

# SUSTAINABLE TOURISM DEVELOPMENT IN SRI LANKA: A SUSTAINABLE APPROACH TOWARDS AGRO-TOURISM IN NUWARA ELIYA

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## ABSTRACT

*Sri Lanka was a sustainable agricultural country in the past which is currently paid international attention as a unique tourism destination in South Asia. The tropical climate, agricultural background, and its reputation as a tourism destination accommodate the concept of Agro-tourism to practice in several destinations in Sri Lanka. Hereby, this study is focused on Nuwara Eliya as a high potential tourism paradise to experience agro-tourism as a part of sustainable tourism. The findings of this study that are based on secondary data and information extracted through archival research reveal problems, opportunities, and potentials of current practices of agro-tourism in Nuwara Eliya. Hereby, 15 agro-ecological regions introduced by the Department of Agriculture, Sri Lanka in the secretariat division of Nuwara Eliya were subjected to examine the agro-sustainable features based on five principles of sustainable agriculture recognized by FAO. Consequently, this assessment revealed the problems which are related to policy implementation, the inefficacy of resources management, coordination failures, environmental pollution, lack of knowledge and awareness about the current practice of agro-tourism within the subjected regions. This study recommends the initiation of monitoring, certification, and awareness programs to assess the sustainability of agro-tourism practices while performing institutional coordination flowing process to enforce the interactions between tourism and agriculture to coordinate agro-tourism affairs in Nuwara Eliya. Finally, employment and commercial opportunities, cultural and social potentials, technological and methodological capabilities have been introduced in this study that can be important to provide a sustainable approach towards agro-tourism practices in the future.*

**Keywords:** Agro-tourism, Sustainable, Agriculture, Practices, Nuwara Eliya

## INTRODUCTION

Sri Lanka is predominantly an agriculture-oriented country since in the past. The majority of people were occupied in agriculture in ancient Sri Lanka. Paddy cultivation was the major agricultural product as rice is the main dish of the Sri Lankan people. With the establishment of the British Empire Tea, Rubber, Coconut, and Coffee were cultivated as the main export crops in Sri Lanka. Spices were major income generated products in the island. By the time, after 1948 various kinds of food crops were introduced by the governments to grant an

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agricultural diversification in Sri Lanka with the rapid growth of population. Adhering to this project, fruits and vegetables were promoted to grow in Sri Lanka under various climatic conditions. On this background, the cool and salubrious climate in the hill country was most applicable for numerous fruits and vegetables cultivated as food crops for local consumption. Hereby, vegetables such as carrots, Leeks, Cabbage, Salad Leaves, Beet Roots, Beans, etc., and fruits like Strawberries, apples, Grapes, Tomatoes, Pear, and Peach, etc. were most popular in the island. At the present, these food crops in central hills have been a significant feature in the local economy as much as export crops in Sri Lanka.

As a world trend, the agricultural sector based on consumer crops has been combined with tourism as a supplementary sustainable industry to make advantages for rural people sustaining “agro-tourism” while avoiding negative impacts of mass tourism over the community and the environment. On this basis, most countries in the world practice agro-tourism as a factor of sustainable rural development. India, Nepal, the Philippines, Australia, the USA, and European countries are currently practicing "agro-tourism" by using traditional and indigenous agricultural methods as a part of promoting ecotourism. Certain countries are using agro-tourism to promote shifting the urban residents to the rural areas to restrict the gatherings of the people in the urban areas and develop rural areas. Agro-tourism provides interesting and unique activities such as milking from cows, feeding farm animals, picking fruits, living together with farmers, etc. for tourists worldwide.

In the context of Sri Lanka, there is a sound natural and cultural environment to promote the sustainability of agro-tourism under the theme of ecotourism. However, Sri Lanka is yet to be utilized its maximum capacity of eco-cultural resources to promote agro-tourism at the present. Unlike in the USA, Australia, and European countries, Sri Lanka is composed of an ideal community bound by the traditional agricultural backgrounds in every nook and corner of the country. The focused area of this study, Nuwara Eliya, provides an excessive eco-cultural background for practicing the concept of agro-tourism as a variety of crops including vegetables and fruits are cultivated in rural areas such as Kandapola, Hawa Eliya, Sitha Eliya, Sanda-Thenna, etc. However, most of these rural areas and farming people are cornered by the current practices of the industry of agro-tourism confining a few destinations which are New-Zealand Farm, Ambewela, and Strawberry Farms, Pattipola. Therefore, agro-tourists would have to restrict for a very few activities associating merely these two destinations and they have lost the opportunities to have a rural agricultural experience since these destinations are limited only to dairy farming and one commercial crop (Strawberry) in Nuwara Eliya. On this background, small-scale farmers are not gained from agro-tourism except a few large-scale businesses. Hence, this study is supposed to investigate the potentials of Nuwara Eliya to promote "Agro-tourism" among the ordinary farming community while addressing issues in current practices.

This research is primarily based on a few research questions that should be addressed in the current context. These questions will be useful to pursue the problems in the current practices, people’s attitudes, economic difficulties, social barriers towards “Agro-tourism” promotions in Nuwara Eliya.

**R.Q. 1:** What is the background of the current practice of “Agro-tourism” in Nuwara Eliya?

**R.Q. 2:** What are the problems of achieving sustainable qualities in the contemporary practices of “Agro-tourism” in Nuwara Eliya?

**R.Q. 3:** What are the opportunities and potentials in Nuwara Eliya to accommodate “Agro-tourism” practices in the future?

The above questions will conduct this study towards an effective research outcome. The results obtained through answering the mentioned questions will produce applicable suggestions, solutions, and recommendations in the forthcoming sections of this study.

### **MATERIALS AND METHODS**

This study is primarily based on secondary quantitative and qualitative data and information extracted from archival research. Hereby, this archival research was done by using the sources available on the internet. Subject-related books, research publications, and articles were useful to realize the conceptual matters of this study. The official websites related to the government and its affiliated institutions were used to collect information regarding current practices while the annual reports and assessment reports are providing statistical data for the analysis of this study.

This study was conducted during the third wave of the COVID-19 pandemic outbreak in Sri Lanka. Therefore, this research was met a few limitations in the process of data collection. Primarily, this study was unable to collect primary data in the field due to the COVID-19 pandemic restriction over traveling and people movements. Therefore, field visits towards farmers and related institutions have to be suspended. Further, most updated data were not found on the official websites due to the delays of data collection methods for the last two years owing to pandemic restrictions. Telephone conversations with the responsible persons were hard to make due to the coordination issues during the COVID-19 pandemic outbreak. Therefore, most responsible institutions were not contacted to gather primary data and information through field visits due to the absences of office bearers.

### **LITERATURE REVIEW**

Tourism can be introduced as a "labor-intensive industry that creates huge employment opportunities for both skill and unskilled labor from both urban and rural areas" (Kobra et al., 2018). According to (Kobra 2018) tourism is the only industry that creates employments from coastal areas to hill areas in a country towards human capital development and their earnings. Tourism is appeared in various forms based on the nature of the tourist's experience. This study is supposed to define the concept of Agro-Tourism towards sustainability. In the literature, Agro-tourism is defined as a form of ecotourism, as well as a component of rural tourism. International Conservation Union (IUCN) defines ecotourism as: "Environmentally responsible travel and visitation to natural areas, to enjoy and appreciate nature (and any accompanying cultural features, both past, and present) that promote conservation, have a low visitor impact and provide for beneficially active socio-economic involvement of local peoples" (CeballosLascuráin& Héctor, 1996). The term "Rural Tourism" has not given a proper definition, but it has been defined in several ways and according to the European Commission, the term "Rural Tourism" is adopted as "tourism in areas with a low density of population" (European Commission, 2000).

However, agro-tourism is derived from rural tourism "related to agricultural activities in the farm, where visitors become acquainted with the

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operation of agricultural processes to experience agricultural life at first hand, cultural landscape, local products, traditional cuisine and daily life of people, cultural elements and authentic features of particular area” (Fahrurrozi, 2017). According to Joaquín Arias Segura, “Agriculture has been recognized as being important to reducing poverty and promoting rural development” (Arias Segura, 2010). Deeply analyzing these definitions, agro-tourism can be identified as a part of sustainable tourism since rural development can be gained by agriculture while generating benefits for the rural community and conserving nature and culture. Therefore, Stela Zoto et al. defined agro-tourism “as a part of the Ecotourism for both are related and subjected to natural attractions” (Zoto, et al., 2013). Further, they describe the trends of agro-tourism as “the past agro touristic attractions were natural sights and plantations but the new agro-tourism concept involves a system bringing together the tourism sector and the agricultural sector as a model of regional development” (Zoto, et al., 2013).

In the line with the literature regarding Agro-tourism, it can be simply defined as “An activity, enterprise or business that combines primary elements and characteristics of agriculture and tourism and provides an experience for visitors that stimulates economic activity and impacts both farm and community income” (Wolfe & Bullen, 2009 as cited in (Byne, 2004). According to modern definitions of agro-tourism, it is referred to as sustainable agriculture. Agriculture will be sustainable when it (1) Ecologically sound, (2) Economically viable, (3) Socially just, (4) Humane, and (5) Adoptable. Therefore, sustainable agriculture can be defined in a global perspective as “Agriculture is sustainable when it is ecologically sound, economically viable, socially just, culturally appropriate and based on a holistic scientific approach” (NGO, *Sustainable Agriculture Treaty*, 1992 cited in (Fahrurrozi, 2017).

Agro-tourism is a multidisciplinary area that includes agricultural tourism, agro-tourism, farm tourism, farm vacation tourism, wine tourism, and agro-entertainment. The activities related to these terms are often operated with small-scale farming, enterprises, rural families, and communities providing a rural experience to the travelers as well as generation livelihoods and incomes for the farmers and affiliated communities (Wimalaratana, 2014). According to Rev (Wimalaratana, 2014), Agro-tourism product potentials in South Asia shows a higher volume of opportunities such as Cottage accommodations in farming lands, Countryside rest houses for lunch and dinner, Highland farm gardens for tourists, Riding in the countryside by using horses, elephants, donkeys along with cart riding and cycling, Tours towards rural productions and processing facilities, Farm tours and traditional farming activities, Cultural shows, Traditional sports, etc. The researcher (Rilla, 2012), pointed out the reasons for the development of agro-tourism are as follows: Educate deliberately by maintaining links between sectors interested in the local society and visitors; the positive impact on improving the health of visitors; creating relaxation; it constitutes an adventure; it determines enjoying natural food; it could be a unique experience and it is a form of leisure tourism.

Basing on this conceptual background, this study will be supposed to provide the most applicable and sustainable approach for agro-tourism practices in Nuwara Eliya, Sri Lanka in the forthcoming sections of this review.

## RESULTS AND DISCUSSION

This section will examine the contemporary background of the current practice of agro-tourism in Nuwara Eliya. At the same time, this review will investigate the problems that are emerged in the existing practices in Agro-tourism in achieving its sustainable qualities. Hereby, this study will assess the sustainability features of the agricultural sector in Nuwara Eliya based on the “Five Principles of Sustainable Agriculture” defined by the Food and Agriculture Organization of the United Nations (FAO) as follows.

**Principle No. 1:** Improving efficiency in the use of resources is crucial to sustainable agriculture.

**Principle No. 2:** Sustainability requires direct action to conserve, protect and enhance natural resources.

**Principle No. 3:** Agriculture that fails to protect and improve rural livelihoods, equity, and social well-being is unsustainable.

**Principle No. 4:** Enhanced resilience of people, communities, and ecosystems is key to sustainable agriculture.

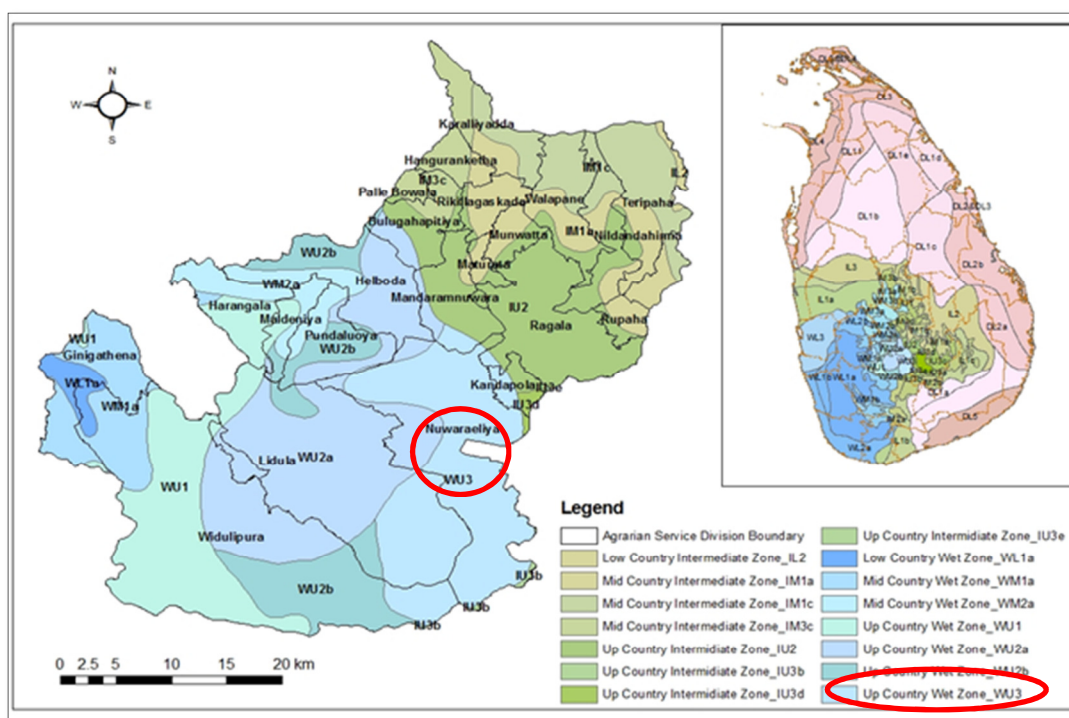
**Principle No. 5:** Sustainable food and agriculture require responsible and effective governance mechanisms.

(Source: Food and Agriculture Organization of the United Nations (FAO), 2017)

This study is supposed to enhance the sustainability of current practices of agro-tourism in Nuwara Eliya adhering to the mentioned Principles of Sustainable Agriculture. In this process, the sustainable qualities of agro-tourism current practices will be evaluated while investigating novel opportunities and potentials for agro-tourism development in Nuwara Eliya based on the Agro-Ecological Regions introduced by the Natural Resources Management Center (NRMC) which is operated under the Department of Agriculture, Sri Lanka. They have categorized Sri Lanka into three zones which are Dry Zone, Intermediate Zone, and Wet Zone. Certain areas in the upcountry were categorized under Intermediate and Wet zone. Hereby, Nuwara Eliya, the center of the upcountry is demarcated into 29 Grama Niladhari (GN) Divisions introduced as Agro-Ecological Zones (**Figure 1**).

In this process, NRMC has recommended customized crops for selected GN divisions within the agro-ecological region of Nuwara Eliya based on the nature of water supplements. Hereby, this study selected the most applicable 15 GN divisions that can be promoted as Agro-tourism destinations which are easily accessed by the tourists who are lodging in Nuwara Eliya city to be considered as sample destinations. (**Table 1**). shows the most applicable and recommended crops in selected divisions in Nuwara Eliya as follows.

According to (**Table 1**) Carrot, Beet, Bean, Potato, Leek, Cabbage, Cauliflower, Lettuce are the most common crops in the above-selected tourism destinations while Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum are the most popular fruits. Tea and fruits are cultivated as perennial crops in Nuwara Eliya in every agricultural site that could be promoted as agro-tourism destinations. According to the above table, it is emphasized that there are growing eco-cultural potentials in Nuwara Eliya to attract tourists towards Agro-tourism at the commercial level through the sustainable management of agricultural products.



**Figure 1:** Agro-Ecological Regions in Nuwara Eliya, Sri Lanka.

*Source:* Natural Resources Management Center (NRMC), Department of Agriculture.

**Table 1:** The Most Recommended Crops in Agro-Ecological Region in Upcountry Wet Zone, Nuwara Eliya (WU3).

GN Division	Ecological Region	Recommended Crops		Perennial Fruits
		Rain Fed	Irrigated	
Sitha-Eliya	WU3	Potatoes, Carrot, Beans, Beet, Leek, Cabbage	Carrot, Beet, Leek, Knolkhol	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea
Shanthipura	WU3	Potatoes, Carrot, Beans, Beet, Leek, Cabbage, Strawberry	Carrot, Beet, Leek, Knolkhol	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea
Pattipola	WU3	Strawberry, Lettuce, Potatoes, Carrot, Beet	Carrot, Beet, Leek, Knolkhol, Garlic, Cauliflower, Tomato	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea
Nuwara Eliya	WU3	Potatoes, Carrot, Beans, Beet, Leek, Cabbage, Lettuce	Cauliflower, Potatoes, Carrot, Beans, Cabbage, Beet, Lettuce, Capsicum	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea
Nuwara Eliya East	WU3	Green Pear, Strawberry, Potatoes, Carrot, Beans, Beet, Leek	Cauliflower, Potatoes, Carrot, Beans, Capsicum	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea

Nuwara Eliya Central	WU3	Green Pear, Strawberry, Potatoes, Carrot, Beans, Beet, Leek	Cauliflower, Potatoes, Carrot, Beans, Capsicum	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea
Nanuoya	WU3	Lettuce, Strawberry, Potatoes, Carrot, Beans, Beet, Leek, Cabbage	Cauliflower, Potatoes, Carrot, Beans, Cabbage, Beet, Lettuce, Capsicum	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea
Kandapola	WU3	Potatoes, Carrot, Beans, Beet, Leek, Cabbage, Strawberry	Carrot, Bean, Potato, Leeks, Cauliflower, Lettuce	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea
Kandapola Central	WU3	Potatoes, Carrot, Beans, Beet, Leek, Cabbage, Strawberry	Carrot, Bean, Potato, Leeks, Cauliflower, Lettuce	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea
Kandapola East	WU3	Potatoes, Carrot, Beans, Beet, Leek, Cabbage, Strawberry	Carrot, Bean, Potato, Leeks, Cauliflower, Lettuce	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea
Kalukelle	WU3	Carrot, Beet, Potato, Leek, Bean, Strawberry	Carrot, Bean, Potato, Leeks, Cauliflower, Lettuce, Tomato, Knolkhol	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea
Bambara-Kelle	WU3	Potato, Bean, Beet, Carrot, Leek, Strawberry	Carrot, Bean, Potato, Leeks, Cauliflower, Lettuce	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea
Ambewela	WU3	Potato, Bean, Beet, Carrot, Leek, Strawberry, Lettuce	Carrot, Bean, Potato, Leeks, Cauliflower, Lettuce	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea
Toppas	WU3	Green Pears, Raddish, Potato, Bean, Beet, Carrot, Leek, Strawberry	Carrot, Bean, Potato, Leeks, Cauliflower, Lettuce	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea, Tea
Windicorner	WU3	Green Pears, Raddish, Potato, Bean, Beet, Carrot, Leek, Strawberry	Cauliflower, Potatoes, Carrot, Beans, Cabbage, Beet, Lettuce, Capsicum	Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, Plum, Tea

*Source: Natural Resources Management Center (NRMC), Department of Agriculture.*

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According to the Assessment of Agricultural Water Pollution in Nuwara Eliya done by the Post Graduate Institute of Agriculture, University of Peradeniya, Sri Lanka, has pointed out Environment-related governmental organizations and their specific activities towards the sustainability of the environment in Nuwara Eliya (Henegama et al., 2013).

**Table 2:** Environment Related Governmental Organizations and Their Specific Activities towards the Sustainability of the Environment in Nuwara Eliya.

Organization	Environment Related Activities
Urban Development Authority	Town and infrastructure planning in Nuwara Eliya and maintaining Gregory Lake
Municipal Council	Administrative Activities in the city (Waste management and Gregory Lake and its catchment area maintenance)
National Water Supply and Drainage Board	Water treatments and supplements ensuring hygiene for people in the town area
Local Authority	Water supply and waste management peripheral areas
Central Environmental Authority	Enforcement of environmental regulations
Department of Irrigation	Maintenance of reservation areas around the water bodies and ensure water supply for cultivations in a sustainable way
National Building Research Organization (NBRO)	Monitoring, planning, and warning issues related to landslides
Disaster Management Centre	Monitoring and coordinate other organizations related to natural disasters and take immediate actions
Meteorological Department	Monitoring and observing activities related to weather and weather forecasting
Department of Agriculture	Enhance the sustainable practices in agriculture in a sustainable manner
Department of Agrarian Services	Conducting extension activities related to sustainable agricultural development

*Source: Tropical Agricultural Research, Post Graduate Institute of Agriculture, University of Peradeniya, Sri Lanka, 2013.*

According to **(Table 2)** the efforts of the governmental organizations towards the sustainability of the environment and agriculture are appreciated. As explained by (Graham,2002). the less institutional capacity of addressing problems is a major reason for the poverty of the countries. As well, the lack of institutions that can sustain the economic policies and failures of development efforts are major issues in most countries such as Sri Lanka (Graham, 2002) cited in (Khan et al. 2020). However, considering agro-tourism practices at the present, the mediation and contribution of SLTDA and Tourism Promotion Bureau are not satisfactory. In the present scenario, these both responsible tourism authorities do not maintain favorable institutional relationships, coordination, and cooperation with other subjective bodies, especially are Department of Agriculture, the Department of Agrarian Services, and the Department of Irrigation in the process of developing industry of agro-tourism practices in Nuwara Eliya. Though certain ecotourism practices are undertaken with the participation of government and the private sector, agro-tourism is yet to be promoted as a part of it. Agro-tourism would be beneficial for the government to use as an economic strategy to upgrade the agricultural industry, quality of lives, the economy of ground-level communities that are involving in small-scale agricultural livelihoods related to vegetable and fruit farming, animal farming, and also fishing. According to the above Principle No. 5 which "Sustainable food and agriculture require responsible and effective



governance mechanisms" would be achievable through the active participation and the contribution of the government and its responsible authorities to promote Agro-tourism in above mentioned agro-ecological regions in Nuwara Eliya, however currently mal-functioned.

Considering the current practices of agro-tourism in the Nuwara Eliya area, Pattipola and New Zealand farm is operated as agro-tourism destinations. The population of Pattipola GN division is around 1726 and 90% of this population is occupied in agriculture-related livelihoods. Pattipola Strawberry farms are popular among tourists who enjoy agro-tourism. Hereby, tourists can join with Mushrooms, Potato, and fruit cultivation along with animal husbandry. Dairy and poultry farming are recently established in this destination under the project of "Divi Neguma" initiated by the Sri Lankan Government. Exotic fruits such as Strawberries, Oranges, Passion Fruits, Lime, Guava, Lemon, Peaches, Tomatillo, Locket, and Apples are cultivated at the commercial level to attract tourists. As well, Ambewela New Zealand Farm is also currently operated as an agro-tourism destination. Around 766 people are living in the Ambewela GN division and the majority of these villages are engaging in farming activities. Fruit and flower farming are practiced by the people in this destination in addition to dairy farming (Rambodagedara et al., 2015). These are the most prominent agro-tourism sites which are currently operated in Nuwara Eliya. However, these practices are inadequate to gain from agro-tourism for the community who are involving in agriculture in Nuwara Eliya. Therefore, the benefits of sustainable agriculture will not be equally distributed among stakeholders at the present. The majority of benefits of the agriculture sector are entertained by the large-scale business community while the small-scale farming community is being under-stressed and mal-functioned. Hereby, the traditional and rural Tea Pluckers are completely forgotten and cornered by the current practices of Agro-Tourism while the tea estates in remote areas are under-utilized in Nuwara Eliya. Consequently, Principle No. 3 of sustainable agriculture would be spoiled through the current practice of agro-tourism in Nuwara Eliya demonstrating inequality of income distribution towards rural farming people.

According to **Table 1**, the majority of potential destinations have been unemployed in the current practices of agro-tourism in Nuwara Eliya. Above mentioned agro-ecological regions which are currently recognized as tourist destinations are not efficiently employed in the current practices of agro-tourism except Pattipola and Ambewela. The government and other authorities have not paid proper attention towards high potential villages such as Kandpola, Sitha-Eliya, Nanu Oya that can be promoted as agro-tourism destinations at the industrial level. Consequently, industrial and organizational capacity and efficiency of agro-tourism have been diminished in Nuwara Eliya as previously explained by (Graham, 2002).

Toppas and Windicorner are comparatively attractive destinations were situated at the entrance to Nuwara Eliya which is currently faded and covered with commercial advertisement banners. Therefore, these cultivations are not properly seen by the visitors who enter Nuwara Eliya. Principle No. 4 which is enhancing ecosystems is violated in this area by the people who are establishing vegetable stoles unnecessarily covering cultivations in this destination. Therefore, this area has become a noisy place crowded with sellers and hotel buildings. According to the above **Table 1**, Nanu Oya is an ideal place for converting into an agro-tourism destination since Nanu Oya station is the most important access point in Nuwara Eliya with the railway station. Moreover, Nanu Oya is an important viewpoint in

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Nuwara Eliya which tourists can observe various natural sceneries including waterfalls, rivers, tea estates, mountains, valleys, etc. upon arrival. However, this significant agroecological destination is currently unemployed in agro-tourism in Nuwara Eliya. Therefore, these three places which are Toppas, Windicorner, and Nanu Oya should be promoted for agro-tourism in Sri Lanka since every tourist who visits Nuwara Eliya is passing through these agricultural areas before entering the city.

Shanthipura is a famous and most popular viewpoint which is situated on the way to Nuwara Eliya city moving through Toppas and Windicorner. However, people who visit this site do not experience Agro-tourism though it is being an agroecological destination that is enriched with various fruits and vegetables that can be tasted by the tourists. Currently, this destination is paid attention by the authorities only as a viewpoint, but as an agro-tourism site.

Further, Green Pear and Strawberries are high returned income generated crops grown in Ambewela, Toppas, Kandapola, Kalukele, and Nuwara Eliya which are currently not focused on by agro-tourism in Nuwara Eliya. Therefore, these cultivations are discouraged in the local commercial market due to the higher cost of production and purchase. Therefore, farmers do not encourage in cultivating such high-return crops since they are not able to spend much on them.

Nuwara Eliya city is the heart of the central province as the most popular tourism destination. However, the agricultural value of this region is limited for commercial purposes despite its agro-ecological features that can be important in agro-tourism. The rapid establishment of concrete buildings in this city diminishes the ecological and environmental values of the agricultural sites around the city area. Therefore, farmers who are dedicated for cultivate these urban sites are not gained by agro-tourism in Nuwara Eliya violating Principal No. 3 which sustaining the livelihoods, equity, and social well-being of these farming people. They are not gained by the tourism and sad stories of their lives are covered by the commercial purposes of businesses and industries. Their lives are hardly sustained through commercial agriculture in Nuwara Eliya. As well, these farmers are not effectively and efficiently used in the industry of tourism to promote agro-tourism in Nuwara Eliya demoting Principle No. 1 which “Improving efficiency in the use of resources is crucial to sustainable agriculture”. Therefore, the agriculture industry will not be sustained by the industry of tourism in Nuwara Eliya.

Principle No. 2 which “Sustainability requires direct action to conserve, protect and enhance natural resources” is often violated through this commercial agriculture since they are using chemicals and pesticides for rapid harvesting of the crops without using biochemicals. As well, this practice will spoil Principle No. 4 which is based on the sustainability of ecosystems related to agriculture. Hence, several agro-friendly worms, insects, animals, flora, and fauna are being endangered by using pesticides and weedicides.

According to the Environmental Audit Report, no: PER/B/2019/02 by Environmental Audit Division, National Audit Office, Sri Lanka, the environmental effect of using pesticides is mentioned as follows.

**Table 3** shows the direct effect of pesticides on environment-friendly flora and fauna. Further, pesticide contamination of soil, underground, and surface water will cause negative impacts on society. If these practices would continuously occur, the ecosystems which are useful for protecting environmental balance will be

destroyed. Therefore, sustainable agricultural methods should be adopted while promoting agro-tourism as a part of it.

Further, the farmers working in existing commercial farmlands and other small-scale farmlands do not care about environmental sustainability. Therefore, ecological devastations such as soil erosion, water pollution, and air pollution have

**Table 3:** The Environmental Effect of Using Pesticides in Agriculture Farms.

Name of the pesticide	Effect on the environment
Algaecides	certain algae are controlled
Avicide	certain birds are controlled
Bactericides	certain bacteria are controlled
Fungicides	fungus control is controlled
Herbicides	unwanted plants are controlled
Molluscicides	snails and slugs are controlled
Nematocides	Nematodes (Roundworms or Threadworms) are controlled
Rodenticides	Rodents (Mammals like rats, mice, squirrels, hamsters, porcupines, and their relatives) are controlled

*Source: Environmental Audit Report Report No: PER/B/2019/02.*

been increased due to the use of chemicals and other artificial materials used in farming. Consequently, existing farming sites such as Kandapola, Nuwara Eliya, Toppas, Windicorner, Sitha Eliya are not attracted by the tourists who are appreciating ecological values. Environmental pollution especially occurred by commercial farming is negatively affected by ecological sustainability defined under Principle No. 4 of sustainable agricultural principles introduced by FAO.

The above review is emphasized that the sponsorship of the government and other authorized bodies for promoting agro-tourism is not satisfied. Therefore, most of the high potential agricultural resources and destinations are being under-utilized in the industry of agro-tourism due to the inefficiency of responsible authorities related to the tourism and agricultural sector in Sri Lanka. Further, the coordination failures between authorities, middle-level, and ground-level stakeholders are not enough strong to expand and develop agro-tourism in Nuwara Eliya. Hereby, the relationships among tour operators, hoteliers, and farmers have not been satisfactorily entertained in the current practices of agro-tourism. Farmers are not properly aware of this particular industry and they do not have a clear idea about the gains from agro-tourism in their day-to-day lives. Sustainable interactions and relationships between farmers and foreign tourists are not sustained by the language barriers. Local tourists are comparatively discouraged to experience agro-tourism than foreign tourists due to their negative attitudes regarding farming people and poor appreciation of indigenous farming communities. Therefore, the local market towards agro-tourism is hard to develop in Sri Lanka.

Above mentioned problems, deficiencies, and barriers of current practices in agro-tourism will be addressed in the next section providing suggestions and recommendations. The next section will provide a conclusion for this study while examining opportunities and possibilities in Nuwara Eliya to promote agro-tourism as an important part of sustainable tourism in the future.

## CONCLUSIONS AND IMPLICATIONS

Sri Lanka is an agricultural country that is enriched with a sound cultural background focused on agriculture. As a modern trend, most countries are using agriculture to promote the tourism industry introducing agro-tourism. The term "Agro-tourism" is derived from "Rural Tourism" to sustain agriculture in rural areas while conserving eco-cultural resources and making benefits for the rural farming people by using tourism. Currently, Nuwara Eliya, Sri Lanka is an ideal agricultural destination that can be developed as an agro-tourism paradise as is a part of sustainable tourism practices. Therefore, this study examined the possibilities and potentials in the Nuwara Eliya area to promote agro-tourism adhering to the "Five Principles of Sustainable Agriculture" introduced by FAO. In this process, this research selected the most applicable 15 GN divisions which are recognized as Agro-Ecological Regions in Nuwara Eliya by Natural Resources Management Center (NRMC), Department of Agriculture, Sri Lanka. The majority of these sample destinations are currently operated as ecotourism destinations in Nuwara Eliya. The provincial restrictions imposed due to the COVID-19 pandemic were major limitations in this study for gathering primary data and field visits in the process of data collection. Hence, this research is composed of secondary qualitative and quantitative data and information extracted from archival research by using books, journals, research papers, articles, annual reports, and recently updated official websites related to the subjective disciplines. Hereby, a comparative analysis was carried out based on "Five Principles of Sustainable Agriculture" to investigate the problems, shortages, and deficiencies in current practices of agro-tourism in Nuwara Eliya.

As a result of the analysis, the study revealed that growing eco-cultural potential for agro-tourism can be found in Nuwara Eliya associating a variety of crop production. However, these resources are not properly managed and efficiently utilized by the current practices of agro-tourism due to the mal contribution, cooperation, and coordination of related governmental bodies especially, SLTDA, Tourism Promotion Bureau, Department of Agriculture, Department of Agrarian Services, and Department of Irrigation. The current agro-tourism practices operated in Pattipola and Ambewela are not sufficient to satisfy the global demand for agro-tourism in Nuwara Eliya. As well, the benefits of these practices are not equally distributed among farming people in Nuwara Eliya since the majority of areas are not favorably utilized by the agro-tourism operations towards social welfare. Moreover, the high usage of pesticides, fertilizer, and chemicals by the commercial agricultural farms in Nuwara Eliya is directly threatening to the sustainability of the environment and eco-systems. Poor knowledge and awareness of the stakeholders regarding the industry of agro-tourism, language barriers between foreign tourists and farming people are drawbacks for the development of agro-tourism in Nuwara Eliya.

Considering the future implications of this study, agro-tourism opportunities and potentials revealed in this study will be helpful to find new directions towards sustainable agriculture and tourism developments for the responsible authorities related to agriculture and tourism. Therefore, the indications and recommendations of this study would make mutual benefits for the agricultural sector and tourism sector at the commercial level in Sri Lanka. Further, this study will provide practical ideologies for future entrepreneurs who are willing to engage in tourism based on their agricultural background. As well, the implications of this study would deliver exceptions to extend the sustainable tourism practices while

broadening the benefits for the farming community in the rural areas in Nuwara Eliya to upgrade their livelihoods while empowering rural women. Finally, it would provide a new approach and opportunity for the Eco-tourists who are experiencing and studying tropical agricultural patterns at a single ground at Nuwara Eliya sustaining the dimensions of the tourism industry in Sri Lanka.

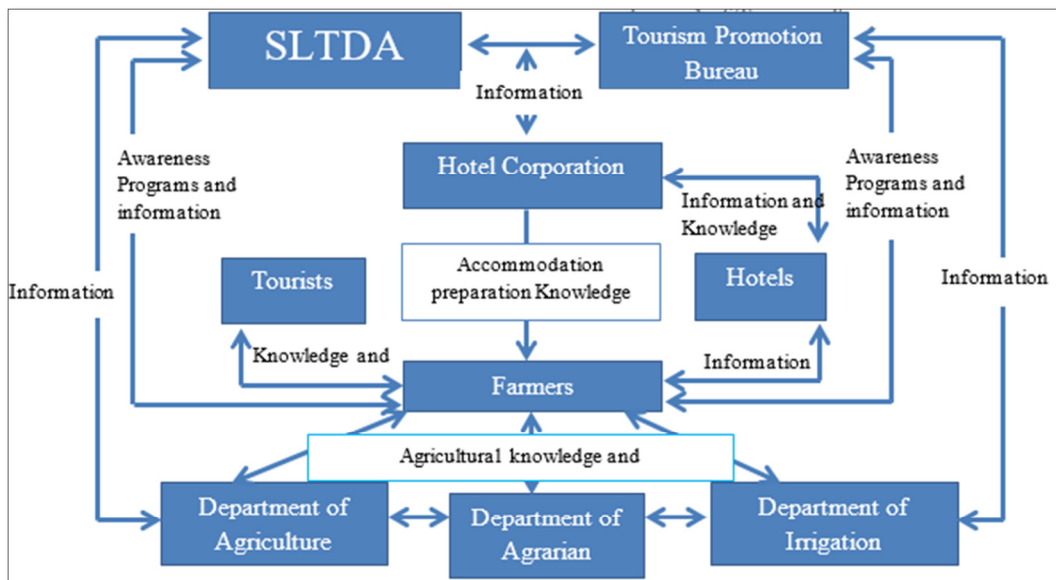
## RECOMMENDATIONS

### Implementing sustainable tourism policy reforms

Sri Lanka tourism industry is still operated under the Tourism Act No. 38, 2005. Compared to emerging world trends of tourism, the existing act should be amended and tailored according to the various dimensions of current tourism practices especially for ecotourism composed with agro-tourism, rural-tourism, etc. introducing sustainable tourism approaches and opportunities to the stakeholders. Under these acts, the government can execute rules and regulations over environmental protection and cultural identities as an action towards eco-cultural conservations.

### Establishing efficient coordination and corporation between subjective governmental bodies in the industry

Considering agro-tourism promotions in Nuwara Eliya, it is important to implement formal coordination between the Department of Agriculture, Department of Agrarian Services, Department of Irrigation, and Hotel Corporation with the affiliation of SLTDA and Tourism Promotion Bureau. The information, commands, and directions transmitted by these authorities should be reached by the farmers at the bottom level via hoteliers in Nuwara Eliya. Hereby, this mechanism should have a proper flow of information and commands from top to bottom as well bottom to top as follows (Figure 2).



**Figure 2:** Suggested Agro-Tourism Coordination Flow Chart in Nuwara Eliya in the future.

According to (Figure 2). the awareness programs, knowledge, and technology provided by tourism and agricultural authorities towards hoteliers and farmers will be returned as information for the authorities while experiences are

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entertained by tourists as feedbacks. Therefore, coordination and corporation between stakeholders are important to enhance the effectiveness and efficiency of the agro-tourism industry in future Nuwara Eliya.

### **Efficient use of Agro-Ecological regions as agro-tourism destinations**

Department of Agriculture has identified 15 GN divisions in Nuwara Eliya area as agro-ecological regions. Therefore, there is a high potential of establishing agro-tourism sites by using these regions. Hereby, currently, Strawberry farming regions such as Shanthipura, Nuwara Eliya East and Central, Nanu Oya, Kandapola, Kalukelle, Bambarakelle, Toppas, and Windicorner can be promoted as Agro-tourism based Strawberry farms in addition to Pattipola. Hereby, the rural farming people in Shanthipura, Nanu Oya, Kandapola, Kalukelle, and Bambara Kelle could be joined to enhance the sustainability of agriculture while generating income through agro-tourism in Nuwara Eliya. As an initial step government can grant financial capital for these people to initiate strawberry farming at a commercial level for the tourists who come to Nuwara Eliya. In addition, Windicorner, Toppas, Nuwara Eliya East, and Central can be developed as Green Pear farming destinations for tourists who are willing to enjoy agro-tourism. Hereby, Strawberry and Green Pears can be promoted as high-income generated crops in Agro-tourism. Further, small tea estates located in rural and remote areas in Nuwara Eliya can be promoted as agro-tourism destinations to experience world-famous Ceylon tea culture for the visitors. Hereby, all the selected agro-ecological regions could be promoted for tea-tourism under the concept of agro-tourism in Nuwara Eliya.

### **Agricultural product diversification in Agro-tourism sites**

In this process perennial crops such as Apple, Avocado, Grape Fruit, Lime, Orange, Pear, Peach, and Plum can be promoted in agro-ecological regions in Nuwara Eliya in addition to vegetable farming. Hereby, the agro-tourists will be able to experience a high range of crops in agro-tourism destinations in Nuwara Eliya. The remote rural areas such as Pattipola, Kandapola, Kalukelle, Bambara Kelle destinations can be utilized for animal husbandry using Cows, Goats, Horses, and Hens, since there are more spaces and meadows available with natural water resources. Consequently, agro-tourists would be able to enjoy and experience traditional animal husbandry methods additionally traditional crop agriculture in Nuwara Eliya.

### **Human resource development through Agro-tourism**

Travel, and tourism provide more opportunities for human resource development while allowing women to workforce participation, leadership, entrepreneurship, and empowerment than other sectors. It reduces poverty in rural communities while generating benefits at both the micro and macro levels in rural areas (Bazazo, et al., 2017) cited in (Kobra, et al., 2019). Therefore, agro-tourism associated with flower farms in Nuwara Eliya would be a great opportunity for women to join and contribute to the tourism industry while earning benefits. Hereby, women's participation in tourism could be enhanced through agro-tourism while empowering the women towards leadership and entrepreneurship through flower and vegetable farming including tea in Nuwara Eliya. Further, small stalls could be established in agroecological regions where tourists could taste processed Fruit Salads, Fruit Juice, Vegetable Salads, Fresh Milk, and Tea, etc. at a reasonable controlled price. Hereby, the concept of "Hela Bojun" conducted by the Sri Lankan Government could be further promoted and expanded in these agro-

tourism regions focusing on rural areas to empower rural women, promote youth employment, and gender equality. It would be beneficial to income generate for rural communities and promote employment opportunities for the rural people as self-entrepreneurs.

### **Agro-tourism activity product diversification**

Agro-tourism activities are limited in the current practices in Nuwara Eliya at the present. Therefore, agro-tourism activity product diversification would be important to expand this industry. Hereby, Fruits and Vegetable plucking, harvesting can be introduced associating fruits and vegetable farms while providing opportunities for tea plucking for the tourists in rural tea estates in Nuwara Eliya. Milking cows, feeding animals, horseback riding around rural areas can be promoted around suggested animal farms in Pattipola, Kandapola, Kalukelle, and Bambara Kelle. Horseback riding will be interesting since tourists could be able to observe and feel the nature and the climate in Nuwara Eliya, especially in village areas. Hereby, tourists can observe the behaviors of animals while experiencing the village culture. Tourists can visit organic farms using traditional agricultural methods and join with seed harvesting in rural farms. Further, tourists would have the knowledge and experience of tea culture in Nuwara Eliya through the activities of visiting small-scale tea factories joining with traditional Tea Pluckers. Homestay with farm-to-table dining activities would be a most enthusiastic event for the foreign tourists in Nuwara Eliya as it allows tasting traditional foods while experiencing village lifestyles enriched with agriculture. These activities will provide educational and interpretational knowledge to the tourists regarding agriculture in Sri Lanka.

### **Introducing and promoting organic farming methods**

Organic farming is important in promoting agro-tourism since it appreciates the sustainable survival of the environment and ecosystems. Therefore, introducing and promoting organic farming methods are essential in Nuwara Eliya. Organic farming will be beneficial for the environment, ecosystems, wildlife, farmers as well as consumers. Hereby, people can be encouraged to use compost to produce natural fertilizer reducing soil carbon losses, soil erosion, and water pollution. Organic fertilizers can be prepared by using natural sources such as livestock and poultry excreta, plant remains, biogas, and agricultural by-products. Adhering to these processes, organic tea, fruits, and vegetables can be promoted under the organic farming system in the agro-ecological regions in Nuwara Eliya. Consequently, sustainable qualities of agro-tourism will be enhanced through these practices in the future.

### **Inaugurating awareness programs for the stakeholders**

In the process of promoting agro-tourism in Nuwara Eliya, the awareness programs should be launched in two specific ways. First, people should be aware of the attitudes and ethics of sustainable tourism practices. Hereby, workshops focused on farming people could be organized demonstrating the way of greeting, welcoming, treating, respecting, and dealing with the tourists who visit their farmlands. As well, positive attitudes should be fed into the minds of the farming people regarding the benefits that they can earn through sustaining agro-tourism. Secondly, hoteliers and farming people should be aware of the “Five Principles of Sustainable Agriculture” since these principles would help the farmers to enhance the sustainability of their farmlands. On this basis, awareness programs could be

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launched with the participation of SLTDA, Tourism Promotion Bureau, and NRMCA along with the Department of Agriculture.

### **Facilitating technology for farming people**

In the field of agriculture, technology is important to enhance its efficiency and effectiveness. In the case of agro-tourism farmers should be introduced sustainable methods of using technology. Hereby, introducing Digital Sensors are important to collect micro-climate data, measure the precise Ph level of the soil, and ensuring the sustainability of the products. Wireless Remote Irrigation Monitoring System is another sustainable technology that is enabling irrigation practices more efficient and sustainable. As well, Drones can be used as a tool for monitoring crop growing conditions. Moreover, Biotechnology will be useful to introduce more fast and precise breeding methods to the farmers. In the process of technology facilitation, government and related bodies such as the Department of Agriculture should contribute by providing agricultural loans for the farmers as a part of technology facilitation. Further, in the process of introducing technologies, the Meteorological Department and Department of Irrigation could be contributed.

### **Providing knowledge and education for the stakeholders**

Knowledge and education regarding agro-tourism should be primarily given to the farmers and related communities. Hereby, farmers should be aware of the inter-relationship between tourism and agriculture and how this relationship about to be sustained through the interactions between farmers, tourists, and other responsible parties. In addition, the Department of Agriculture could share knowledge regarding sustainable agricultural methods, water management, and its practical usage towards environmental sustainability while serving tourists at their farming premises. Further, SLTDA and Tourism Promotion Bureau could guide the farmers to establish eco-friendly accommodations for the tourists to lodging with them and sharing agricultural experiences. It is important to launch foreign language training programs for the farming people for the basic communications with the foreign agro-tourists since language barriers are uncomfortable for maintaining inter-relationships sharing experiences between tourists and farmers.

### **Monitoring and certification of agro-tourism activities**

Agro-tourism certification criteria should be granted for the agro-tourism practices in Nuwara Eliya based on “Five Principles of Sustainable Agriculture”. In this case, the agro-tourism activities that are undertaken by the rural and farming people should be monitored by the responsible authorities even on monthly basis to ensure the quality and sustainability of the practices and their products supplied to the visitors. On this basis, special certificates and awards could be offered for the top-ranked agro-tourism practices to encourage the farming people to maintain the certified sustainable qualities of the industry. This kind of program could be initiated by SLTDA and Hotel Corporation incorporating the Department of Agriculture and Central Environmental Authority in Sri Lanka.

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