

DEVELOPMENT STATUS OF ORGANIC FARMING IN THE WORLD

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Abstract

Organic production system has been increasing significantly in both production scale, market size, and sales volume in many parts of the world. However, many politicians and academics are still anxious about the potential contributions of the organic production systems to the future development of the agriculture sector. This overview focuses on analysing the history, development status, the main strengths and weaknesses of the world organic farming that might help to provide a more obvious view on this production system. Organic farming has been demonstrated as a more sustainable way to produce food because of less resource utilization, increased biodiversity, reduced environmental impacts, and higher product safety as compared to the conventional counterpart. Organic products have also been widely evaluated to be healthier, tastier, and more environmentally friendly. However, this farming system has been facing certain difficulties in terms of productivity, ensuring food quality, product price, market accessibility, conversion duration, and conversion costs. Further works are required to identify the relative performances of different production systems regarding individual sustainability objectives.

Keywords: *organic farming, history, development, market, sustainability*

1. Introduction

In recent years, the organic production system has increased significantly in many parts of the world (Australian Organic Ltd., 2017; Lampkin, 1999; Rigby & Caceres, 2001). In 1999, the world organic agricultural land constituted only 11.0 million ha. By 2014, this figure was increased to 43.7 million ha, representing a roughly 4-fold growth in 15 years

(Lernoud & Willer, 2016). Alongside the increase in the organically managed land, the market size and sales values of organic products have also grown. In 2015, the global sales of organic products reached 81.6 billion US dollars, which increased by 10% compared to that of 2014 and four times since 2000 (Australian Organic Ltd., 2017). The market studies have also indicated the increasing demand of

consumers for organic products (Fookes, 2001; McCoy & Parlevliet, 2001). This trend could be explained by several reasons including concerns about pesticide residues in food, health, the safety of food workers, and the utilization of genetically modified organisms in agriculture production. Besides that, the demands for environmental protection and improved animal welfare have also pushed up the growth of organic production (Fookes, 2001). Parrott and Marsden (2002) stressed that the maintenance of agricultural biodiversity is essential to ensure global food security in the long term. The scientific evidence has shown the better performances of organic production systems in relation to almost environmental indicators, such as floral and faunal biodiversity, system stability, landscape conservation, soil fertility, greenhouse gases, and air contamination, compared to the conventional systems (Stolze et al., 2000). However, despite the remarkable successes in the production scale and consumer demand, many politicians and academics are still anxious about the potential contributions of the organic production systems to the future development of the agriculture sector. Even organic farming has been considered by some to be restrictive and over-idealistic (Lampkin, 1999). To have a more obvious view of organic farming, this overview will focus on analyzing the history, development status, the main strengths and weaknesses of the world organic farming.

2. History, development status, strengths and weaknesses of organic farming in the world

2.1. History of organic farming

Organic farming was developed independently in the developed countries in the early time of the last century (Lockeretz, 2007). The period from the 1920s to the 1960s was the roots of the organic movement (Kristiansen et al., 2006). The term 'organic' was firstly used by Northbourne (1940) to characterize the farms, which employed humus farming methods. The organic pioneers believed that the health of each nation built on agriculture depends on the vitality of the soil. The health and vitality of the soil were inherent in its biology and in its organic element called *humus* (Kuepper, 2010). While many ideas of organic pioneers still valid, others are not relevant to the current attitudes on organic farming (Kristiansen et al., 2006).

During the 1970s to the 1980s, organic agriculture was grown dramatically (Kristiansen et al., 2006). Beyond the development of organic farming in Western Europe and North America, organic agriculture was also developed considerably in many countries in Oceania, Asia, America, and Africa (Yussefi, 2004). Especially, in 1972 the International Federation of Organic Agriculture Movements (IFOAM) was established (Woodward & Vogtmann 2004). From the 1990s, the market demand and production of organic food continued to increase over the world with significant growth rates of 20-30% each year. Although organic farming has been grown sharply, the world organic land was not equally distributed. According to Yussefi (2004), the majority of the organic land (80%) is located in ten countries. In which, Australia and

Argentina have more than 50% of the world's organic land. Following the growth speed of the organic sector, the intergovernmental agreements were signed to facilitate the international organic trade. The main purpose of these agreements was to create the systems, which could ensure the equivalence in the certification standards between the exporting and importing countries. Until now, many governments have recognized the problems associated with conventional agriculture as well as the benefits could be brought by organic agriculture. This has led to the establishment of government policies and actions to support the growth of the organic sector (Dabbert et al., 2001).

2.2. Development status of organic farming

Organic farming and certification standards

Certification is an important process, which could not only increase the value of organic products but also protect their propriety and fame. Via the certification, the standards on organic farming would not be diluted or misrepresented. Besides, this work can create barriers for food producers to enter the markets. The certification is also necessary to justify the origin of products for the consumers and ensure the profit of organic producers (Parrott & Marsden, 2002). According to Reganold and Wachter (2016), organic producers are increasingly interested in the certified organic systems because this can help them to decrease the dependence on non-renewable resources, access to high-value markets with the premium prices, and increase the farm profit. An Australian market report in 2017 also showed that the

organic certifications increase the trust of more than 66% of the shoppers in the origin of organic products. In addition, the organic certification could also impact on the purchase decision of 85% surveyed shoppers (Australian Organic Ltd., 2017).

Since the first organic certification standard was drafted in Europe and the United States in the 1970s, the number of organic certifiers have increased considerably. Until now, there are 283 different organic certification bodies, which are operating in 170 countries (Reganold & Wachter, 2016). At the global level, the International Federation of Organic Agriculture Movements (IFOAM), Codex Alimentarius, and the International Organization for Standardization (ISO) are the central bodies for organic production standards. In which, IFOAM's Basic Standards for the production, processing, and distribution of organic products have been used widely to develop certification programs by different bodies worldwide (Lotter, 2003). The rapid growth of the certifiers reflects the demand for organic certification over the world. The requirements might be varied slightly amongst the certifying agencies; however, the world organic standards often contain common rules (Tate, 1994). In which, the biological processes, crop rotations, soil quality, animal and plant diversity, and animal welfare are promoted. Whereas, almost synthesize pesticides and fertilizers, genetic engineering, irradiation, sewage sludge, and the use of antibiotics for disease prevention are prohibited (Reganold & Wachter, 2016).

Because certification standards mainly originated from the temperate developed

countries, they are sometimes not appropriate with the production conditions in other regions. The increased demand for European and American consumers for organic foods has promoted organic food imports from developing countries. Although farmers can get high prices for exported foods, the limited accessibility of local consumers to large numbers of these foods might cause problems of food security and social equality. Thus, participatory guarantee systems based on the verification of local stakeholders might be a more appropriate approach for verifying organic food (Reganold & Wachter, 2016).

Current size and scope of organic farming

Organic agriculture has grown constantly over the world, which has shown by the increase in the organic land area, production volume, and sales value through the years (Australian Organic Ltd., 2017). In 1985, the certified organic land constituted only 0.1 million ha in Europe, which shared less than 0.1% of total land for agricultural production. By 1997, the land under organic management increased to 2.3 million ha (Foster & Lampkin, 1999). In 2014, the world organic agriculture land was calculated at 43.7 million ha, which was managed by roughly 2.3 million producers in 172 countries. The regions possess the largest organic land are Oceania (17.3 million hectares), Europe (11.6 million hectares), and Latin America (6.8 million hectares). In which, Australia, Argentina, and the US are the countries with the highest organic managed land (Lernoud & Willer, 2016). Meanwhile, the countries with the greatest numbers of

organic producers are India, Uganda, and Mexico. However, the majority of organic land is grassland (NCOF, 2010; Lernoud & Willer, 2016) and organics also represents a small percentage in the agricultural production and its market (Australian Organic Ltd., 2017). The arable organic land (20% of total organic agricultural land) is mainly devoted to producing cereals, green fodder, oilseeds, vegetables, and dried pulses. The important permanent organic crops are coffee, olives, grapes, nuts, and cocoa (Lernoud & Willer, 2016).

The rapid growth of the organic sector is also shown by its sales value and export activities. In 2015, the global sales of organic products obtained 81.6 billion US dollars, which increased by 10% compared to that of 2014 and four times since 2000. Organic consumers are mainly concentrated in Europe and North America (Australian Organic Ltd., 2017). In which, the US, Germany, and France are the largest markets for organic products (Lernoud & Willer, 2016). Whereas, Australasia, Asia, and Latin America are the key regions for producing and exporting organic products. At present, organics is the fastest growing retail food in the USA. Meanwhile, the European organic sector also experienced a significant growth rate of 13% between the years 2014 and 2015. In some European countries, where organic farming is strongly supported by the governments and the consumer base is highly educated, the market share is even roughly double (Australian Organic Ltd., 2017). The export of organic products also increases significantly over the world. In 2016, organic exports continued to rise in all

continents with the occurrence of some new markets in Central Asia and South America. Approximately a third of organic products were exported to the East Asian, while another third was destined to North America. The USA, South Korea, China, Hong Kong, and Singapore were the top five destinations for exports in 2016 occupying approximately two-thirds of total organics exported. In which, Hong Kong had the greatest increase in the organic exports between 2015 and 2016. Exports of beef shared the highest percentage of all exported organic items in 2016 (nearly 20%), other important exports were horticultural products, dairy products, and wine (Australian Organic Ltd., 2017).

2.3. Main strengths and weaknesses of organic farming

Strengths

The impacts of agriculture production on the environment, such as biodiversity, wildlife habitats, water pollution, and the atmosphere, are strongly correlated with resource consumption. In the organic farming systems, a smaller amount of resources are utilized, thus fewer waste products will be produced and discharged into the environment (Lampkin, 1999). Previous studies have demonstrated that organic farming reduced the use of resources per hectare as well as per unit of food produced. Thus, emissions and pollution, especially greenhouse gases and nitrate leaching, are decreased. Likewise, the pollution potential from pesticides, phosphates, and nitrates could also be considerably reduced in the organic production systems (Kristensen, 1995; Unwin et al., 1995). The capacity of organic farming to contribute positively to

biodiversity has been illustrated by scientific evidence (Isart & Llerena, 1996; Unwin et al., 1995). This benefit has been attributed to the indirect impacts of nutrient availability, the modifications in the cropping patterns, and the management of non-cropped areas in organic agriculture (Lampkin, 1999). Thus, organic farming is a more sustainable way to produce food than the conventional counterpart (Wood et al., 2006).

The market studies have indicated that the consumer demand in Europe, North America, and Asia is growing for agricultural products that are healthy and have low effects on the environment. The consumers' willingness to pay premium prices for such products is also obvious (McCoy & Parlevliet, 2001). The organic products have been widely accepted by the consumers to be healthier, tastier, and more environmentally friendly than those produced from conventional agriculture (Goldman & Clancy 1991; Hamm, 1997; Hartman Group, 1997; Ott et al., 1991). This fact has explained the significant growth in the production and consumption of organic products through the years. The rapid increase of the organic dairy industry in the US has mainly attributed to the consumer aversion to milk produced from bovine-growth-hormone cows (Depuis 2000). In addition, organic farming has been received increasing supports from the governments as well as international organizations. Activities have been implemented to develop local/international standards and legislation, strengthen the capacities of stakeholders involving in the organic sector, and develop markets for organic products (Parrott & Marsden,

2002). By 1996, almost EU members had established policies to promote the conversion from conventional to organic farming including subsidy offers. In some countries, organic farming subsidies might reach up to 800 Euros per hectare (Wheeler, 2011).

Weaknesses

The system productivity, price, and accessibility are the major disadvantages for organic farming. The yields of organic crops are often lower than those produced from conventional systems. In Western Europe, 20 to 40% of lower productivities have been observed for organic systems compared to conventional systems (Lampkin & Padel, 1994). Especially, the overall yields of cereal crops might be reduced by 40-50% due to the rotational constraints in organic farms (Lampkin, 1999). In addition, organic farming might contain the disadvantages in terms of food quality such as the lower levels of protein in milling wheat. The poor visual appearance of some organic fruits and vegetables caused by pest and disease damage has been reported. Some studies have also reported that organic farming techniques might not always avoid contamination by heavy metals, pesticides, and other pollutants due to cross-contamination problems (Lampkin, 1999). Besides that, a market report in Australia in 2017 showed that price, trust, and accessibility are three main barriers that limit the purchase of organic food by the consumers. While the price of organic products is the largest constraint for the consumption of organic products; additional information, easy accessibility, easy identification, and better quality of the

organic products are also expected by the consumers (Australian Organic Ltd., 2017).

Another disadvantage of organic farming is the duration and costs related to the conversion from other systems to organic farming systems. In fact, the preparation of biological systems and soil quality for organic farming requires a gradual process. Normally, the organic farmers have to obey the organic standards in three years before the farms are accepted to obtain the full organic status (McCoy & Parlevliet, 2001). In addition, the conversion costs for organic farming might be significantly higher than those for conventional farming due to the limitation in information availability. Traditionally, the information on organic farming techniques has not been provided by the public extension departments and this situation still happens in some countries. Thus, farmers must spend a long time to collect, decipher, and adopt sustainable farming information (Wheeler, 2011). Previous studies have shown that transactions to organic farming might lead to a loss of 15% yields, which are mainly happening in the initial conversion years (Grolink, 1999 as cited in Parrott & Marsden, 2002).

3. Conclusion

This overview explores the history and development status of organic farming over the world. Since the 1970s when the first organic certification standard was drafted, the world organic production systems have grown considerably. However, the development levels of organic production might differ largely between the countries and regions. Organic

farming has been demonstrated as a more sustainable way to produce food because of less resource utilisation, increased biodiversity, reduced environmental impacts, and higher product safety compared to the conventional counterpart. Organic products have also been widely evaluated to be healthier, tastier, and more environmentally friendly. The increasing supports from the governments and international organisations will also be a push factor for the development of organic farming in the future. The rapid growth of organic farming has important implications for the supply of advice and training courses to the farmers, the expansion of inspection and certification procedures, as well as the market development for the organic food (Lampkin, 2000). Besides that, organic agriculture has also faced certain difficulties in terms of productivity, ensuring food quality, product price, market accessibility, conversion duration, and conversion costs for organic farming. Further works are required to identify the relative performances of different production systems regarding individual sustainability objectives (Lampkin, 1999). Besides that, the development of the tools that are necessary for the understanding of complex ecological interactions at different levels of the systems could help to increase the growth of organic agriculture and improve the sustainability of other agricultural forms (Stockdale et al., 2000).

Conflict of Interest

The authors declare no conflict of interest.

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