

CHALLENGES AND WAY-FORWARD OF NON-ORGANIC AGRICULTURE TO ORGANIC AGRICULTURE: A COMPARATIVE STUDY BETWEEN CHINA AND SRI LANKA

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ABSTRACT

The agriculture around the world is still heavily associated with chemical fertilisers, pesticides etc. and being inorganic. Although, a positive trend has been developing for organic agriculture around the world due to the benefits it delivers. Since the comparative studies related to organic agriculture on China and Sri Lanka are hardly found, the objectives of the study to perform a comparative analysis between China and Sri Lanka. Further, study examines benefits and challenges of both contexts. The research applies qualitative purposive sampling method and collect data using interview technique. Further study expects to use secondary data sources to achieve its objectives. The primary data is analysed using the thematic analysis. Moreover, the study focuses to examine the secondary sources related to China and Sri Lanka. The results of the study revealed that, although the China has remarkable progress in organic agriculture, there are deficiencies such excessive supply of organic products, disparities in organic production and consumption, Inadequacy of trust of consumers on organic foods, low educational status of organic farmers and deficiencies in technology used for organic agriculture and expensiveness in organic products compared with inorganic resulted in low demand. Also, results of the study further revealed that, the rapid transformation from inorganic agriculture to organic committed by the government of Sri Lanka created certain issues in the country resulting a threat to the food security of the country. Further, there are many deficiencies noted in the process such lack of proper mechanism to supply organic inputs to bridge the country's requirement, no proper mechanism in place to monitor the organic agriculture process, difficulties in obtaining of organic certification, lack of local certification bodies, deficiencies in alternatives to replace chemical inputs such pesticides, weedicides etc., lack of government support to farmers to bear the income loss incurring due to the loss of yield during the transition period etc. Further, results of the study highlight the comparative differences between two countries. Moreover, challenges, benefits, strengths, weaknesses, and threats in the organic agriculture of these countries are objectively evaluated.

KEYWORDS: Organic Agriculture, Chemical Fertilizer, Organic Products, Organic Inputs, Alternatives of Chemical Inputs

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1. INTRODUCTION

World's agricultural traditions have been significantly changed by technological advancements and introducing of chemicals as inputs such fertilizers and pesticides. These initiatives have introduced an era with high agricultural production and good quality products. However, it is a fact that, soil and water pollution have been increased by these residues generated by chemicals. Although, the agricultural productivity has been increased due to the application of chemicals, it has been caused for the contamination of soil and water resources. Due to the impacts of inorganic agriculture, consumers are making high preference on organically farmed products (Perera *et al.*, 2007). Organic farming is a production method that protects the quality of soils, ecosystems, and people (Siriwardana & Silva, 2013). Today, it is a big challenge to clients to find out quality organic foods. Organic farming encourages peoples' long existence through nutritious foods and environmentally friendly agriculture (Santhirakumar & Narmilan, 2019).

Therefore, importance of the organic agriculture has been increasing currently, as a global trend. In 2018, 186 countries are recorded with organic activities (Research Institute of Organic Agriculture (FiBL), Frick, and IFOAM – Organics International, Bonn., 2020). Many countries around the globe have been considering, establishing of required policies and legal frameworks to standardize the organic agriculture (Busacca *et al.*, 2020). The total farming lands dedicated for organic agriculture, around the globe is recorded as 71.5 million hectares in 2018, which is 60.5 million hectares increase compared to 1999 (Schlatter *et al.*, 2020). However, the organic share of total agriculture lands globally is still at 1.5 percent (Willer *et al.*, 2020).

Sri Lankan agricultural production system focuses export market through the plantation sector which yielding with perennial crops such coffee, tea, rubber, and coconut. Further, it aims to fulfil local

requirements through small holder sector included small farmers who cultivates rice, vegetables, legumes, tubers, spices, and fruits (Agricultural Research Policy (SLCARP) Ministry of Agriculture, 2018; Sangakkara & Katupitiya, 2004). According to the statistics, Sri Lanka possesses organic agricultural land of 77,169 hectares in 2018 which is a decrease of 19,149 hectares compared to 2017. Sri Lanka is one of the leading countries in Asian region having highest organic share of total agricultural land of 2.8 percent in 2018. Sri Lanka has about 1,416 organic producers, 879 organic processors and 313 organic exporters in 2018 (Schlatter *et al.*, 2020).

Organic agriculture of Sri Lanka is still at its fundamental stage. The contribution of the organic agriculture is at 6 percent of the total agriculture in Sri Lanka. There are only few local and international certification bodies are available in the context. Organic producers who focus foreign market largely work with the Control Union and other organic producers work with certifying authorities such as Sri Cert and SLSI (Ecorys Nederland, 2020).

literature review

A. Global Status of Organic Agriculture

According to FiBL¹ survey 2020, world's entire organic areas is recorded as 107.3 million hectares in 2018. The distribution of the same is comprised in 67 percent of agricultural land and crops, 32 percent wild collection and 0.6 percent other. In 2018, there are 71.51 million hectares of lands deployed for organic agriculture, which is an increase of 2.02 million hectares with 2.90 percent compared to 2017. World's per capita organic food consumption is calculated as 12.9 euros in 2018 (Schlatter *et al.* 2020).

B. Organic Agriculture in China

China possessed the world's third largest organic agriculture land, which is 3.13 million hectares in

¹ Research Institute of Organic Agriculture, Switzerland.

2018. Moreover, China's organic share of total agricultural land was reported as 0.6 percent in 2018. Further, China operated the world fourth largest markets of 8.1 billion euros approximately for organic food in 2018 (Schlatter *et al.*, 2020). Furthermore, China is the largest organic agri-food supplier to European Union (EU) which represents 12.7 percent share of all organic imports to EU with 415,243 metric tons (Panichi, 2020).

C. Organic Agriculture in Sri Lanka

Sri Lanka has implemented a rapid transformation from inorganic agriculture to organic farming in 2021. Imposing a prohibition on agrochemicals is not adequate to achieve the success of the transformation. However, such transformation requires massive efforts, including rigorous practices and sharing of know-how. This process could take considerable time on developing countries. Organic farming does not mean the application of organic fertilizer alone, but to make it a success, it must be associated with unique regenerative techniques. Thus, rapid transformation may appear not to be practically a viable solution in the short run. However, Sri Lanka is a developing country that could implement such changes gradually with the support of regenerative permaculture experts (Sivaramanan & Kotagama, 2021).

2. METHODOLOGY

The research is designed as a qualitative research within the research paradigm of interpretivism/Constructivism (Creswell, 2014). The research applies the qualitative purposive sampling method and collects data using interview technique (Sekaran, 2003; Sapsford and Jupp, 2006; Creswell, 2014). Further, the study expects to use secondary data sources to achieve its objectives. The primary data is analysed using thematic analysis. The primary data collection is comprised of six interviews obtained from professionals with hands on experience in the field of agriculture. These respondents were selected using published web sites of government and non-government agriculture-research-based institutions. Further, the respondents possess sound theoretical and applied knowledge in agriculture due to their

academic engagements and post qualification working experience in the field and also as senior researchers in the field. The adequacy of primary data collection or the sample size is decided upon meeting the saturation point. In qualitative research studies, the primary data collected through the interviews are converted into interview transcripts and analysed using Thematic Analysis Technique which is heavily applied by the qualitative researchers to analyse the bulk interview data (Maguir & Delahunt, 2017; Jugder, 2006; Braun & Clarke, 2006 p.78). Further, the study refers to reputed secondary sources such The World of Organic Agriculture Statistics and Emerging Trends, Publications of China Beijing Organic and Beyond Corporation, Agriculture related research articles published in reputed local journals and research conference proceedings etc. for its analysis.

ANALYSIS

A. Comparison of Statistics

The study expects to perform a comparison of available statistics of China and Sri Lanka to create an understanding about the status of organic agriculture of these countries.

1. Organic Agriculture Land and Its Share

In agriculture, land is one of the most important production factors. In terms of organic agriculture, China possessed 3.14 million hectares of land on organic agriculture in 2018 while Sri Lanka deployed 0.08 million hectares for organic agriculture for the same period. Sri Lanka is one of the leading countries in the Asian region having a high organic share of total agricultural land, which was recorded as 2.80 percent in 2018. Further, China contributes for 0.60 percent organic share of total agricultural land for the same period (Refer Table. 1).

2. Organic Producers, Processors and Exporters

According to statistics published in 2020, China reported 6,308 Organic Producers, 3,865 Organic Processors and 1,198 Organic Exporters in 2018. In turn, Sri Lanka reported 1,416 Organic Producers, 879 Organic Processors and 313 Organic Exporters in the same period

(Refer Table. 2).

Table 1. Organic Agriculture Land and Its Share on Total Agricultural Land 2018

Theme	China	Sri Lanka
Organic Agricultural Land [million hectares] 2018	3.14	0.08
Organic Share of Total Agricultural Land 2018	0.60%	2.80%

Source: Schlatter *et al* (2020) based on FiBL survey (2020 p.39-40 & p.43-44)

Table 2. Organic Producers, Processors and Exporters 2018

Theme	China	Sri Lanka
No. of Organic Producers 2018	6,308 ²	1,416
No. of Organic Processors 2018	3,865	879
No. of Organic Exporters 2018	1,198	313

Source: Schlatter *et al* (2020) based on FiBL survey (2020 p.58-63)

Table 3. Organic Agriculture Exports 2018

Theme	China	Sri Lanka
Organic Agriculture related Exports (million euros) 2018	806	259
Organic Retail Sales (million euros) 2018	8,087	no data available

Source: Schlatter *et al* (2020) based on FiBL survey (2020 p.68-69)

3. Organic Agriculture Exports and Retail Sales

In 2018, China earned 806 million euros through their organic agriculture related exports while Sri Lanka reported 259 million euros on organic agriculture related exports in the same period. Further, China earns 8,087 million euros as its Organic Retail Sales

in 2018 (Refer Table. 3).

4. Organic Imports of European Union (EU)

China was the world rank number one (01) organic supplier to European Union in 2018, having supplied 415,243 metric tonnes. China contributed with a 12.7 percent share of all organic imports of European Union during the same period. And also, Sri Lanka possesses 26th position (rank no.26) of the list of organic suppliers to European Union in 2018, while supplying 26,570 metric tonnes. Further, Sri Lanka contributed a 0.8 percent share of all organic imports of European Union pertaining to the same period (Refer Table. 4).

Table 4. Organic Imports of European Union 2018

Indicator	China	Sri Lanka
Metric Tonnes (MT)	415,243	26,570
Rank	1	26
Share of All Organic Imports to EU (percent)	12.7	0.8

Source: Panichi (2020) based on TRACES/European Commission (2019 p.146-147)

5. Land Use on Key Cultivations in Organic Agriculture

According to the Statistics of FiBL & IFOAM³ – Organics International (2020), It is identified that China has diversified land use in organic agriculture among many cultivations (Refer Table. 5). Further, China has heavily deployed land for Cereals and Oilseeds. However, there is no such distributed diversification among crop types identified in Sri Lanka.

² According to the statistic of 2016, reported in 2018

³ International Federation of Organic Agriculture Movements (IFOAM).

B. What does it mean as Organic Agriculture in Sri Lankan Context

According to the primary data analysis, respondents' views on the concept of organic agriculture are identified.

Table 5. Land Use and Key Cultivations in Organic Agriculture

Type of Commodity	China	Sri Lanka
Beehives (Beehives No.)	229,084	-
Aquaculture Production [metric tonnes]	71,667	-
Cereals Organic area [hectares]	968,000	-
Citrus fruit Organic area [hectares]	11,963	-
Dry pulses Organic area [hectares]	59,000	-
Temperate fruit Organic area [hectares]	51,022	-
Tropical and subtropical fruit Organic area [hectares]	-	591
Grapes Organic area [hectares]	19,888	-
Oilseeds Organic area [hectares]	478,000	-
Olives Organic area [hectares]	-	-
Vegetables Organic area [hectares]	43,602	129
Organic cotton/ Certified Organic Area [hectares] (2017/2018)	20,023	-

Respondent 1, 2 and 5 (R1, R2 & R5) stated that the recognition on the organic agriculture heavily depended on the certification as Organic by the world's recognized certification body. R1 and R5 further stated that the farmers have to spend at least

three (03) years in preparation of the land with organic inputs such as agro chemicals and fertilizer to be qualified in getting Organic Certification. According to R1, Organic Agriculture is free from agro chemicals and fertilizer (inorganic). Moreover, R5 revealed that there is a misconception in our context that producing agriculture products using Compost or Biodegradable material such as Compost or Vermiwash, is Organic Agriculture. But, when it is made using compost or similar inputs, it should be classified under Natural Agriculture instead of Organic Agriculture.

C. SWOT Analysis on Organic Agriculture of China and Sri Lanka

1. Strengths, Opportunities and Challenges in Organic Agriculture of China

1.1. Strengths and Opportunities of Organic Agriculture in China

Strengths and Opportunities in organic agriculture of China are identified as, having a certification system with high accuracy and consecutive improvement, having high contribution of the government towards the enhancement of organic agriculture, having simulation programmes on organic certification and nominated week for the promotion of organic theme in order to spread and create an impact, increasing the prices of traditional agricultural products due to the bad impacts of urbanization, increasing of usage and people's preference on organic foods in superior quality, spreading of organic restaurants and encouraging of organic farming through urban tourism agriculture and having chances to enter the high quality foreign organic products to the local market (Youting *et al.*, 2020).

1.2. Challenges in Organic Agriculture in China

According to the report of Organic Agriculture in China 2020, published by China Beijing Organic and Beyond Corporation (OABC), challenges and opportunities of organic agriculture in China have been identified as follows.

1.2.1. Excessive Supply of Organic Products

China's total organic production and consumption in 2018 were recorded as 243.2 and 92.1 billion US dollars respectively with an oversupply by 62.1 percent as illustrated in Figure 1 below (Youting *et al.*, 2020).

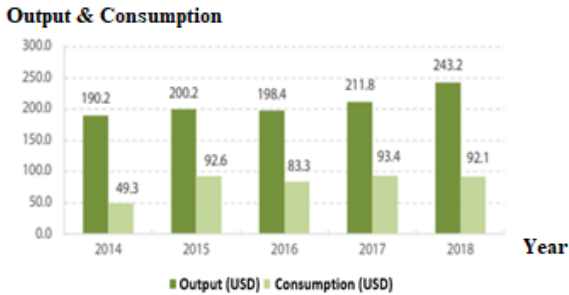


Figure 1: Organic Products Output vs Consumption (USD).Source: Youting *et al* (2020; p.43)

1.2.2. Disparities in Organic Production and Consumption

The organic agriculture is mostly concentrated in remote area of China such Xinjiang, Heilongjiang, Inner Mongolia, Liaoning, and Guizhou, having small population, low industrial pollution and suitable climatic conditions. First-tier cities such Beijing, Shanghai, Shenzhen, Guangzhou, Chengdu, Hangzhou, Chongqing, Wuhan, Xi'an, Suzhou, Tianjin, Nanjing, Ningbo etc. which possess large populations, consume a huge quantity of organic foods. These cities are the primary contributors of the consumption of organic foods (Youting *et al.*, 2020).

1.2.3. Consumers' Trust on Organic Foods Inadequate

Consumers face difficulty to trust organic food, due to the media publicity and the social reliability method. Further, the perception of urban generation believing that the chemical pesticides is the only way to control pests in agriculture also limit the consumption of organic food (Youting *et al.*, 2020).

1.2.4. Low Educational Status of Organic Farmers and Deficiencies in Technology Used for Organic Agriculture

Because of the low educational level of organic farmers, they do not have a thorough insight into organic agriculture. Further, they do not have a comprehensive understanding about organic agriculture; therefore, they focus only on banning chemical inputs on pests and diseases (Youting *et al.*, 2020).

1.2.5. Expensiveness in Organic Products Compared to Inorganic products, which Resulted in Having the Low Demand

Prices of organic foods are five to ten times higher than those of inorganic foods. Therefore, people are not able to purchase such expensive products (Youting *et al.*, 2020; Scott & Si, 2020).

2. Strengths, Opportunities and Challenges in Organic Agriculture of Sri Lanka

2.1. Strengths, and Opportunities in Organic Farming of Sri Lanka

Organic agriculture is environmentally friendly. It conserves natural resources such as soil and water. Further, it promotes human health and long life. Benefits of the organic farming has been absorbed by many agricultural sectors. According to Santhirakumar and Narmilan (2019), Siriwardhane and Samaraweera (2017) and Malkanthi (2021), there is good demand for organic foods due to the health consciousness and environmental friendliness in nature. According to Malkanthi (2020), availability of indigenous knowledge and tactics on organic agriculture, diversified ecological status, and assistance of the government are the key capacities.

Ecorys Nederland (2020) identifies strengths related to Sri Lanka organic agriculture as having a wide range of hands-on exposure with the private sector and emphasizes the opportunities of Sri Lanka organic agriculture as having high demand for organic products in the international market, increasing the

local and regional demand for the organic products, priority of the new government over the organic farming and organic farming in conserved natural areas.

Through the interviews conducted by the researcher in the context, the opinions of professionals in agricultural field have been collected. The analysis of experts views, emphasizes strengths and opportunities in Organic Agriculture of Sri Lanka as follows.

Strengths

- Having traditional seed varieties with high adaptability due to the qualities they possess such as needing less fertilizer and water and high resistance for pest attacks E.g. Sri Lanka's traditional rice varieties.
- Indigenous and community knowledge in agriculture.
- Having trained human capital (officials) and physical resources such research centres, seed banks and training centres. E.g. Centres located in Pannala, Makandura, which train farmers to produce Compost Fertilizer.
- Natural environment conditions leading to less, or negligible pests, diseases and weeds compared to South Asian Countries (India, Myanmar, Vietnam etc.).
- Having rich soil condition in the country.
- Vast diversity due to the ecological zones and ability to proceed cultivation throughout the 365 days of the year.
- Low cost to maintain optimum levels compared to other countries even with the technology (greenhouses).
- Having developed standards for organic agriculture, organic fertilizer by the Sri Lanka Standards Institute and having optimum plant quarantine regulations.
- Having separate plans for organic agriculture by the Ministry of Agriculture.

Opportunities

- Having a good demand for organic products locally and internationally.

- Having premium price for organic products in the marketplace and the said premium price compensating the yield loss which occurs due to maintaining of organic cultivation.
- Suitability of organic cultivations in small land sizes and convenience to deploy resources/ materials E.g. For lands having 1/2 to 1 hectare.
- Having safety, quality, and health benefits in Organic Agriculture.
- Vulnerability in improving the traditional seed varieties E.g. Paddy.
- Attitude that consumption of organic products is health friendly.
- Ability in developing of indexes to measure and apply the optimum levels of agro organic fertilizer etc. to attain the efficiency of organic agriculture to retain the sustainability.
- Ability to maintain close supervision which is highly required over the organic agriculture as a result of development of semi urban sector and population aging. E.g. Elderly population who are living in small size land blocks (e.g.10 perches) due to the land fragmentation, has enough opportunity keep close supervision over the organic cultivation they maintain.
- Opportunity to developing of local certification body for organic products' certification purpose.
- Having niche marketplace for organic products and potentiality in expanding organic products in local Super Market chains focusing on potential customer segments.
- Opportunity to increase the yield in the long run due to the enrichment of the soil condition as a result of maintaining of Organic Status.

2.2. Challenges, Weaknesses, Threats, and Constraints for Organic Farming in Sri Lanka

Santhirakumar and Narmilan (2019) emphasized that

few farmers are converting into organic agriculture. Existing challenges such as deficiency in household income, low life standards, novel technical capabilities of the small-scale female farmers, issues encountered in marketing stage, required standards on organic food labelling, required quality standards of organic products additionally, losing the financial support through the Samurdy scheme adversely impact for the adaptation of organic agriculture, and further, according to Siriwardana and Silva (2013), having deficiencies in reaching of credit information, marketplaces, and prices for small-scale farmers. Also, lack of organisational support, including the assistance of the government, is in poor status on organic paddy sub-sector.

Moreover, challenges on organic farming are identified as low yield followed by the low income, market opportunities limited for organic products, knowledge gaps on the certification process and also, the certification process being costly and complicated (Malkanthi, 2020; Karalliyadda & Kazunari 2018). Further, Siriwardhane and Samaraweera (2017) and Malkanthi (2020) identified the availability of low organic inputs, deployment of high amount of labour and consuming of more time as constraints on organic agriculture.

Moreover, as Ecorys Nederland (2020) emphasized the weaknesses of the sustainable organic agriculture in Sri Lanka in their project report of Technical Assistance to the Modernisation of Agriculture Programme as lack of expertise in the public sector, less priority given by the Ministry of Agriculture on organic farming, lack of pre-discussion with stakeholders in the process of standards and legislation development and such standards and legislations depicting weaknesses in adapting into the local settings, the national standard being established focusing European Union are having extreme demands in the development of the domestic market and lack of membership in Asian Local Government for Organic Agriculture (ALGOA). Further, Ecorys Nederland (2020) emphasized that the threats for the organic agriculture in Sri Lanka as lack of supporting programmes in organic agriculture, continuing the supply of subsidies for chemical inputs and having

biasedness by credit and research on conventional agriculture.

The interviews conducted with the agriculture field experts revealed certain deficiencies related to the Organic Agriculture in Sri Lanka as follows.

- The contribution of the organic agriculture being minimal on the agriculture exports.
- Unavailability of local body for Organic Certification.
- Establishing the National Organic Council Unit (NOCU) in the Export Development Board (EDB) rather than in the Ministry of Agriculture, which prevents successful coordination among all potential stakeholders such all processors, exporters etc. (NOCU is the unit where all the processors, exporters are to be registered).
- Organic Certification is currently issued only by the Control Union (International body) and third country registration facility which could be obtained through the NOCU to export Organic products to Europe or Japan, is currently in inoperative status.
- High cost to obtain Organic Certification from the Control Union.
- Lack of a monitoring mechanism by the government to screen and provide assurance as truly organic (like GAP certification).
- Importing of organic fertilizer in inferior quality due to inadequate quantities of organic fertilizer to meet the local demand.
- Inability to successfully control pests and diseases due to lack of alternatives for pesticide, fungicide, weedicide etc.
- Organic cultivation is not commercially viable compared to the growth of the population and the consumption pattern due to the low yield and it may lead to creating issues in the food security. Also, to meet the demand for growing population, high quantity organic fertilizer is needed, which is difficult to manage currently.
- Existing hybrid seed varieties (foreign) used in Organic Cultivation in our context are not

good fit. For instance, these hybrid seed varieties are developed to get high yields using high amounts of fertilizer and they are highly vulnerable for pest and disease attacks.

- Transition from inorganic agriculture to organic has a crop loss and it is difficult to implement in large scale.
- Farmers do not have adequate knowledge in organic agriculture.
- Lack of indexes for farmers to decide the adequate dosage of organic fertilizer based on the crop type, age etc.
- Even though organic products get premium price in the marketplace, the production cannot be increased accordingly due to the scarcity of resources such labour and lands.
- There is no mechanism established to compensate on the farmers over the losses incurred during the conversion period from inorganic to organic cultivation.

D. Is Organic Agriculture Successful in Sri Lanka

According to the analysis, it is revealed that organic agriculture in Sri Lanka is currently not in a successful status. According to all Respondents, the Government's decision in converting the total agriculture into organic status is a failure. Further, as revealed by the Respondents, there are no countries in the world that converted into 100 percent Organic.

According to R1, *'We failed in Organic Agriculture. Ex. I work mostly with Tea and Paddy, the existing seed varieties are developed using sophisticated methods for inorganic cultivation expecting high yield (provided high content of agro chemicals and fertilizer) these seeds are needed to apply fertilizer even before starting the cultivation, when it is converted to organic with the same seed types with no chemical fertilizer, since having existing level of pest, face for entire yield loss. In Sri Lanka, there is a 40 percent yield loss due to the fertilizer issue. Specially for vegetables (in Nuwara Eliya), suffered with pest attack than the fertilizer issue with high yield damage*

in organic agriculture. Converting 100 percent into Organic is not practical. The Government decision over the night to convert into the Organic cultivation is not farsighted decision, very incorrect decision.'

Further, according to R6, *'you have to identify a zone or such way to develop organic agriculture. There is no acceptance for organic products without a certification in the International Market. Government also thought that our cultivation could be exported (organic) immediately. We can't do that; we do not have even a local body for organic certification. There is no development over such areas. Sudden conversion total agriculture into organic is a big mistake that the government committed'*.

E. Success Stories in Organic Agriculture in the World

When considering the success stories in organic agriculture in the world, it is revealed that no country had implemented 100 percent organic. Bhutan and Sikkim state of India have achieved success in organic agriculture. Further, according to the Respondents, they do not have adequate knowledge in success stories of organic agriculture in the world.

3. DISCUSSION

During the past four decades, the world's per capita food production has grown by 17 percent. Chemical inputs have contributed to increase the agricultural yield considerably. The success experienced has increased the excessive use of agrochemicals. Consecutive improvements in chemical inputs have enhanced the powerfulness and become more hazardous and expensive. This has created an adverse impact on environment and human health conditions (Perera *et al.*, 2007).

According to the IFOAM survey on organic standards and legislation, 84 countries have established organic standards in 2019, and 17 countries have been drafting legislation which is in progress. The European Union (EU) has approved a basic act of its new organic regulation in 2018, which will be implemented in 2021. The secondary legislation (act) for production,

labelling, controls, and trade started to be drafted and adopted in 2018, which has been in progress. One important change has been in place on group certification (Group certification means that a certain number of small farmers are allowed to acquire the certification as a single entity), which is currently only allowed for small operators in developing countries. Applicability of the new regulation is enforced everywhere in the world, including the European Union (Busacca *et al.*, 2020; Willer *et al.*, 2020).

The national regulation on organic agriculture has not been still enforced in the Sri Lankan context. As a result, the domestic market also is not yet regulated. According to the national regulation, all organic products have to be certified by an accredited certification body registered under the National Organic Control Unit (NOCU). International certification bodies such SriCert, Biocert and Sri Lanka Standard Institute or Participatory Guarantee System certified bodies (PGS) are currently doing the certification for the domestic market. PGS is not mentioned in the national regulation and is based on group certification. Small farmers in organic spice farming are practicing the Group certification. The importance of such systems is applicable to other organic small farmers as well. Smallholder farmers with short and transparent channel partners are with a disadvantage due to non-inclusion of PGS in the national regulation (Ecorys Nederland, 2020).

According to Malkanthi (2021), policies on organic agriculture have to be developed covering all aspects such as production, handling, processing, certification, labelling and marketing for the benefits of farmers, marketers and consumers. Ecorys Nederland (2020) reported that there is no adequate support by the public sector over the organic extension services.

Considering the organic share of total agricultural land is at minimal status in China and Sri Lanka. However, Sri Lanka is one of the leading countries in the Asian region having high organic share of total agricultural land. China was the world's rank number one (01) organic supplier to European Union in 2018 and contributed a 12.7 percent share of all organic

imports of European Union during the same period. And also, Sri Lanka possessed the 26th position in the list of organic suppliers to European Union in 2018. Further, it is revealed that China exports organic products fifteen times more than Sri Lanka. According to the Statistics of FiBL & IFOAM - Organics International (2020), It is identified that China has diversified land use in organic agriculture among many cultivations. Further, China has heavily deployed land for Cereals and Oilseeds. However, there is no such distributed diversification among crop types identified in Sri Lanka.

4. CONCLUSION

China is the world's third largest organic agricultural land-deployer and the leading country in many aspects of organic agriculture in the Asian Region. Further, China is the top supplier in organic agriculture products into the European Market. Organic production of China is mostly concentrated on remote areas and the heavy consumption of organic products are concentrated in eleven (11) first tier cities of China. Further, China possesses excessive supply of organic products compared to the demand. Moreover, prices of organic foods in China are between five to ten times greater than those of conventional foods. The regulations on organic agriculture in China are with fully implemented status. Sri Lanka is one of the leading countries of the Asian Region which is having a high organic share of total agricultural lands. Further, Sri Lanka has implemented the rapid transformation into organic agriculture from inorganic, but it is experiencing that such rapid transformation is not practically a viable solution in the short run. However, Sri Lanka being a developing country, it is advisable to implement such changes gradually with the support of regenerative permaculture experts. Moreover, strengthening of areas such as planning and supervision, institutional support system to adopt the organic agriculture, enhancing of farmers' capacity to promote organic agriculture and ensuring a healthy food security with no chemical inputs are noted as essential elements to achieve success in organic agriculture in Sri Lanka.

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