



“Gheorghe Asachi” Technical University of Iasi, Romania



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## ASSESSING A SUSTAINABLE DEVELOPMENT MODEL FOR ORGANIC AGRICULTURE: THE EXAMPLE OF LEISURE FARMS IN TAIWAN

Tsung Hung Lee<sup>1\*</sup>, Yin Yuan Chen<sup>2</sup>, Mei-Hsiang Chen<sup>2,3</sup>

<sup>1</sup>Graduate School of Leisure and Exercise Studies, National Yunlin University of Science and Technology, 123, Sec. 3, University Rd. Touliu, Yunlin, Taiwan 640

<sup>2</sup>Department and Graduate Institute of Accounting, National Yunlin University of Science and Technology, 123, Sec. 3, University Rd. Touliu, Yunlin, Taiwan 640

<sup>3</sup>Department of Applied Foreign Languages, TransWorld University, 1221, Zhennan Rd., Touliu Yunlin Taiwan 640

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### Abstract

This study explores the sustainable development of organic farms and organic farming in Taiwan by analyzing leisure services and the relationship between farmers and their entrepreneurial goals. Internet searches were used to identify 120 organic leisure farms in Taiwan with their own websites, which were subjected to content analysis. The researchers then mailed questionnaires to each Taiwanese organic farm for which a full mailing address could be located. A total of 403 valid questionnaires were obtained. Analysis of the results shows that the websites of Taiwan's organic leisure farms feature content related to three main areas: tourism and leisure, the farming experience, and environmental education. Three types of content important to organic farms are correlated with the business objectives of farmers: the non-economic objectives of farm operators are categorized into “family relationships” and “individual pursuits,” whereas their economic objectives are categorized into “profitability” and “marketing opportunities.” Finally, this study suggests that organic leisure farming, in addition to combining tourism and leisure, helping the environment, and fulfilling educational needs, significantly improves farm operators' family relationships and individual pursuits, increases profitability, and provides additional marketing opportunities.

*Key words:* leisure farms, organic agriculture, organic farming, sustainable development

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### 1. Introduction

Sustainable development is development that meets the needs of the present without compromising the needs and development opportunities of future generations (Brundtland, 1985). Leisure agriculture is a fusion of agricultural production and the opportunity to experience nature and recreational activities (Phillip et al., 2010); the development of organic agriculture is helpful for local development, and it ultimately achieves the purpose of environmental protection (Choo and Jamal, 2009; Petrescu et al., 2015). However, studies comparing conventional agriculture to organic agriculture have revealed that organic

farming can result in a 20% decrease in revenue as well as a corresponding decline in production (Ponti et al., 2012). Therefore, studies undertaken in various regions, such as Alpi Lepontine in the Swiss Alps, have urged policy makers to promote organic farming along with leisure farming as an additional tourist attraction (Castellani and Sala, 2012). As such farms diversify, the operators are likely to benefit from more stable and higher incomes (Barbieri et al., 2008; Brandth and Haugen, 2007).

According to statistics published in 2012 by the International Federation of Organic Agriculture Movements (IFOAM, 2014), 372 billion hectares of land worldwide were used for organic agriculture, an

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\* Author to whom all correspondence should be addressed: e-mail: [thlee@yuntech.edu.tw](mailto:thlee@yuntech.edu.tw); Phone: 886-5-5342601; Fax: 886-5-531-2183

increase of 2.4 times relative to the figure of 110 billion hectares from more than a decade earlier (in 1999). In 2012, there were more than 766 Agriculture Alliance members worldwide from 120 countries (IFOAM, 2014), which demonstrate that organic agriculture is trending as one of the world's emerging farming methods. In 2007, Taiwan's government announced the implementation of the "Agricultural Production and Certification Act" introducing "organic produce" legal norms into practice. Two years later, in 2009, in an attempt to create new opportunities for the next wave of industry, the Executive Yuan promoted the development of six major rising industries (Taiwan Directive, 2013), including organic agriculture.

Statistics from late 2012 show that Taiwan's organic agriculture included 5,850 hectares of organic farmland, an increase of 16.6% above the 5,015 hectares reported in 2011. Moreover, the figures from 2002 showed an increase of 3.8 times (Taiwan Directive, 2013). These findings indicate that in addition to promoting organic agriculture, Taiwan is aggressively developing policies that lead to the further development of organic leisure farms. As of the end of October 2012, the number of tourists participating in rural leisure travel amounted to 9,000,000 admissions, including repeat visitors, creating value of more than 50 billion NT\$ (Taiwan Directive, 2013).

A farm that focuses on production can be transformed into a tourist/recreation destination that incorporates production, recreation, conservation, and other functions to become a leisure farm. With the stress of modern work, leisure farms are ideal for holidays or for spare time, allowing people to release pressure, relax, and adjust their mood. This experience can be achieved by enhancing agricultural and recreational service experiences in farmland settings to encourage repeat visits (Choo and Petrick, 2014; Klauco et al., 2017).

The concept of agrileisure involves the promotion of local rather than imported foods and can thus serve as an agent of social change. Furthermore, this concept is related to public health and place-based education. It has been hypothesized that young people are losing their awareness of the origins of food; thus, agrileisure can also assist in re-introducing youngsters to ideas of where their food comes from, such as when teachers require their students to consider their experiences on a leisure farm in relation to their sense of place and the awareness of the origins of their food (Amsden and McEntee, 2011).

Although agrileisure involves forms of leisure enjoyment in which the tourists are spectators, many people who are involved in agrileisure also participate in work that has a more significant effect than merely intrinsic benefits, regardless of whether they are aware of this influence. This work aids the community, the economy, and the local environment. Further explorations of the concept of agrileisure can help provide insight into its ramifications (Farmer, 2012). In addition to physical and mental health, such settings

attach importance to the concept of leisure. Leisure farms provide a leisure experience, promote organic farming, and actively integrate resources to ensure the sustainability of the ecological cycle. Organic agriculture is regarded as a breakthrough in the existing agricultural dilemma. Another type of breakthrough is ecotourism tours, which incorporate new ideas related to sustainable ecological development (Choo and Jamal, 2009).

There have been numerous studies on the agricultural business and overviews of leisure services (Barbieri et al., 2008), such as farm produce content diversity, ecology, and rural life (Ollenburg and Buckley, 2007). This is combined with consideration for how organic agriculture may supplement more traditional production methods for farmers, and how organic agriculture can proceed concurrently with recreational activities to increase revenue via leisure services (Knowd, 2006). Providing recreational spaces for tourists can lead to a willingness in future to seek out and purchase organic produce and other organic products, thus being beneficial to the organic produce industry's sales (Michaelidou and Hassan, 2010) to improve organic farmers' income, and promote diversified development in rural areas (IFOAM, 2014). Agricultural-based tourism has shown significant growth in many countries (Sharpley and Vass, 2006).

Notable examples of studies on ecotourism include Choo and Jamal's (2009) report on a new form of ecotourism in Korea, Tew and Barbieri's (2012) discussion of providers' perspectives on of the perceived benefits of agritourism, Choo and Petrick's (2014) exploration of social interactions and intentions to revisit agritourism attractions, and Barbieri's (2010) analysis of the motivations behind agritourism and other farm enterprise developments. However, studies that explore organic farming, recreational services, and sustainable development are scarce. The role of leisure services in the context of organic agriculture and sustainable development appears to be worthy of further investigation.

To fill the above research gaps, this study focuses on the construction of a sustainable development model for organic farming in Taiwan. It is the area of organic agriculture, which, when proper principles and procedures are followed, is a form of sustainable development that this study posits as the basis for a new form of organic agriculture in Taiwan: organic leisure farming. First, this study used basic information regarding the Certified Organic program to obtain an overview of Taiwan's organic agricultural industry, including information on types of crops, production area, size, and related data.

Second, to verify basic information on organic farmers who operated organic leisure farming sites was reviewed individually over the Internet. Based on this information, a content analysis of the farms' leisure services was conducted. Third, to further verify the basic information on organic farmers, a questionnaire was distributed to analyze the organic farming industry's perceptions of organic leisure

farms. Three dimensions were considered: tourism and leisure; farming experience and environmental education; and leisure farms' business goals, including profitability. In the third category four dimensions of marketing opportunities were considered, including family relationships and personal pursuits.

## **2. Literature review**

### *2.1. Sustainable development of agriculture and leisure*

The 1992 Rio Declaration on Environment and Development stated that three concepts of sustainable development must exist in balance for sustainable human development: environmental protection, economic growth, and social development (UN, 2013). Sustainable organic agriculture integrates environmental and ecological resources and economic and social development operators to achieve an optimum balance (IFOAM, 2014). Beyond being a means of food production, sustainable organic agriculture can provide entertainment and recreational functions, enabling farm activities to become tourist activities for the purpose of providing leisure services (Barbieri et al., 2008). To assess this innovative combination, a new model of sustainable development in leisure farming had to be constructed to focus on leisure services, leisure farms, and the business objectives of farmers (Choo and Jamal, 2009; Tew and Barbieri, 2012). Because these leisure farms are intended to contribute to the development of organic agriculture, they require a specific policy of objectives that promote the overall development of organic agriculture (Luttikholt et al., 2006).

### *2.2. Leisure farms and leisure services*

Leisure farms provide diverse attractions, including the manufacturing of agricultural products, the availability of home stays (Kizos and Iosifides, 2007), opportunities for customers to participate in farming activities, opportunities for visitors to observe the nature of agricultural business activities, and educational services (Ollenburg and Buckley, 2007). The leisure farm has become a new means of stimulating economic development in rural communities (Mbaiwa, 2011). Thus, the organic farm is a locus of organic farming, recreation, and education, and it can create additional value beyond the production of organic agriculture (Barbieri and Valdivia, 2010).

All visitors may participate in farming experiences that may include the cultivation of crops, the leading of draft horses or machinery to plow farmland, sowing or transplanting crops, weeding, fertilizing, pruning, harvesting, and even post-harvest crop conditioning depending on safety issues and feasibility factors. Leisure farming provides memorable events by investing the experiences of tourists with meaning and creating memories with unforgettable value (Pine and Gilmore, 1998).

The organic farm production model includes resource recycling, environmental protection, and biodiversity management concepts (Rigby and Cáceres, 2001). The farm itself provides an opportunity for the public to learn about the concept of a sustainable environment (Fleischer and Tchetchik, 2005). Visitors to large farms obtain knowledge of the relationship between nature and crops, the environmental impact of farming, and related topics through observation and ecological farming experiences.

### *2.3. Farmers' business objectives*

Leisure farming encompasses a variety of different types of entrepreneurial farming (Barbieri et al., 2008), including organic leisure farms (Flanigan et al., 2014). Organic leisure farmers are entrepreneurs who are committed to developing leisure services at the site of their farmland, and their goal is to satisfy the visitors (Austin and Vancouver, 1996). Therefore, these farmers' business objectives for the leisure industry reflect entrepreneurial goals (Barbieri and Mahoney, 2009).

The entrepreneurial skills of leisure farmers and their cultural, social, and economic backgrounds (Morgan et al., 2010) differ from those of entrepreneurs involved in other types of leisure agriculture (Barbieri, 2010). According to the relevant literature, the objectives of leisure farmers include the development of new farm customers, the education of visitors in agricultural knowledge, and improved quality of life for themselves and other members of the family farm community (Barbieri, 2010; Barbieri and Mahoney, 2009; Ollenburg and Buckley, 2007). A summary of the literature on the promotion of entrepreneurial types in the development of leisure farms reveals that four main objectives are common to most leisure farmers. The first objective is "profitability," which involves increasing farmers' income sources to provide them with a steady income (Barbieri, 2010; Ollenburg and Buckley, 2007). The second objective is "marketing opportunities," including providing services to existing customers and developing value-added products (Barbieri, 2010). The third objective is to nurture and protect "family relationships," such as by improving the quality of family life and ensuring the continuance of the farming business (Barbieri, 2010). The fourth objective is the ability to become involved in "personal pursuits" such as enhancing the vitality of one's individual work and combining one's professional work with private interests (Barbieri, 2010). Tew and Barbieri (2012) conducted a survey of leisure farms in Missouri (USA) and identified two types of business objectives: economic objectives ("profitability" and "marketing opportunities") and non-economic objectives ("family relationships" and "individual pursuits"). However, since studies of the roles of economic and non-economic benefits in the context of leisure farming are generally scarce, the potential of leisure farmers to achieve a variety of

objectives and the development of organic leisure farms merits further study.

### 3. Methodology

#### 3.1. Data collection

##### 3.1.1. Survey of organic farmers

Organic farmers may apply for certification as Certified Organic farmers by presenting their information to Taiwanese officials. Information on farmers who had received this certification by December 31, 2011, was obtained from the organic industry as commissioned by the Council of Agricultural Development Center at Ilan University for the purpose of building and maintaining an organic farm information inquiry system. After information on organic farmers was obtained, the information was consolidated and checked for errors, and duplicates and erroneous submissions were then identified and removed. There were 2,317 organic farms identified, with a total area of 4,741 hectares of farmland. These figures may be compared with the Council of Agriculture's statistics as of December 31, 2011: the number of National Organic Farmers was 2,300, with 5,016 hectares of various crops. The Organic Farming Department was initially intended to be involved in data collection, but its members withdrew from the project because of the variance in organic area statistics. Nonetheless, the overall total area compared to the Council of Agriculture's data achieved a coverage rate of approximately 95%.

Data from the 2,317 organic farmers were individually identified by a Google search for organic farmers engaged in leisure agricultural work by collating a list of websites that combined tourism and leisure, the farming experience, and environmental education. A total of 120 websites of this type were identified.

Content analysis was conducted based on four aspects: tourism and leisure (entertainment, dining, and lodging), farming experiences (agriculture and culture), environmental education, and membership in the organization of National Organic Farmers.

##### 3.1.2. Research instrument

This study used a questionnaire to collect data. The questionnaire consisted of five parts, as described in the following sections.

*Overview of organic agriculture*—Five questions were asked to obtain an overview of organic agriculture. These questions included items on the production of organic crops, the total area of the respondents' farmland, organic phases, and leisure agriculture.

*Circumstances regarding the operation of leisure agriculture*—This part included 11 items to gather information on the circumstances under which leisure agriculture operates. Items included statistics on the number of visitors, the types of visitors, the number of years that the respondents had been involved with leisure farming, visitors fees, total

revenue, service revenue ratios, the number of marketing programs, the hiring of staff, guests' willingness to recommend and revisit the leisure farms, and expectations for increases in leisure activities or facilities.

*Perceptions of organic leisure farms*—This part referred to Barbieri's (2010) findings, using five items to measure leisure programs, five items to measure farming experiences, and five items to measure environmental concerns. The responses were scored on a 5-point Likert scale ranging from 1 for "strongly unnecessary" to 5 for "strongly necessary." Thus, a 15-item scale was developed to measure perceptions of organic leisure farms.

*Objectives for the operation of leisure farms*—This part also referred to Barbieri (2010) findings, using a 16-item scale to measure the respondents' likelihood of operating leisure farms. The responses were scored on a 5-point Likert scale ranging from 1 for "strongly unimportant" to 5 for "strongly important."

*Demographic variables*—Items included age, educational background, changes in career and status, the respondents' number of generations traditionally involved in agriculture, household income, and the duration of farming experience.

*The development of organic agriculture*—One open-ended item asked the respondents to address their opinions freely on the development of organic agriculture. Among the 372 valid questionnaires, 153 of the respondents provided additional comments for this item, representing a response rate of 41.1%. These free-form answers were subjected to content analysis.

##### 3.1.3. Questionnaire survey

To gather a register of data on the respondents involved in this comprehensive survey of the organic farming industry in Taiwan, 700 copies of the questionnaire were printed after documenting and screening the available data for duplicate addresses. Eventually, 1,617 copies of the questionnaire were mailed along with return envelopes using complete mailing addresses. To overcome non-response bias, we attempted to increase the response rate by soliciting the respondents who did not answer in the first wave of mailings by sending a second questionnaire (three weeks later) accompanied by a telephone call reminder. A total of 403 copies were collected. Thirty-one responses were incomplete, resulting in 372 usable questionnaires obtained.

#### 3.2. Statistical analysis

All data were analyzed using IBM SPSS Statistics 21.0 for Windows. Descriptive statistics were used for data error detection to ensure that the raw data were correct and to understand the structured distribution of the sample.

An exploratory factor analysis was employed to identify the data structure and to further purify the measurement items. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy yielded 0.914 for

“perceptions of organic leisure farms” and 0.945 for “leisure farms’ objectives” whereas Bartlett’s test of sphericity showed significant values for “perceptions of organic leisure farms” ( $\chi^2 = 3385.362$ ,  $df = 105$ ,  $p < 0.001$ ) and “leisure farms’ objectives” ( $\chi^2 = 5161.596$ ,  $df = 120$ ,  $p < 0.001$ ). An exploratory factor analysis was then performed to reduce the number of variables. Principal component analysis was used to extract the factors. After the application of this factor analysis, only factors with eigenvalues exceeding 1 were retained. A varimax rotation was used for axis rotation. A multiple regression analysis was conducted to predict the relative contribution of each factor analyzed by the exploratory factor analysis. An independent sample t-test was used to determine whether the organic farms in question were operating as leisure farms.

Additionally, the qualitative part of the study used a one-item open-ended questionnaire that allowed the respondents to respond to the questions in a free-form manner. The qualitative data were summarized and analyzed, and text descriptions of the results were produced. To ensure the validity of the findings, digest transcripts were carefully read and encoded by the authors and research assistants to clarify the issues by comparing data and analyzing inconsistencies.

## **4. Results**

### *4.1. Organic agriculture industry*

Across Taiwan, there were 62.7% who made new applications, much higher than the earlier figure of 37.3%; this points toward a substantial increase in the government’s promotion of organic farming. The crop structure of organic crops is led by vegetables at 34.3%, followed by rice (29.8%), others (including specialty crops such as coffee) (15.1%), fruit trees (14.0%), and tea (6.8%). Farmland areas in Taiwan of two hectares or less are counted as small, simple peasant farms; these farms account for 79.0% of Taiwan’s organic agriculture. Large farms, which are defined as having an area of 10 hectares or more, account for only 2.9% of Taiwan’s organic agriculture, indicating that most of Taiwan’s organic agriculture is performed by farmers with small areas of farmland.

### *4.2. Organic leisure farms*

Inductive content analysis and calculations yielded the number of organic leisure farms offering specific types of services. The most common types of service available were the provision of food and beverages (54 of the sites examined), followed by 45 offering accommodations and only 25 offering entertainment. With regard to learning experiences, 66 farms offered farming experiences through agricultural experience activities, 45 provided lessons on culture, and 42 offered environmental education instruction.

From the above comparison, we can observe that the majority of revenue for organic leisure farm services is generated by two sources: agricultural activities and food service. The category “tourism and leisure areas” represents entertainment facilities that cater primarily to areas that provide pastoral care, meals, and lodging places. The category of “farming experience” includes hands-on agricultural production-related activities, largely related to “do-it-yourself” (DIY) organic agricultural projects, such as picking crops, gaining experience in local and cultural aspects of non-organic farming, DIY activities related to agriculture, and DIY activities related to rural culture. Environmental education consists of a combination of observation and participation in major agricultural production, primarily in the form of school field trips.

Organic leisure farms may be involved in coalition partnerships, primarily for local farmers’ associations (such as the 4-H Club, production and marketing groups, and Mother Tian’s home economics classes) or for organic industry cooperation alliances, non-governmental organizations (NGOs), and travel agencies (although only one such agency has a website).

### *4.3. The state of organic leisure farms’ operations*

Organic farmers aged 41 years and older accounted for 82.5% of all organic farmers in this study, whereas those 40 years of age and younger accounted for only 17.5% of the respondents. This finding suggests that organic agricultural operators generally fall into an older age bracket relative to the 2011 survey, in which the agricultural population over age 40 accounted for 82.8% and those aged 39 or younger accounted for 17.2% of all farmers (Taiwan Directive, 2014). Thus, the age structure of the organic farmers and the structure of our agricultural questionnaires did not differ significantly from the 2011 survey. Farm owners who had an educational background in agriculture accounted for only 38.4% of all farmers. Approximately 71.5% of the respondents had been farm workers continuously throughout their professional lives. Multi-generational family farmers accounted for 65.1% of the total. Of the organic farming families, 66.7% had a yearly revenue of \$1,000,000. Farmers who worked full time at organic agriculture accounted for 22.7% of the total, indicating that 77.3% of the respondents’ time was spent performing different work.

Of the operators in organic agriculture, 32.8% had experience with leisure farm services, whereas 67.2% were only involved with agricultural production. Leisure farms constituted 46.7% of the various leisure-related services, followed by 29.5% for rural bed and breakfasts, public farms, fruit gardens, educational farms, and others (such as garden restaurants and exhibition centers). In 2010, the total number of visitors to organic leisure farms was 322,330; the main types of tourists who visited organic farms consisted of families and children,

organizations, and schools (including cram schools and daycare classes).

4.4. Analysis of leisure farm activity

The most important agricultural activity involved the provision of healthy, fresh food service (mean = 4.01), followed by crop picking and production experience in the processing of agricultural products (mean = 3.96), providing recreation and tourism activities (mean = 3.85), and offering home stays and rural life experiences (mean = 3.79).

Regarding the indicators of organic leisure farms, nearly all the organic farmers (89.3%) were willing to recommend recreational agricultural activities at other organic farms. Approximately three-quarters of the respondents (71.3%) indicated their intentions to increase the number of activities or leisure farm facilities that they offer. More than half of the respondents (50.8%) agreed that providing leisure services at their organic leisure farms would help to increase farm profits, with 25% indicating that they “strongly agree.”

Furthermore, 80% of the respondents indicated that they supported the idea that farm profits could be beneficial to the development of leisure agriculture: 51.6% answered “agree,” and 30.1% answered “strongly agree.”

4.5. Provisions for service analysis

Three factors (namely, environmental education, tourism and leisure programs, and farming experience) were extracted from “perceptions of organic leisure farms.” Environmental education included five items, accounting for 26.18% of the explained variance. The five items of the “tourism and leisure programs” variables represented approximately 23.44% of the explained variance; the five items of “farming experience” accounted for

approximately 18.36% of the explained variance (Table 1).

4.6. Analysis of leisure farm objectives

Sixteen question items concerning the operation of leisure farm goals were categorized into three factors: family relationships and personal pursuits, profitability, and market opportunities. “Family relationships and personal pursuits” consisted of five variables, with an explained variance of 26.21%. “Profitability” included six variables, representing approximately 25.37% of the explained variance. The five variables within the factor of “marketing opportunities” represented approximately 23.46% of the explained variance (Table 2).

The organic farmers who responded to the questionnaire were divided into two groups: those who were engaged in leisure agriculture (122 respondents, accounting for 32.8% of the total) and those who were not (250 respondents, representing 67.2% of the total). A t-test of the statistical results revealed the importance of “family relationships and individual pursuits” (t=1.07, p>0.05), “profitability” (t=0.90, p>0.05), and “marketing opportunities” (t=1.05, p>0.05). Overall, the results showed that there was no significant difference between the groups. Therefore, the goals of organic farming operators of leisure farms were slightly higher than the average for organic farmers who did not operate leisure farms; overall, however, the two groups’ agricultural goals did not differ significantly.

4.7. The development of organic agriculture

The respondents’ answers were classified into three general categories: “agricultural production,” “farming life,” and “rural ecology.” Three “other” responses did not fit into any of the above three categories.

Table 1. Entertainment activities and service factor analysis of organic farms

<i>Entertainment activities and services</i>	<i>Factor Loadings</i>	<i>Eigenvalue</i>	<i>Explained variance (%)</i>
<i>Environmental education</i>		3.93	26.18
Providing field trip lesson plans	0.84		
Farm animal and plant ecology guided tours	0.81		
Observation and participation in agricultural production	0.79		
Understanding of local rural culture	0.75		
Organic farming classes	0.74		
<i>Tourism and leisure</i>		3.52	23.44
Introducing a variety of holiday activities	0.81		
Festivals and celebrations	0.77		
Agricultural production leisure site design	0.76		
Providing a variety of recreational activities	0.75		
Series of local tourism and leisure resources	0.73		
<i>Farming experience</i>		2.75	18.36
Feeding farm animals	0.78		
Operating agricultural machinery	0.76		
Picking crops	0.69		
Growing organic vegetables	0.64		
Do-It-Yourself agricultural product projects	0.51		
Total explained variance			67.98

For the purposes of content analysis, each response that mentioned any of these topics counted as one comment, and categories that were not mentioned were not counted. After the analysis, the results indicated a maximum of 82 comments on “farming life,” 66 comments on “rural ecology,” and 39 comments on “agricultural production.” Thus, for organic operators, the development of organic agriculture remains the greatest concern, followed by agricultural life issues and agro-ecological production.

Further exploration of the aspects of agricultural life showed that the most common response was to increase the number of ways of marketing leisure farms, with 31 responses. Sixteen responses indicated that there should be an increase of farmers moving to leisure agriculture and rural ecology. Twenty-nine respondents favored environmental education, and 19 favored

conservation. Eighteen respondents recommended enhancing aspects of agricultural production, 18 favored public-sector counseling, and eight recommended enhancing the technology used in organic farming (Table 2). Overall, organic operators believed that although the technology has matured, they still confront the problem of how to market organic agriculture. Environmental education involves two aspects that organic operators consider to be important: rural ecology and the marketing of organic agriculture, specifically through the promotion of various types of education.

Thus, farmers proposed that the collected data should be categorized into four groups: farmers’ internal strengths, weaknesses, external opportunities, and threats (SWOT) to provide organic leisure farms with vital information for the development of marketing strategies (Table 3).

**Table 2.** Factor analysis of organic leisure farms’ agricultural goals

<i>Leisure farm operator’s agricultural objective</i>	<i>Factor loadings</i>	<i>Eigenvalue</i>	<i>Explained variance (%)</i>
<i>Family relationships and individual pursuits</i>			
Providing employment opportunities for family members	0.79	4.19	26.21
Enhancing the quality of family life	0.77		
Ensuring the continuance of farming	0.75		
Enhancing the vitality of personal work	0.75		
Combining work and interests	0.69		
Increase revenue from sources other than agricultural production	0.62		
<i>Profitability</i>			
Increasing the farm’s sources of income	0.82	4.06	25.37
Providing a stable income	0.79		
Increasing agricultural production’s income	0.77		
Making full use of agricultural resources	0.72		
Reducing risk of financial loss in case of crop failure	0.71		
<i>Marketing Opportunities</i>			
Serving existing customers	0.77	3.75	23.46
Developing value-added products	0.76		
Providing knowledge of organic agriculture	0.73		
Distributing own produce	0.73		
Developing new customers	0.71		
Total explained variance (%)			

**Table 3.** SWOT analysis of organic leisure farms

<i>Strengths</i>	<i>Weaknesses</i>
1. Production, life, and ecological activities are diverse	1. Insufficient operating funds for leisure activities
2. Farming experience activities are numerous	2. Legalization and security issues
3. Schools schedule educational field trips	3. Lack of business philosophy and management system
4. Associated with community cultural activities	4. Insufficient professional manpower training services
5. Provide environmental and ecological education	5. Inadequate marketing and promotion
6. Uniqueness of every farm	6. The lack of cross-industry strategic alliances
<i>Opportunities</i>	<i>Threats</i>
1. Leisure farms are becoming more popular	1. The presence of competition from other organic leisure farms
2. Popular concepts of health and health care	2. Seasonal differences make planning and management difficult
3. Ecological and environmental conservation	3. High levels of uncertainty regarding legality
4. Reducing pressure by engaging in recreation	4. Insufficient public awareness of organic agriculture
5. Leisure agriculture tutoring and rewards	5. Organic leisure farms have a vague position in the overall market
6. Rapid and convenient transportation	

## 5. Discussions

Organic agriculture is based on small-scale landholders, who typically have low incomes. For this reason, most organic leisure farm operators devote part of their time to work outside agriculture, a finding that is consistent with organic farming operations in Taiwan as well as with WWOOF (Willing Workers on Organic Farms, an organization in New Zealand) organic farms and other small subsistence farms (McIntosh and Bonnemann, 2006).

In their responses to open ended questionnaire items, organic farm operators said that adding leisure services to their organic farms had increased their profits, and helped develop organic agriculture in order to leisure farm profits. Research on similar situations regarding organic agriculture in Thailand confirmed that agriculture, when supplemented by tourism, brings additional tourism revenue (Chemnasiri, 2010). Farm operators can also increase their agricultural income by means of direct sales at the farms, so as to continue to engage in self-reliant farming work (Chemnasiri, 2010). Therefore, this study suggests that organic agriculture should be combined with leisure agriculture, for the purpose of supplementing their income from off-farm organic produce.

Studies of leisure farming in other parts of the world have resulted in related conclusions. Chemnasiri's guidelines, intended for farmers in Thailand (Chemnasiri, 2010), similarly reflect the importance of training agro-tourism providers so as to increase farm operators' understanding of tourism and cultural heritage preservation, so as to allow them to generate more income; they also stress the importance of the opportunity to sell organically grown produce directly to visitors, with the objective of allowing farmers to maintain their farms and be self-reliant, without having to move to a city to seek other employment. The study emphasizes the need for community participation, governmental support, fair distribution of profits to all participants in the farming, and the preservation of culture, heritage, and environment.

Choo and Jamal (2009) emphasize the role that Korean culture plays in organic leisure farming: especially important is a commonly held ethical belief that earth, animals, and humans are interconnected; also significant is rural farmers' self-defined role as stewards of the land for future generations of South Koreans, sometimes result in farming techniques that are naturally aligned with principles of sustainable tourism and agriculture. A specific type of leisure farming, coined "eco-organic farm tourism" by Choo and Jamal, is the result: organic leisure farming that also focuses on humans' relationship with the land and nature, and is therefore invested in principles of ecology. Therefore, leisure farming represents a crossroads where organic farming, sustainable tourism, agritourism, and ecotourism intersect (Choo and Jamal, 2009). Choo and Jamal's research further

explores this area of intersection; their study found organic leisure farms to represent a combination of three forms of agricultural tourism: environmental education, tourism and leisure, and farming experience. The authors recommend that further international research be conducted to discover ways in which the principles of eco-organic farm tourism might need to be adjusted or varied in places other than South Korea. They also stress that the success of this specific form of organic leisure farming depends on local participation, governmental support, and financial incentives and support for organic farming.

McIntosh and Bonnemann's study of organic farming in New Zealand (McIntosh and Bonnemann, 2006) that features points towards differences between commercial tourism on organic leisure farms in that country and volunteering for farm work in return for lodgings as part of an organization called WWOOF. These differences include four key dimensions: the rurality of the experience, the opportunity to learn about organics, the personal meaningfulness of the experience, and the element of sincerity in the experience. Essentially, these dimensions are related to the volunteerism inherent in this organization: participants are more similar to backpackers and long-term budget travelers than wealthy visitors on holiday, and they tend to stay longer and share both space and housekeeping duties with the farm operators themselves. New Zealand farmers working with WWOOF indicate that the experience is more genuine than a leisure farm because the guests actually get involved with farm labor, and are not paying to be entertained; rather, they actually become farmers temporarily during their stay.

As Choo and Jamal (2009) point out, different nations and regions have different ways of developing and organizing agritourism, and that national standards for what defines organic farming vary from nation to nation. For example, Japan promoted agritourism projects in the 1990s, following in the footsteps of European examples. Similarly, in Malaysia, agritourism centers for education and recreation purposes are funded primarily by the government. France, an example of a European country with well-developed rural tourism, focuses more on self-catering accommodations for travelers to camp or to live in caravans. In Korea, however, farm tourism was developed by collective groups of farmers located near tourist resort areas.

Organic leisure agriculture provides interaction between tourists and agriculture on organic farms to provide a variety of different experiences and activities, such as farm accommodations, farming demonstrations, farm tourism, participation in farm work; leisure activities are primarily designed to let visitors gain experience related to organic agriculture, such as crop picking and processing agricultural products. It must be stressed that, with the potential hazards inherent in such situations, guest safety must always be a prime consideration. When such activities are perceived as being safe for visitors, they make up



popular tourist packages, they are consistent with the definition of one type of leisure agriculture, providing tourists and farm-based agriculture that allows for interaction among the guests and also with the farmers, and allows visitors to experience authentic agricultural work (Flanigan et al., 2014). In addition, organic leisure farms' operating areas should be strengthened by the sponsorship of NGO groups, other organic industries, alliances with the local tourism industry, and local agriculture-related organizations to improve recreational services and facilities and to supplement the content richness of the farm experience and expand service scenarios (Choo and Jamal, 2009).

This study found that organic leisure farms' operators share a number of business objectives, namely, family relationships and individual pursuits, profitability, and marketing opportunities. Organic leisure farms can not only offer visitors farming experiences, providing the farmers with tourist income, but they can also sell their produce directly to their guests: a form of tourist service interaction (Choo and Petrick, 2014). This additional income can help raise the quality of life of rural households, increasing employment opportunities for family members and preserving the ways of agriculture and rural life, thus contributing to community development (Barbieri and Mahoney, 2009; Tew and Barbieri, 2012).

Finally, this study found that organic leisure farming, in addition to combining tourism and leisure, helping the environment, and fulfilling educational needs, significantly improves farm operators' family relationships and individual pursuits, increases profitability, and provides additional marketing opportunities. The aforementioned are the three factors that positively affect organic leisure farmers' business objectives. A study of farms in South Korea, namely organic leisure farms that provide tourism and leisure and which work to protect the environment, stresses that organic leisure farming should be based on education as a major factor in providing services. This study, by Choo and Jamal (2009), identifies a new form of organic farming that features all of these traits, and adheres to the model of sustainable development; Choo and Jamal assert that organic agriculture programs and policies elsewhere would likewise be well advised to follow sustainable agriculture and sustainable farm tourism practices (Choo and Jamal, 2009).

## 6. Conclusions

This study concludes that the organic leisure farms bring together entertainment features, hospitality services, tourism and leisure, and environmental education: a blend that, according to the relevant literature, is distinctive and characteristic specifically of Taiwan's organic farming experiences. Taiwan's organic leisure farms have a distinct character that represents a new form of leisure farm, which, in its unique blend of characteristics, offers a significant contribution to the academic literature.

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