hectares (a combination of agriculture, wild culture, forestry, and aquaculture), Australia leads the way,

followed by Finland. India is the world's largest producer of organic products. The maps show how the organics craze has expanded over the world, highlighting leaders and laggards, as well as areas for development and better reporting. The World mapper GIS algorithm, which was created at the University of Sheffield as a cartographic visualization tool, is used to create these maps[3].

C. Arsenault remarked in another study that organics is a tremendous success story for Australia, and that achieving worldwide majority (51%) is a significant milestone for the industry. In 181 nations, organic agriculture has been reported. Australia has 35,645,038 certified organic hectares out of a total of 69,845,243 hectares worldwide. Since the first worldwide data on organics were compiled and released in 2000, based on certified organic hectares, Australia will always be the world leader in organics. Global organics has risen at a rate of 12 percent per year (pa) during the last two decades, whereas Australian organics has expanded at a rate of 16 percent pa. For the last five years, Australia's growth has accelerated to 22%. Without the assistance from the government or institutions, this has been done in Australia. The crown of Australia is not going to be "kicked off." Argentina is in second place, with 3,385,827 hectares, little over 10% of Australia's total. China comes in third with 3,023,000 hectares, followed by Spain (2,082,173 ha) and the United States (2,082,173 ha) (2,031,318 ha). All eight Australian states and territory have reported on organics. South Australia and Queensland are the two most populous states. Only 8.8% of the country's farmland is certified organic, indicating that there is still opportunity for improvement. Organic agriculture, whether it's in the United States or abroad, delivers high-quality products at a premium market price. At its current pace of expansion, Australia will soon join the '10 percent Club,' which includes leaders Liechtenstein (37.9%), Samoa (37.6%), Austria (24.0%), Estonia (20.5%), and ten other countries. The worldwide need for clean, healthy food drives the market for Australian organic goods, which ultimately means discriminating customers willing to pay a premium for organic products. Customers are becoming more educated, discerning, health conscious, and rich across the world. If given the choice, no one would eat glyphosated food if they knew the risks. Organics, both internationally and in Australia, have a promising future[4].

In his research, V. Seufert reveals the Organic farming's global spread has been a major element in its growth. IFOAM was founded in 1972 with just five countries represented; by the late 1990s, it had grown to approximately 100 countries. IFOAM's scientific conferences were hosted only in Western Europe and North America until the mid-1980s, when they began to be held in nations as varied and far apart as Burkina Faso, Australia, Hungary, and Brazil, to name a few. The UN Food and Agriculture Organization has been active in organic farming since 1999, including networking, market research, environmental impact assessments, enhancing technical knowledge, responding to country requests, and setting standards through the Codex Alimentarius Commission. As seen by this, organic farming has spread around the globe. Similarly, since 2001, the United Nations Conference on Trade and Development (UNCTAD) has been involved in a variety of aspects of the global organic food trade, with a particular emphasis on assisting disadvantaged countries in increasing their production and exports[5].

III. DISCUSSION

A. Chemical Composition of Organic Food

With association synthetic varieties at stretches the synthesis of naturally full-grown| completely grownup| mature} food contrasted and customarily developed food, considers have analyzed varieties in supplements, ant nutrients, and substance deposits. In his research, V. Seufert reveals the Organic farming's global spread has been a major element in its growth. IFOAM was founded in 1972 with just five countries represented; by the late 1990s, it had grown to approximately 100 countries. IFOAM's scientific conferences were hosted only in Western Europe and North America until the mid-1980s, when they began to be held in nations as varied and far apart as Burkina Faso, Australia, Hungary, and Brazil, to name a few. The UN Food and Agriculture Organization has been active in organic farming since 1999, including networking, market research, environmental impact assessments, enhancing technical knowledge, responding to country requests, and setting standards through the Codex Alimentarius Commission. As seen by this, organic farming has spread around the globe. Similarly, since 2001, the United Nations Conference on Trade and Development (UNCTAD) has been involved in a variety of aspects of the global organic food trade, with a particular emphasis on assisting disadvantaged countries in increasing their production and exports. The amount of time between collection and inquiry, as well as conditions of transit and capacity, all have an impact on the compound synthesis of a specific food item. There is proof that natural output is dryer than expectedly mature produce; also, a more grounded richness in any chemical categorization is defined by greater focus rather than in outright quantities[6].

a. Nutrients

Numerous individuals accept that natural food sources have higher substance of supplements so more grounded than traditionally made food varieties. Nonetheless, researchers haven't been similarly persuaded that usually this can be} regularly the case because of the investigation led among the circle has not shown steady outcomes. A 2009 efficient audit found that naturally made staples don't give off an impression of being more extravagant in nutrients and minerals than traditionally made groceries. Natural formed staples had a lower gas and higher phosphorus content than expectedly developed staples, according to the findings of the deliberate survey alone. The two groups did not vary in terms of cancer-preventive substances, calcium, potassium, absolute solubilized solids, copper, iron, nitrates, manganese, or number eleven. According to a 2012 study of logical writing, there were considerable disparities in the nutritional composition of natural and common plant or creature stock, and the findings varied from study to study. Make considers worth reporting on inhibitor (nutrient C)

(31 investigations), carotene (an antecedent for nourishment A) (12 investigations), and alpha-tocopherol (a very sustenance E) (5 investigations) content; milk considers reportable on carotene (4 investigations) and alpha-tocopherol levels; milk considers reportable on inhibitor (nutrient C) (31 investigations), carotene (an antecedent for nourishment A) (12 investigations), and alpha (4 investigations). Despite the fact that few research have looked at the nutritional makeup of meats, no changes in carotene, alpha-tocopherol, or antiophthalmic factor (retinol) in hamburger have been found.

The designers looked over eleven completely different supplements that have been reported in assembling investigations. Natural sources of food had higher resultant material content than habitually created food variations, according to a 2011 writing audit. Natural chicken also had higher amounts of unsaturated carboxylic corrosive unsaturated fats than conventional chicken. According to the inventors, there was no change in the natural component or fat composition of natural and conventional milk. According to a 2016 comprehensive review and meta-analysis, natural meat contained equivalent or slightly lower levels of saturated fat and monounsaturated fat as regular meat, but more massive amounts of each, as well as n-3 unsaturated fats. Another meta-examination composed indistinguishable year tracked down no fundamental varieties in degrees of immersed and monounsaturated fat among natural and typical milk, yet essentially more elevated levels of by and large and n-3 unsaturated fats in natural milk than in ordinary milk [7].

b. Anti-Nurients

The designers examined eleven distinct additives that have been described in assembling research. According to a 2011 writing audit, natural sources of food had greater resulting material content than artificially manufactured food variants. Unsaturated carboxylic corrosive unsaturated fats were also found in larger levels in natural chicken than in conventional chicken. The natural component or fat content of natural and conventional milk did not differ, according to the inventors. Natural meat has similar or slightly lower levels of saturated and monounsaturated fat than normal meat, but more substantial quantities of both, as well as n-3 unsaturated fats, according to a 2016 comprehensive review and meta-analysis. Be that as it may, a 2014 audit discovered lower centralizations of metal, strikingly in naturally develop grains [8].

c. *Phytochemicals*

Organically grown-up crops exhibited lower metal and compound deposition and higher polyphenol convergences than mature harvests, according to a meta-analysis of 343 phytochemical component studies published in 2014. Phenolic acids, flavanones, stilbenes, flavones, flavanols, and anthocyanins all exhibited stronger convergences, with flavanones being 69 percent higher. The absence of normalized estimations and helpless inclusion on proportions of fluctuation, copy or specific inclusion of information, distribution inclination, lack of comprehensiveness in special investigation examination drug buildup levels in organic and standard harvest season, the topographical beginning of tests, and irregularity of cultivating and post-collect ways have all been identified as insufficiencies in studies on phytochemical arrangement of natural yields[9].

d. Pesticide Residue

The amount of pesticide residue left in or on food is referred to as pesticide residue. Before a chemical may be used with a food crop in the United States, the Environmental Protection Agency should certify that it is safe for humans to use. Detectable chemical residues were discovered in seven-membered of organic turn out specimens and thirty-eighth of standard turn out samples, according to a 2012 meta-analysis. This finding was statistically diverse, most likely due to the different detection levels utilized in these research. Only three investigations, all from the EU Union, were based on the prevalence of contamination olympic most permissible levels. Pesticide residue was four times more likely to be found in conventionally farmed crops than in organically cultivated crops, according to a 2014 meta-analysis. According to the American Cancer Society, there is no evidence that the little number of molecules residue found in regular meals raises the risk of cancer, although it does recommend that fruits and vegetables be properly washed. They must also indicate that no study has been done to prove that eating organic food reduces the risk of cancer when matched to foods grown using conventional farming practices. When it relates to chemical control, the EPA maintains strict criteria, defining a tolerance for the quantity of pesticide residue which may be discovered in or on any specific food. Though some residue may remain after harvest, as the chemical degrades, residue frequently says no over time. Furthermore, since the commodities are cleansed and processed before being sold, any residues are generally minimal[10].

e. Bacterial Contamination

The prevalence of E. coli poisoning was not statistically significant, according to a 2012 meta-analysis (7 percent in organic manufacture and 6 June 1944 in standard produce). While microorganism contamination is common in both organic and conventional animal products, there were statistically insignificant variations in microorganism contamination prevalence between organic and traditional animal products[11].

B. Health And Safety Related To Organic Foods

There is virtually little scientific evidence that a high-organic-food diet benefits or harms human health, and performing any kind of thorough trial on the issue is very difficult. "According to a 2012 meta-analysis, "there are no semipermanent examinations comparing health outcomes of those consuming mostly organic versus conventionally manufactured food while adjusting for socioeconomic variables; such research would be costly to do." "The bulk of the studies in the package didn't even look at direct human health impacts," according to a meta-analysis released in 2009. In eleven of the trials included, a change

in inhibitor activity was a major finding (83 percent). Although inhibitor status and action are helpful indications, they may not always correspond to a positive health outcome. One of the remaining two studies looked at the carboxylic acid composition of breast milk and the potential health benefits for infants from consuming different amounts of conjugated linoleic acids from breast milk, while the other looked at the carboxylic acid composition of breast milk and the potential health benefits for infants from consuming different amounts of conjugated linoleic acids from breast milk." Furthermore, as previously stated, it is hard to extrapolate health recommendations based only on qualitative assessments due to the difficulty in properly and efficiently detecting chemical distinctions between organic and conventional foods.

While "consumers may prefer to buy organic fruit, vegetables, and meat because they believe they are more nutritious than alternative food," as of 2012, "the balance of extant scientific data does not support this perspective." Because there is no proof of the health benefits of eating organic foods, semiconductor diode researchers have opted to undertake additional semipermanent studies. Furthermore, studies that claim organic foods are healthier than conventional foods have considerable methodological challenges, such as establishing a link between organic food consumption and qualities associated with maintaining a healthy lifestyle. In a 2012 review of the literature on organic foods, the American Academy of Pediatrics found that "current proof does not support any substantive organic process advantages or deficits from feeding organic compared to conventionally mature foods, and there aren't any well-powered human studies that directly demonstrate health benefits or sickness protection as a result of consuming an organic diet[12]".

C. Genetically Modified Foods

Hereditarily changed food varieties (GM food varieties), conjointly alluded to as hereditarily planned food sources (GE food sources), or bioengineered food varieties square measure food varieties produced using organic entities that have had changes brought into their deoxyribonucleic corrosive exploitation the procedures of biotechnology. Biotechnology procedures yield the presentation of late characteristics also as greater administration over attributes contrasted with past techniques, as specific rearing and change reproducing.

a. Insect Resistance

Some GMO food sources are changed to shape them extra evidence against creepy crawlies and elective nuisances. According to a rigorous research from the University of California, San Diego, poisonous microbe (yet safe for human consumption) is sometimes introduced to crops to make them repel pests. This means that the amount of substance synthetics used on the plants is reduced, and as a result, their exposure to harmful pesticides is reduced as well.

b. Stronger Crops

Another advantage of gram innovation is that harvests are planned to account for climatic constraints and variations, implying that even in bad or harsh climates, adequate quality and pleasing yields may be expected. Ranchers are being forced to grow crops in previously unfavorable places, and refined plants that can survive high salt content in the soil and groundwater, along with lengthy periods of drought, may be able to help them generate good yields. Similarly, hereditarily altered animals and plants will provide as additional protection against disease outbreaks. We may think of the invention as an immunogen for animal species, but it's really encoded into their characteristics rather than fired into their structure.

c. Larger Production

It was simple to enhance crops that are labeled as genetically modified since all of their instances have a higher insect resistance. This trait aids farmers in producing higher quantities of crops or meals.

d. Environmental Protection

The development of metric weight unit animals and crops needs less time, equipment, and chemicals, according to a research released by Associate in Nursing Sooner State State University, and will help minimize greenhouse gas emissions, wear and tear, and pollution. This means that the overall health and attractiveness of the environment around farms has improved, allowing for better water and air quality to be maintained, which may help everyone's well-being indirectly.

D. Environmental Impact and Emission

Oxford College's Manager Specialist dissected 71 r-tracked down that natural food once in a while Unsafe to the climate. The ozone harming substance emanations of every result of natural milk, grain and pork are higher than conventional items, yet the discharges of natural meat and olives are lower in many investigations. As a rule, natural food requires less energy yet more soil. For every item unit, natural items cause more nitrogen draining, nitrous oxide discharges, alkali outflows, eutrophication and fermentation than customarily developed food sources. Different contrasts are not self-evident. The scientists inferred that the public discussion should consider the various employments of conventional or natural agribusiness, not simply talking about customary and natural horticulture. They likewise search for explicit answers for explicit circumstances. Ranchers who support natural cultivating accept that natural cultivating accentuates shut supplement cycles, biodiversity and compelling soil the executives, and gives freedoms to relieve or even converse the impacts of environmental change, and that non-renewable energy sources can Diminish fuel emanations. "In calm environments, the carbon sequestration productivity in natural frameworks is double that of conventional cultivating techniques (575-700 kilograms of carbon for each hectare each year-510-625 pounds/section of land/year) and twice that of customary cultivating. Also, utilize natural harvest revolution as cover crops". Pundits of

natural horticulture accept that expanding the region needed to develop natural food can possibly annihilate rainforests and numerous biological systems[13].

a. Nutrient leaching

Organic goods had the largest nitrogen leaching and acidification potential, according to a meta-analysis of 71 research published since 2012. According to one study, "excess nutrients in lakes, rivers, and groundwater might contribute to algal blooms, eutrophication, and the resultant dead zones of aquatic life."

b. Land use

Organic farming takes 84 percent more acreage to produce the same quantity of crops, according to a meta-analysis of 71 research undertaken by the University of Oxford. This is mostly due to nutritional inadequacies, but it may also be due to weeds, pests, low-yielding livestock, and a lack of available land. Plant fertility-promoting crops. Despite the fact that organic agriculture often does not maintain area for animal habitat and forestry, current improvements in ecological concerns have effectively remedied these challenges. Organic livestock, according to Professor Wolfgang Branscheid, are hazardous to the environment since organic chickens and organic pigs need more than twice as much acreage as "regular" hens and pork. Organic beef, according to the Hudson Institute, takes three times the amount of land as conventional cattle. Certain organic animal husbandry practices, on the other hand, have been shown to assign agricultural output and wildlife to abandoned, marginal, or inaccessible land. Buying feed and cash crops in the same field will result in less net land usage. Organic farming practices have started to deliver record yields in various regions of the globe[14].

c. Pesticides

Synthetic pesticides are generally prohibited in organic farming. If a chemical substance does not exist in nature, it is considered synthetic. Labels go further and generally prohibit chemical synthesis into naturally occurring compounds. Therefore, the prohibition is also related to the connection type, not just the connection type. A non-exhaustive list of approved organic pesticides, together with their median lethal dose. Boric acid has an LD50 of 2660 mg/kg, making it an insecticide. Bromomethane is a gas still used in organic strawberry growing nurseries. The fungicide copper(II) sulfate (LD50 300 mg/kg) is also used in traditional agriculture. Mancozeb is a less toxic herbicide that may be used in traditional agriculture (LD50 4,500 to 11,200 mg/kg). Lime sulfur (also known as calcium polysulfide) and synthetic compounds (LD50: 820 mg/kg) are considered safe. Neem oil is used as an insect repellent in India, however it is illegal in the United Kingdom and Europe since it contains azadirachtin. Pyrethrin is generated from Pyrethrum floral components (LD50 of 370 mg/kg). It is used to keep insects at away because of its high toxicity. Rotenone (LD50: 132 mg/kg) is a powerful insecticide that was formerly widely utilized. Despite its high toxicity to aquatic life and suspected links to Parkinson's disease, Rotenone is allowed in organic farming since it is a naturally occurring material[4].

d. Food quality and safety

Although organic foods may differ in their nutrient and anti-nutrient content when comparing organic foods with conventional foods, foods are manufactured and processed in different ways, so it is There is no evidence that organic food is any safer or healthier as regular food. No evidence exists to support the claim that organic food tastes better[8].

e. Soil protection

Soil conservationists feel that organically produced soil is of higher quality and retains more water. In dry years, this may assist organic farms enhance their productivity. Organic farming may gather organic materials from the soil more effectively than regular farming without farming, implying that organic farming has long-term advantagesIn cold and temperate climes, 18 years of biological technique study on undernourished soils found that conventional methods outperformed soil fertility and low soil yield, and that the majority of the advantages of cultivating organic agricultural goods came from imports. While imported materials may be deemed self-sufficient, they cannot be called self-sufficient. Geomorphologist David Montgomery described the imminent crisis of soil erosion in the book "Mud: The Erosion of Civilization". Agriculture requires about one meter of topsoil, and its topsoil consumption rate is ten times that of its replacement topsoil. No-tillage, which is said to rely on pesticides, is a way to reduce erosion. Adding fertilizer to organic agriculture for soil formation is superior to not farming at all, according to a 2007 study by the United States Department of Agriculture's Agricultural Research Service (USDA)[10].

IV. CONCLUSION

Increased yields and reduced reliance on chemical pesticides and herbicides are anticipated to assist relieve numerous hunger and deficiency disease concerns across the world, as well as preserve and maintain the environment, by increasing yields and reducing reliance on chemical pesticides and herbicides. Though, organic food product return up with most healthy composition, however it will have its own disadvantages, however most well-liked most to be consumed thanks to its supreme quality of natural composition. The various procedures concerned in organic food process any ensures the purity of organic food product even once they enter within the house factories to be processed and provided to the shoppers to be consumed.

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