Research Article

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Agritourism as a sustainable adaptation option for climate change

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Abstract: The global climate change has become one of the imperative issue for the smallholder dominated agriculture and tourism sectors in Sri Lanka. This study investigated the perception of farmers on climate change and the potential of agritourism as a sustainable adaptation option to mitigate the negative impacts of climate change in both tourism and agricultural sectors. The study was carried out in the low country dry zone (LCDZ) and the upcountry wet zone (UPWZ) of Sri Lanka. A survey strategy followed by structured and unstructured interviews were undertaken to collect the data. The sample was composed of 100 farmers each from the UPWZ and LCDZ respectively. The study revealed that there had been climate extremes in both climatic zones in terms of high rainfall and longer dry spells. Thus, it was important for the farmers to have necessary knowledge and skills on different diversification techniques related to crop-production, integrated farming systems and climate resilient production which are economical and mitigate the adverse climatic effects. However, the results revealed that the farmers have altered the cropping patterns and crop management practices rather than adopting entrepreneurial activities like agritourism. Lack of awareness of agritourism within the farming community is the main reason for farmers not contemplating this important diversification option. The results indicate that a significant number of farmers showed interest in considering agritourism as an option to mitigate climate change. It is important to educate farmers on diversification options.

Keywords: Agritourism; Climate change; Sri Lanka; Sustainable adaptation

1 Introduction

Global climate change is considered as one of the main global challenges encountered in the 21st century. Esham et al. (2013) discuss that the climate change in Sri Lanka is taking place in terms of rainfall variability and an increase in climate extremes and warming. In Sri Lanka, climate change threatens to have a significant impact on sectors such as water, agriculture and health (De Costa 2008; Athulathmudali et al. 2011).

Given the seriousness of the impacts of climate change on agriculture and rural communities, adaptation to climate change has become inevitable for these communities. Adaptation strategies to climate change can be categorized into technological developments, government programs and insurance, farm practices, and farm financial management diversifying livelihoods (Morton 2007; Howden et al. 2007; Daulagala et al. 2013). Among limited alternatives available for these rural communities agritourism can be considered as a viable alternative both to minimize impact of climate change as well as to exploit the opportunities associated with climate change (Mahaliyanaarachchi 2015). Further, Valdivia et al. (2014) have also stated, agritourism as an adaptation strategy for climate change which would generate agricultural incomes while sustaining rural livelihoods. Agritourism is also promoted as an entrepreneurial economic diversification strategy throughout the world (Nickerson et al. 2001; Ollenburg et al. 2007; Valdivia et al. 2014).

Agritourism is thus a specific form of tourism with a strong environmental component (Leco et al. 2012). It is usually defined as visiting a working agricultural setting (such as a farm, ranch) for leisure, recreation, or education purposes (Mahaliyanaarachchi 2015; Gil Arroyo et al. 2013).The concept of agritourism is yet to be developed in

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Sri Lanka and still prevail in the initial stage of development (Malkanthi et al. 2011; Rambodagedara et al. 2015). However, Sri Lanka consists of favourable conditions to reap the benefits of agritourism (Malkanthi et al. 2011). Sri Lanka is bestowed with diverse agro-climatic conditions, ancient irrigation tanks, tea, rubber, coconut and spice plantations, scenic paddy fields, dairy farms, traditional cultural activities and hospitable people. This makes Sri Lanka a suitable agritourism destination (Malkanthi et al. 2011). Only a few agritourism destinations are operating at present with general facilities and services (Rambodagedara et al. 2015). These destinations include Agro Technology Parks which were established by the Department of Agriculture with the objectives of agriculture extension, education and agritourism in Sri Lanka (Department of Agriculture 2014). In addition, there are few private sector organizations who have initiated agritourism activities at different levels (Rambodagedara et al. 2015).

This study attempts to find out the farmer's perception on climate change in Sri Lanka and their use of agritourism as a sustainable option to mitigate the adverse impact of climate change.

2 Methods

The research area selected for the study was two different climatic zones in Sri Lanka namely the Low country dry zone (LCDZ) which includes Thissmaharamaya and Mulkirigala DS divisions and the Upcountry wet zone (UPWZ) which includes Welimada and Nuwara Eliya DS divisions (Figure 1). Both climatic study areas could capitalize on their farming livelihoods and the diversity of their agricultural production as the offer of authentic "working agricultural" experiences are key to attract tourists (Valdivia et al. 2014). Both climatic zones having farming livelihoods, although with different agricultural production. Predominantly, UPWZ farmers cultivate upcountry vegetables (e.g., cabbage, lettuce, carrots, potatoes) whereas the LCDZ farmers cultivate paddy and low country vegetables (e.g., okra, arbajeen, cucumber, pumpkins, snake gourd) cereals and legumes.

These areas were selected as they were among the major tourism destinations in Sri Lanka. They mainly cater for eco and cultural tourism in Sri Lanka which has a close relationship with agritourism. Further these districts are among the major agricultural production areas in the country which provides ample opportunities for agritourism (Rambodagedara et al. 2015).

Data were collected using face to face structured interviews. Non-probability and snowball sampling techniques were used to identify participating farms due to unavailability of a sampling frame. A sample of one hundred farmers was selected from both climatic zones. The questionnaire consisted of three parts including agricultural profile, farmers' ideas and attitudes on climate change, and farmers knowledge on agritourism. All sampled farmers participated in the survey. Data were analyzed using SPSS and included both descriptive statistics and non-parametric tests. Pearson Chi square test were conducted to identify the relationship between the practice of agritourism and monthly income.

3 Results

3.1 Perceptions of Climate Change and Coping Diversification Strategies

Out of all the farmers in the UPDZ, 29% strongly agreed and 23% agreed with the fact that their crops were damaged by the droughts whereas 31% of the farmers

Figure 1: Study Locations

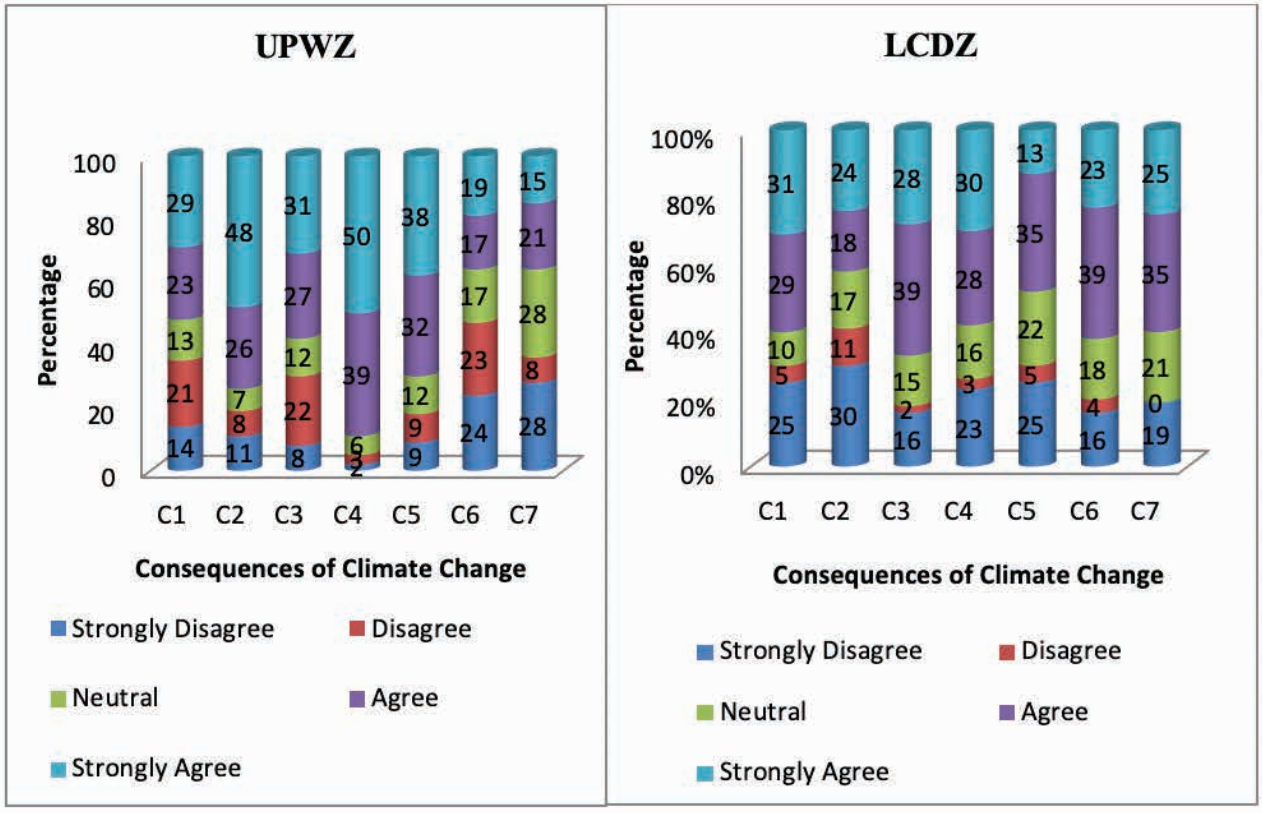


Figure 2: Consequences of Climate Change on Agriculture perceived by the respondents in UPWZ and LCDZ

C1: Damage to the crops due to droughts;
C2: Damage to the crops due to heavy rains and floods;
C3: Water scarcity to the crops due to no rain on due time;
C4: Pest and diseases outbreak due to no rain on due time;
C5: Soil Erosions;
C6: Damage to the crops due to heavy temperatures in daytime;
C7: Loss of grace lands for animal.

in the LCDZ strongly agreed and 29% agreed that the droughts adversely damage their crops.

Farmers from both climatic zones reported the use of several adaptation practices to climate change (Figure 3a and 3b). Over one third of farmers from UPWZ (36%) and LCDZ (33%) have opted for other income sources.

3.2 The potential of agritourism as a climate change adaptation strategy

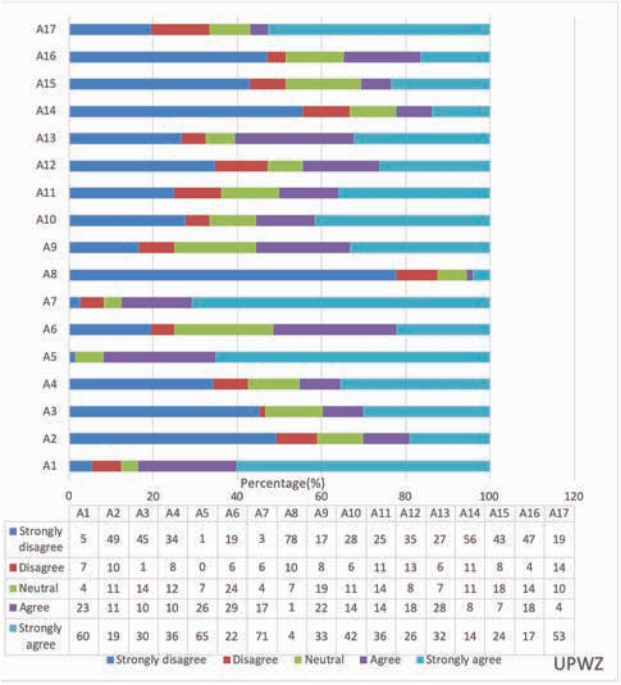
Although some farmers were unaware of Agritourism, they were already practicing some agritourism activities (Figures 4 and 5). However, most of the farmers in the UPWZ (72%) and LCDZ (54%) wished to operate the agritourism business as a complementary enterprise.

The Pearson chi-square test showed significant differences in the monthly income between farmers offering agritourism in UPWZ (X^2=17.809, df=4, p<0.001), but not significant in LCDZ (X^2=5.500, df=4, p=0.240). Altogether results indicate that the percentage of farmers with an income of Rs. 50001 or more is higher within the farmers who practice an agritourism activity (Figure 7).

4 Discussion

Crop failures were mainly due to weather aberrations like delayed onset of rains, early withdrawal of effective rains, and the occurrence of different degrees of drought at different stages of crop growth (Chithranayana et al. 2013). Thus, farmers are deploying adaptation strategies to mitigate the adverse impact of climate change. Farmers focused on using strategies related to the crops they cultivated and their farming patterns and techniques rather than diversifying their business by incorporating other entrepreneurial activities like Agritourism. This was mainly due to low awareness on the concept of Agritourism within the farming community.

Though majority of the farmers were unaware about the concept of Agritourism, they have adopted the farm



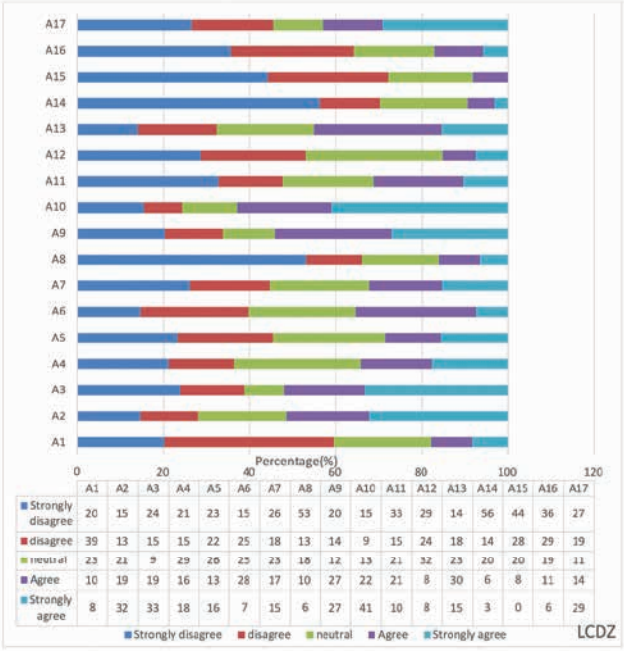


Figure 3 a: Adaptation strategies used by the farming community to cope climate change

Figure 3 b: Adaptation strategies used by the farming community to cope climate change

A1: Cultivation short duration crops (less than 3 months);

A2: Rainwater harvesting and use for cultivation;

A3: Crop insurance against damages;

A4: Cultivating drought resistance crops/ varieties;

A5: Crop diversification;

A6: Change dates of planting and harvesting;

A7: Mixed cropping, Moving to mainly livestock;

A8: Moving to mainly livestock;

A9: Manage cultivation according to the precipitations (pattern of rain fall) of the region;

A10: Careful use of irrigation water;

A11: Moving to non-farming income sources;

A12: Practice off season cropping;

A13: Adopt soil conservation practices (mulching, shade trees etc.;

A14: Lease your land;

A15: Shift farming to new location;

A16: Use ground water;

A17: Practice rituals (bodi puja /bara to gods, etc.).

operated tourist activities within the study area. The results revealed that some farmers have adapted non-farming income generating activities showing that there is potential of these farmers to be attracted towards the agritourism industry. These included direct sales of the farm products, allowing visitors to visit the farm (farm tours), selling of planting materials and seeds, processing of farm products. Capitalizing on such asset is critical taking into consideration that, although most farmers were unaware of the concept of agritourism, they are already offering some activities to visitors (e.g., farm tours), and indicated a strong inclination to start a guest houses and restaurants, which can stimulate the direct sales of the farm (Rambodagedara et al. 2015).

The study areas can also emphasize the unique topography of *Nuwara Eliya* and *Welimada* (hilly areas) D/S, *Thissmaharamaya* and *Mulkirigala* DS. (flat areas), diversified and traditional agricultural activities, natural attractiveness of these villages combined with cultural and rural activities flavored by agriculture and the proximity for popular tourism attractions make these areas potential agritourism destinations (Bebbington 2000; Nilsson 2002). Results suggest that the incipient agritourism development in the study is increasing the farmers' income, which may be the reason why most farmers consider it as a good economic diversification strategy.

However, it is advisable that anyone planning to start an agritourism project look at it as a business as an operation, thus develop a business plan based on the activities they want to offer (Mahaliyanaarachchi 2015). Importantly, it is advisable that they develop agritourism as a complementary enterprise, maintaining an equal share between framing and agritourism.

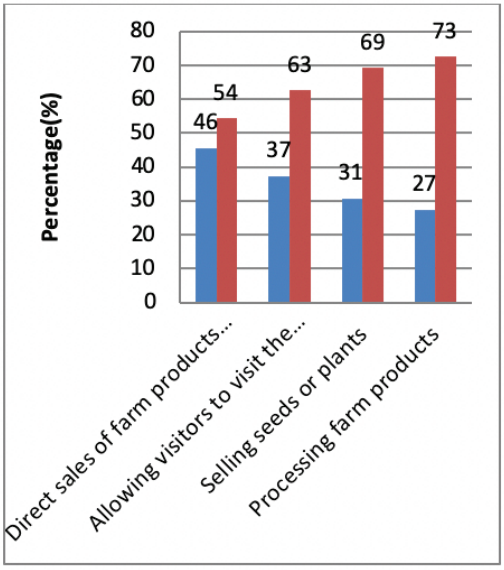


Figure 4: Agritourism activities practiced by the farmers in LCDZ

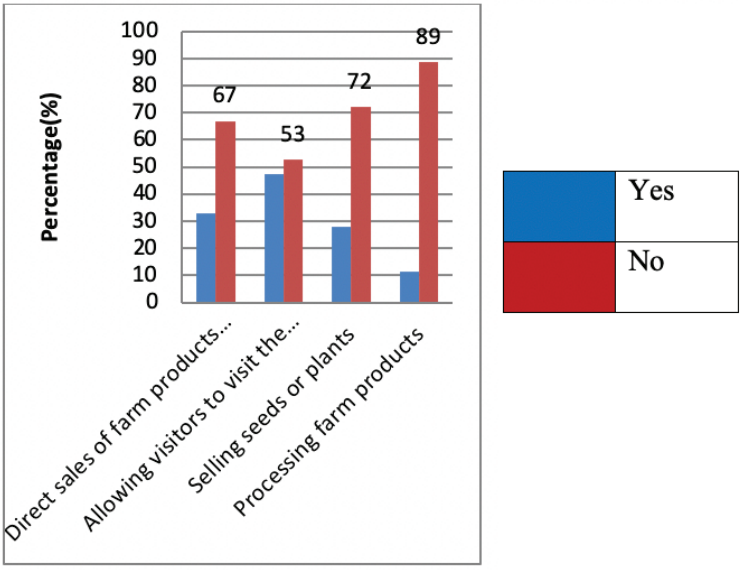


Figure 5: Agritourism activities practiced by the farmers in UPWZ

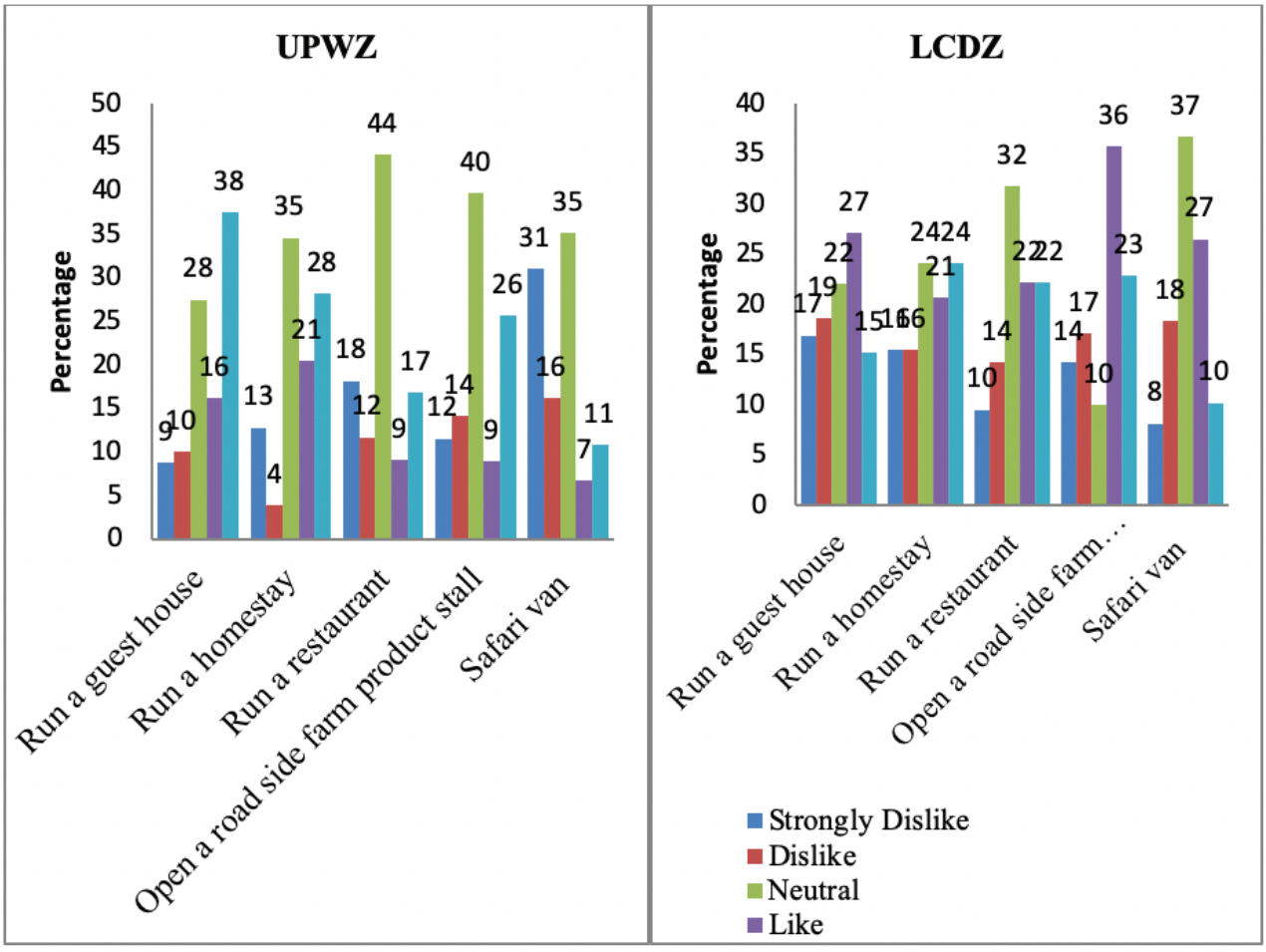


Figure 6: How do you like to involve in tourism?

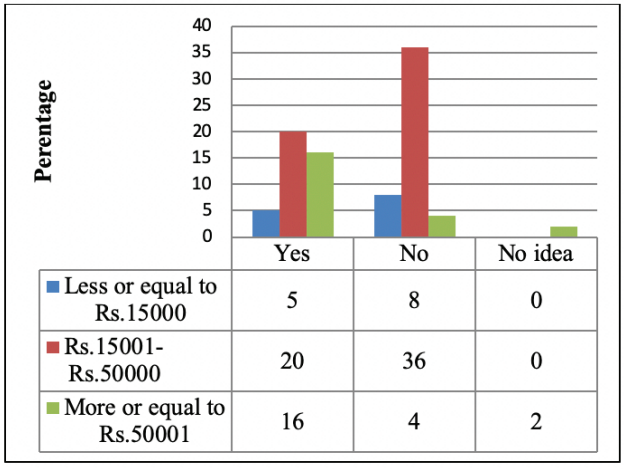


Figure 7: Crosstabulation between the income level of farmers and practice of an agritourism activity

5 Conclusion

The study revealed that lack of awareness of agritourism within the farming community is the main reason for farmers not adapting this important diversification option. However, a significant number of farmers showed interest in considering agritourism as an option to mitigate climate change. The study also promoted further research including studies to be conducted on a comprehensive study on viable agritourism destinations currently operating in Sri Lanka. This would be useful to develop the agritourism industry and to understand the current development of Agritourism sector in Sri Lanka.

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Conflict of interest: Authors declare no conflict of interest.

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