

# Organic Agriculture Harmony in Nutrition, Environment and Health: Case Study in Iran

Sara Jelodarian

**Abstract**—Organic agriculture is a kind of living and dynamic agriculture that was introduced in the early 20<sup>th</sup> century. The fundamental basis for organic agriculture is in harmony with nature. This version of farming emphasizes removing growth hormones, chemical fertilizers, toxins, radiation, genetic manipulation and instead, integration of modern scientific techniques (such as biologic and microbial control) that leads to the production of healthy food and the preservation of the environment and use of agricultural products such as forage and manure. Supports from governments for the markets producing organic products and taking advantage of the experiences from other successful societies in this field can help progress the positive and effective aspects of this technology, especially in developing countries. This research proves that till 2030, 25% of the global agricultural lands would be covered by organic farming. Consequently Iran, due to its rich genetic resources and various climates, can be a pioneer in promoting organic products. In addition, for sustainable farming, blend of organic and other innovative systems is needed. Important limitations exist to accept these systems, also a diversity of policy instruments will be required to comfort their development and implementation. The paper was conducted to results of compilation of reports, issues, books, articles related to the subject with library studies and research. Likewise we combined experimental and survey to get data.

**Keywords**—Development, production markets, progress, strategic role, technology.

## I. INTRODUCTION

IN the global arena, a review of the revolutionary backgrounds in developed countries indicate that the source of development in many of them is extra production in agriculture department, which has led to future revolutions in the early stages of development [1].

In developing and transitional countries, agriculture plays a critical role in stabilizing the economic bases. Since this economic department is important in terms of providing nutritional needs of the people, raw material for industries, employment and income, its sustainability and continuous growth can be a main contributory factor in social stability and economic growth [2].

Although, most of the disagreements regarding the nature and capacities of sustainable agriculture are associated with the definitions provided for them, it has different definitions in the vocabulary of various thinkers, depending on interests and experiences. [3]. Sustainable agriculture is to develop policies and operations that guarantee the people's ability to produce food and clothes and preserve the economic and agricultural

status and social values, without doing any harm to the natural resources. The aim of sustainable agriculture is to exert a successful management over basic resources of agriculture or environmental compatibility in order to be able to fulfill the present and future human needs and promote the household income in long-term, in such a way that the most economic and beneficial way of using energy and transforming it into agricultural products would not lead to destruction of soil fertility and environment quality [4], [5], [1].

The emergence of environmental, social and economic problems caused by industrial agriculture has necessitated the production of healthy and sustainable food [6]. The objective of sustainable agriculture is to encourage and develop biodiversity and the organic confirmation certificates consider this issue too [7]. Organic agriculture means using traditional and scientific information to reduce the usage of toxins and chemical compounds in producing the products. The organic agriculture systems are based on ecosystem management and are not dependent on out-of-farm inputs. In this kind of agriculture, the synthesized inputs like chemical fertilizers, pesticides, vet drugs, genetic and racial manipulated plants and preservation materials, additives and radiations are set aside.

Agriculture and its productions play a fundamental role in human life sustainability. In the global arena, a review of the revolutionary backgrounds in developed countries indicate that the source of development in many of them is extra production in agriculture department, which has led to future revolutions in the early stages of development [1].

Preserving the soil as a single living creature is considered as the first and main objective in organic farming. Another objective in organic agriculture is production optimization and increased environment quality and social well-being [8].

The benefits of organic food can certainly be based on keeping low or zero pesticides and maintaining environmental and economic sustainability [9]. Organic agriculture is a type of appropriate production management that leads to promotion and development of biologic ecosystems, biologic cycles and soil biologic activity. This theory emphasizes the use of in-farm inputs and avoids other external inputs. To this end, one needs compatibility systems in both areas.

Before the advent of oil incomes, the national economy in Iran was based on agriculture and it was considered to be the only source for budgeting the treasury and governmental expenditures. Nowadays, given the limited role of this section in economy, the study of the function of economic sections in the national macroeconomic framework highlights the significant role of agriculture section in this country, because

Sara Jelodarian is Ph.D. Candidate in Agriculture, Horticulture, Pomology (Nanotechnology), Department of Horticulture Science, Science and Research Branch, Islamic Azad University, Tehran, Iran (e-mail: sjelodarian@srbiau.ac.ir).

it contributes to employment and money-making of the natives, modification of inequalities, gross domestic production, provision of population consumption needs, and national incomes that set the background for national and economic development. Thus, given the multilateral role of agriculture in human life and the fact that it is the focus of sustainable development discussions [10], it can be said that reaching sustainability in all of its aspects is an undeniable necessity. However, there is a little coded and accurate information about the status of organic productions in Iran, the Organic Productions Committee was established in 2001 by the vice president of Agriculture Ministry in Iranian Flora Preservation Organization. In line with the regulations of this committee, some questionnaire were developed to collect information and then they were sent to different provinces, the results of which are accessible in written format [25].

Generally, the findings of researches and investigations show that organic agriculture can help global food provision, while reducing the adverse environmental effects of normal agriculture [11]. On the other words, farmers can increase the provision of agriculture productions in coordination with the population growth and economic growth and with an eye on the environment [12].

## II. MATERIAL AND METHODS

Our study was conducted to results of compilation of reports, issues, books, articles related to the subject with library studies and research.

This paper combined experimental and survey to get data. Also reviewing the slightly resources and introducing of development of organic agriculture, discussing about its position in nutrition, environment and human health in Iran and the world was done. The required information was collected by content analysis method and after adjustment and classification, it was analyzed base on the research purposes.

## III. RESULTS AND DISCUSSION

### *The Importance of Organic Agriculture*

#### The Importance of Organic Agriculture in Developed and Developing Countries

In European countries, governments support the farmers through providing subsidies for the organic agriculture section [13]. English, Sweden, and Swiss researches found in their recent studies that organic farming on average contributes 34% more to the preservation of plant and animal species and insects than the normal and commonplace agricultural methods [14]. Ethiopia as a developing country, whose population is consisted of 85% farmers, successfully created an organic agriculture system in all of its farms and became one of the most important exporters of agricultural products in today's world.

At first, this plan only created, preserved and maintained similar efficiency to the previous methods of farming, but then the expenditures of farming activities reduced significantly.

As such, this approach to agriculture could exert a significant effect on farmers' self-reliance in producing agricultural products given the domestic needs. Creating the organic agriculture system in Ethiopia led this country to growth and sustainable development. At present, relying on the full supports of the government, Ethiopia has been able to win the global markets of organic productions and export its organic products to developed countries such as the USA, Japan, European countries and other neighboring countries. This experience can be a template for all third-world countries.

In 2005, Saudi Arabia started an organic agriculture project involving a group of farms. In 2007, they established the first Saudi Organic Farming Association (SOFA). In 2008, the government established the first department for OA and in 2009 developed an organic production policy. The action plan of Saudi Ministry of Environment, Water, and Agriculture (2018–2023) aims to increase organic production by 300 percent and strengthening the institutional capacity in this field. The ministry has allocated SR750 million (\$200 million) to support the services included in the plan as a positive step for addressing the country's nutritional needs, public health, and environment related issues [15].

According to the World of Organic Agriculture 2018 report [24], India is home to 30% of the total organic producers in the world, while accounts for just 2.59% (1.5 million hectares) of the total organic cultivation area of 57.8 million hectares.

India produced around 2.75 million MT (2019-20) of certified organic products which include all varieties of food products namely oil seeds, sugar cane, cereals & millets, cotton, pulses, aromatic& medicinal plants, tea, coffee, fruits, spices, dry fruits, vegetables, processed foods etc. Figs. 1-4 contain precise information [16]-[18].

### Organic Agriculture: Key Indicators and Top Countries

Indicator	World	Top countries
Countries with organic activities <sup>1</sup>	2018: 186 countries	
Organic agricultural land	2018: 71.5 million hectares (1999: 11 million hectares)	Australia (35.7 million hectares) Argentina (3.6 million hectares) China (3.1 million hectares)
Organic share of total agricultural land	2018: 1.5 %	Liechtenstein (38.5 %) Samoa (34.5 %) Austria (24.7 %)
Wild collection and further non-agricultural areas	2018: 35.7 million hectares (1999: 4.1 million hectares)	Finland (11.3 million hectares) Zambia (3.2 million hectares) Tanzania (2.4 million hectares)
Producers	2018: 2.8 million producers (1999: 200'000 producers)	India (1'149'371) Uganda (210'352) Ethiopia (203'602)
Organic market <sup>2</sup>	2018: 96.7 billion euros (2000: 15.1 billion euros)	US (40.6 billion euros) Germany (10.9 billion euros) France (9.1 billion euros)
Per capita consumption	2018: 12.8 euros	Switzerland (312 euros) Denmark (312 euros) Sweden (231 euros)
Number of countries with organic regulations	2018: 103 countries	
Number of affiliates of IFOAM – Organics International	2018: 779 affiliates from 110 countries	Germany - 79 affiliates India - 55 affiliates China - 45 affiliates United States - 48 affiliates

Source: FiBL survey 2020, based on national data sources and data from certifiers

Fig. 1. Organic Agriculture: Key Indicators and Top Countries (FiBL survey 2018), based on national data sources and data from certifiers Global markers Ecovia Intelligence (formerly Organic Monitor (2020) [16]

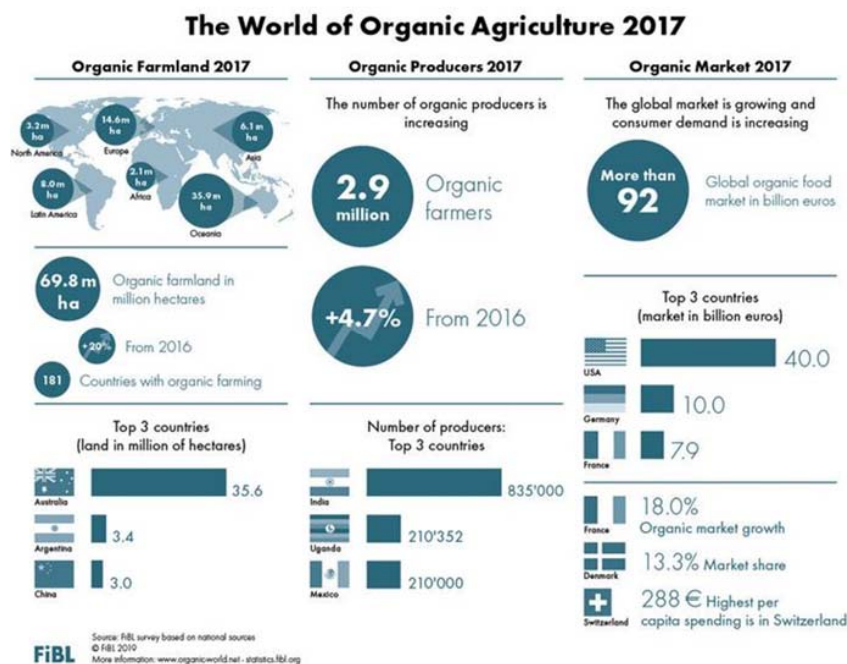


Fig. 2 Organic agriculture worldwide: Key indicators 2017 [17]

#### Asia: Development of organic agricultural land 2000 to 2017

Source: FiBL-IFOAM-SOEL-Surveys 2002-2019

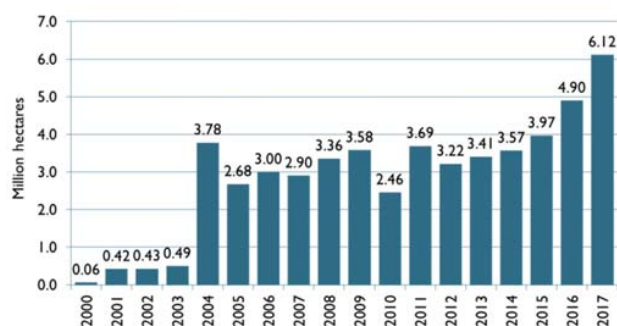


Fig. 3 FiBL- IFOAM- SOEL- Surveys 2000-2017

Asia: Development of organic agricultural land 2000 to 2017 [17]

The most important challenges of organic farming in India include:

- Shortage of Biomass
- Disparity of Supply and Demand
- Time (greater interaction between a farmer and his crop for observation, timely intervention and weed control)
- High MRP (high price)
- Lack of special infrastructure [19]

#### The Importance of Organic Agriculture in Iran

Important actions regarding organic agriculture have also been taken in Iran. In the 5<sup>th</sup> Development Program, the promotion of combinational battle against pests and the optimal consumption of chemical toxins and fertilizers and the development of organic farming is explicitly noted in section

D of Article 143, in order to cover at least 25% of the production till the end of this program (the act of 5<sup>th</sup> five-year program/chapter 5: economic, pp. 155-156) [25]. Iran has several opportunities to export fresh and organic fruits and vegetables to European countries; especially products such as pistachios. In addition, its vast rainfed farms provide an ideal capacity for organic farming. So in this direction, many factors should be considered such as culture and advertising, strengthening distribution and sales channels, financial and credit support, inspection and supervision, training and extension programs and certification facilities, logo and branding as the main and most important drivers of organic product market development [20]. In addition, it is necessary to address challenges and infrastructure such as: government support, government subsidies and sales guarantees, insurance of organic products, licensing and elimination of bureaucracy, facilitation of commercialization and standardization, close cooperation and bridge of involved agencies, removal of economic barriers to buyers, infrastructure and Advanced equipment, farm integration and limitation of polluted natural resources and culturalization [21].

#### Challenges for Organic Agriculture

- Retaining sustainability in the world economy: regulating organic elements with commercial rules.
- Retaining malleable organic modulus and certification systems to address topics like:
  - a. nature conservation and regeneration;
  - b. equitable, affordable and flexible access to certification services;
  - c. responsible labor relations and land tenure arrangements;
  - d. animal welfare;

- e. new inputs such as 'natural' biocides, soil amendments and GMOs;
- f. basis or empirical or defective for including/excluding materials from organic standards;
- g. Chasing global integration of warranties and standards.
- Developing research activities in many fields (especially beyond Europe and North America) and enhancing the integration of knowledge.
- Blossoming regionally convenient agronomic explanations to production constraints, such as animal health, weeds, and soil fertility.
- Training and educating at all levels to create capacity, infrastructure and networks.
- Maintaining the quality of food while trying to increase productivity.
- Lack of competence in regulatory and marketing structures (e.g., labeling).
- Maintaining good reputation and establishing.
- Consumer prices are too high and quality and conflicting [22].



Fig. 4 Organic agricultural land in the countries of Asia 2016 (in hectares) [18]

#### *Organic Agriculture Benefits*

In the following, some of the most important and prevalent benefits of organic agriculture are presented:

- Extending biodiversity
- Preserving the environment
- Reducing soil erosion and improving its texture
- Reducing air pollution
- Improving society's health
- Correcting society's nutrition
- Creating self-sufficiency in soil organic material and food elements
- Gradual reduction of economic risks
- Reduction of input expenditure for farmers
- Reduction of pollution in water sources (groundwater and surface runoffs) as a result of avoiding fertilizers, toxins and pesticides
- Production of high-quality food in appropriate quantities
- Coordination with nation (not domination)
- Reinforcement of biological cycles
- Utilization of renewable resources to the most
- Provision of a situation for livestock to express their instinctual behaviors
- Preservation of genetic diversity in agricultural system
- Consideration of more extended social and ecologic effect

of a farming system

#### *Organic Agriculture from Tawhid and Wisdom and Knowledge Perspective*

Organic agriculture is consistent with the principles of ecology, health, environment and fairness, so it has the potential to be compatible with Tawhid-based Wisdom. Transcendent Theosophy is a Tawhid-based school of thought, in which God plays a serious role in human life. In this mode of thinking, the basic elements are God, Nature and Human. This philosophy is taken from an end-oriented and objective-centered school [23]. Therefore, the promotion of environment-friendly agriculture methods must be a priority. From Tawhid perspective, human health must be accompanied with healthy food provision. In addition, humans are the custodians of the environment and divine gifts, which is consistent with Tawhid-based Wisdom. As God says in Yusuf verse in the Holy Quran: "I will be a knowing guardian", which highlights the importance of wisely management of natural resources. Therefore, one of the aspects of Tawhid-based Wisdom can be the emphasis on organic agriculture and the preservation of the environment.

We must be having a broad evaluation of productivity, economic return, environmental impact, and social equity to designing of productive and sustainable agroecosystems. Moreover, it is impossible to achieve remarkable progress unless we know the importance of philosophy, ethics, literature and other culture reflections which help to explain the unique location, including individuals and resources [7].

#### IV. CONCLUSIONS

It is predicted that till 2030, 25% of the global agricultural lands would be covered by organic farming. Iran, due to its rich genetic resources and various climates, can be a pioneer in promoting organic products. If expert markets are led toward this method, and the issues related to consumer culture, producers, marketing, exports, etc. are eliminated, there is no doubt that this kind of farming would promise a bright future and a sustainable economy based on agriculture. Crops such as pistachios, pomegranate, date, almond, fig and some herbal drugs such as saffron are among the products that are now produced and supplied in an organic manner. Given the high prices of these products, in order to boom the markets for biologic products, governments can pay subsidies to the farmers as well as low income people. In addition, it is better to upgrade the knowledge of producers and consumers regarding these products and the side effects of using chemical toxins and fertilizers through various media and different institutions.

Organic agriculture is a transition from nature to nature and this material and spiritual way is interwoven with wellness, healthy nutrition and preservation of environment.

#### DECLARATION OF INTEREST STATEMENT

There are no conflicts of interest.

#### REFERENCES

- [1] Moti'i Langeroudi, S. H., & Shamsaii, E. Rural development based on agricultural Continuity and sustainability. *GeoRes.*, 2007, 22(2), 85-104. (in Persian).
- [2] Temperate Zones. New York: Wiley. Gongn, J. & Lin, H. Sustainable development for agricultural region in China: case studies. *For. Ecol. Manag.*, 2000, 128: 27-38.
- [3] Francis CA, Flora CB, and King LD (Eds.). Sustainable Agriculture in Temperate Zones. New York: Wiley, 1990.
- [4] Harwood, R.R. A history of sustainable agriculture. In: Edwards, C.A., Lal, R., Madden, P., Miller, R.H. and House, G. (Eds.). Sustainable agricultural systems, Soil and Water Conservation Society., 1990, pp. 3-19.
- [5] Hosseini, S.J. and Shariati, M.R. Attitudes and educational needs of extension agents in agriculture organization of Semnan province toward sustainable agriculture. *Agr. Rur. Dev. J.*, 2003, 258: 25-31.
- [6] Yazdan Panah, M., Taghi Beygi, M. 'Demand Analysis for Organic Fruits in Boroujerd County, Using of Heath Beliefs Model'. *Iranian J Agric Econ Devel Res.*, 2018, 49(2), pp. 239-250.
- [7] Francis, C., Lieblein, G., Gliessman, S., Breland, T.A., Creamer, N., Harwood, R., Salomonsson, L. et al. Agroecology: the ecology of food systems. *J. Sustain. Agric.*, 2003, 22(3): 99-118.
- [8] Wallace, Janet. (Ed.). Organic Field Crop Handbook. Canadian Organic Grower: Ottawa, Ontario, 2001.
- [9] Roussos, Peter & Flessoura, I. & Petropoulos, F. & Massas, Ioannis & Tsafouros, A. & Ntanos, E. & Denaxa, N-K. Soil physicochemical properties, tree nutrient status, physical, organoleptic and phytochemical characteristics and antioxidant capacity of clementine mandarin (Citrus clementine cv. SRA63) juice under integrated and organic farming. *Sci. Hortic.*, 2019, 250. 414-420.
- [10] Lynam, J.K. Sustainable growth in agricultural Production: the links between Production, resources, and research.in: Opportunities, Use, and transfer of systems research methods in agriculture to developing Countries. In: zoldsworthy, P., PenninggDeveries, F. (Eds). Kluwer Academic Publishers, The Netherlands, 1994, pp. 3 - 27.
- [11] Badgley, C., Moghtader, J., Quintero, E., Zakem, Chappell, M.J., Vázquez, K.A., Samulon, A. & Perfecto, I. Organic agriculture and the global food supply. *RENEW AGR FOOD SYST.*, 2007, 22: 86-108.
- [12] UNDP. Sustainable Human Development and Agriculture. New York: NY, 1994.
- [13] Khaledi, M., Weseen, S., Sawyer, E., Ferguson, S. & Gray, R. Factors Influencing Partial and Complete Adoption of Organic Farming Practices in Saskatchewan, Canada. *Can. J. Agric. Econ.*, 2010, 58(1): 37-56.
- [14] Tuck, L.S., Winqvist, C., Mota, F., Ahnström, J., Turnbull, A.L. & Bengtsson, J. Land-use intensity and the effects of organic farming on biodiversity: a hierarchical meta-analysis. *J Appl Ecol.*, 2014, 51: 746-755.
- [15] Alotaibi, Bader Alhafi & Yoder, Ed & Brennan, Mark & Kassem, Hazem. Training Needs of Extension Agents' Regarding Organic Agriculture in Saudi Arabia. *Eval Program Plann.*, 2019, 77.
- [16] Willer H, Schlatter B, Trávníček J, Kemper L and Lernoud J (2020) The world of organic agriculture. Statistics and emerging trends. Research Institute of Organic Agriculture FiBL and IFOAM Organics International, Frick and Bonn.
- [17] Willer, H., & Lernoud, J. (Eds.). (2017). The World of Organic Agriculture: Statistics and Emerging Trends 2016: Frick, Switzerland: Research Institute of Organic Agriculture (FiBL) & Bonn: IFOAM-Organics International.
- [18] Willer, H., & Lernoud, J. (Eds.). (2016). The World of Organic Agriculture: Statistics and Emerging Trends 2016: Frick, Switzerland: Research Institute of Organic Agriculture (FiBL) & Bonn: IFOAM-Organics International.
- [19] Elayaraja, Mr. M., Vijai, Dr. C. 2021. Organic farming in India: Benefits and Challenges. *Eur. J. Mol. Clin. Med.* 7, 11, 3021-3029.
- [20] Sandoghi, A., Yadavar, H., Raheli, H., H&auml;ring, A. 'Identifying and Explaining the Driving Factors of Organic Agricultural Products Market Development'. *Iranian J Agric Econ Devel Res.*, 2019, 50(2), pp. 295-310.
- [21] Delangizan, S., Papzan, A., Armand, S. 'Analysis of the Challenges of Commercializing Organic and Healthy Products Based on Fundamental Theory (Case Study: Kermanshah City)'. *Iranian J Agric Econ Devel Res.*, 2020, 51(2), pp. 313-325.
- [22] Kristiansen P, Taji A and Reganold J (Eds). Organic agriculture: A

- global perspective (Book style). Collingwood, Victoria, Australia, 2006, pp. 425.
- [23] Lakzaee, N. Transcendental politics and guiding government according to Mulla Sadra. Political Science Dept, Baqir al-Olum University., 2008, 11(issue 43), 53-83. (in Persian).
- [24] Krian Pandey. India has the highest number of organic farmers globally, but most of them are struggling. Retrieved from, 2018. <https://www.downtoearth.org.in/news/agriculture/india-has-the-highest-number-of-organic-farmers-globally-but-most-of-them-are-struggling-61289>
- [25] Seyed Hassan Razavi; mahdi pourtaheri; Abdorreza Eftekhari. "evaluation of organic agriculture development place in rural areass, case study: producers of intransition and certified products". *Journal of Rural Research*, 6, 1, 2015, 27-45.