International Journal of Advanced Scientific Research
ISSN: 2456-0421; Impact Factor: RJIF 5.32
Received: 08-12-2018; Accepted: 11-01-2019
www.allscientificjournal.com
Volume 4; Issue 1; January 2019; Page No. 35-38

Analysis of the factors affecting farmers' perception toward the sugarcane cultivation of small scale farmers in Monaragala District of Sri Lanka

AGSD De Silva[1], N Sanotharan[2], CJ Senevirathna[3], SK Perera[4]
[1, 2] Sri Lanka School of Agriculture, Department of Agriculture, Sri Lanka
[3] Lanka Sugar Company (PVT), Sewanagala, Sri Lanka
[4] National Resources Management Centre, Department of Agriculture, Sri Lanka

Abstract
The sugarcane is the crop belongs to family Poaceae which originated from South Asia and Southeast Asia. In Sri Lanka, sugarcane mainly is used for sugar extraction and a smaller portion for alcohol production. Sewanagala is one of the major sugarcane growing areas in Monaragala District of Sri Lanka. The Sri Lankan sugar industry needs drastic changes ranging from the micro level to macro level to bring it to a right pathway for the best contribution to regional and national development. The objectives of the study were, to analyze the factors affecting farmers' perception toward sugarcane cultivation and, to find out the present limitations to make suggestions to avoid the limitations of small scale sugarcane cultivation in the Sewanagala region in Monaragala District of Sri Lanka. In this study, a total 100 small scale farmers were randomly selected from Sewanagala sugar cultivated region and details on farmers' perception toward the sugarcane cultivation were collected from the farmers through pre tested structured questionnaire and interview. Results revealed that the relationship between age and experience, profit gained by sugarcane farming with the size of the cultivated land and, profit with farmer satisfaction were significantly ($p<0.05$) and positive relationship while the relationship between the age and the education level, education with experience of the farmers were significantly ($p<0.05$) and negative relationship in sugarcane cultivation. In addition, the average profit of the cultivation was Rs.85370 per acre. The critical issues of sugarcane cultivation were higher labour cost, lack of human capital and, lack of good quality seed cane while the introduction of new technology and implement the proper extension services were suggested to overcome the limitations of this study.

Keywords: farmers' perception, Monaragala district, and sugarcane cultivation

1. Introduction
Sugarcane (*Saccharum officinarum* L.) belongs to the family of the Poaceae. It was originated in South Asia and Southeast Asia for the production of sugar and other by products (Peiris *et al.*, 2012; Duarte-Almeida *et al*., 2007) [7, 3]. The global demand for sugar is the primary driver for sugarcane cultivation. Eighty percent of sugar is made from sugarcane while the most of the rest is made from sugar beets (Dahlia *et al*., 2012) [1]. Sugarcane is an important commercial crop which was cultivated around 23.8 million hectares, in more than 90 countries, with a worldwide harvest of 1.69 billion tons (FOA, 2011). Of the current condition, domestic production meets about 9%, while the balance is imported from other countries (Keerthipala, 2007) [6]. Brazil was the most key producer of sugar cane within the world. The next five major producers with decreasing amounts of production were India, China, Thailand, Pakistan and Mexico (FOA, 2011). The Sri Lankan sugar industry was started in the mid of the 19th century. Hingurana, Kantale, Sewanagala and Pelwatte were four sugarcane processing industries in Sri Lanka. However, the Hingurana and Kantale sugar mills ceased the functioning due to the improper management (Peiris *et al*., 2012) [7].
Sugar is one of the major food items in Sri Lanka and it is an important sub sector in the economy of Sri Lanka, making a significant contribution to the national balance of the payment (Peiris *et al*., 2012) [7]. The annual per capita consumption of sugar in Sri Lanka is around 30 kg (F.O.Licht, 2005) [4]. The sugar requirement of the country is estimated to be 650,000 tons annually (Department of census and statistics, 2015). In 2015, sugar production in the country was 55, 972 tons and in 2016, it was 62,048 metric tons in terms of 10.9 percent increment compared to 2015. The population growth and the rise of the incomes are likely to increase the sugar consumption significantly over the next 10-15 years. By 2020, the demand may approach 1 million tons of sugar in Sri Lanka (Department of census and statistics, 2015).
In recent years, sugarcane farmers have been facing new issues on their livelihood due to old machinery in the factories, lack of labours, higher labour cost, lower harvesting amount of sugar process capacity of the factory, and shifting away of new generation from the sugarcane cultivation. Therefore, it is important to reveal the present situation and opportunities of sugarcane farming.
In this study, the objectives were to focus the factors affecting farmers' perception on sugarcane farming, finding out the existing limitation to increase the sugarcane cultivation and make suggestions to overcome the limitations of small-scale sugarcane farming in Monaragala District of Sri Lanka.

2. Methodology
2.1 Study area
A study was carried out at Sevenagala sugarcane cultivated upland and lowland areas located in Monaragala District, Uva Province of Sri Lanka. This belongs to the low country dry zone (DL1) agro-ecological zone. Sevenagala is located at 6° 19' 31.318" N latitude 80° 55' 11.291" E longitude and the

elevation is 151 m from sea level. The area covered by the study was approximately 13,000 ha and the mean temperature, annual rainfall and relative humidity were 30^{O}C, 1603 mm and, 69 % respectively.

2.2 Sample size and sampling method
Small scale farmers who cultivated sugar cane under the Mahaweli Authority were considered as the target population. In this study, 100 individual farmers were randomly selected from the Sevenagala area in Monaragala District of Sri Lanka.

2.3 Data collection
A pretested questionnaire was used to collect the information from farmers to find out the factors that affecting the perception of farmers on sugarcane cultivation in Monaragala District of Sri Lanka. Data were collected from farmers in the sugarcane cultivation; the age of farmer, gender, farming experience, education, profit with land size and profit with satisfaction through the structured interview.

2.4 Data Analysis
The collected data were statistically analyzed in descriptive and inferential statistical model using the statistical package for social science (SPSS version 20.0) software. The correlation coefficient was used to find out the relationship between the ages with experience, age with education, education with experience, profit with land size and profit with satisfaction. Further, coefficient analysis was done to find out whether the relationships were positive or negative. P values less than 0.05 were considered the level of significance of the result.

3. Results and Discussions
3.1 Socio Economic Background
The present study was conducted using the details of 100 sugarcane farmers in the Sewanagala area in Monaragala District. Only 56 % of farmers were involved in sugarcane cultivation as their main source of income which was followed by the paddy and banana cultivation. On the other hand, most of the farmers showed higher levels of satisfaction towards banana cultivation as an alternative crop because it gives a comparatively higher income than sugarcane.

Similarly, 28% of the sugarcane farmers were categorized under the age group of 51- 60 years while there were only 15 % and 1 % of farmers belong to the age groups of 31-40 and 20-30 respectively. It showed that the perception of the younger generation towards the sugarcane cultivation was comparatively lower than the middle aged group of people.

As the farmers' experience was one of the most important socio-economic variables, around 62% of the farmers in the studied group showed 20- 30 years of experience in sugarcane farming and 14 % were with at least 10 years of experience in the field. The majority of the farmers in formal education had attended school grade 5 to grade 11 (46 %) and only 5% of farmers with the General Certificate of Education (GCE) Ordinary Level examination. Further, there were 40 % of farmers who had attended less than grade 5.

3.2 Factor affecting to the cultivation
Relationship among several variables as age with experience, age with education, education with experience, profit with land size and profit with satisfaction.

3.3 Age with experience
Figure 1 showed that the relationship between the experience of the sugarcane farmers to their age. It was a highly positive relationship (r=0.739) where the age increased by farmers' experience improvement in sugarcane cultivation.

3.4 Age with education
There was a significantly ($p<0.05$) and negatively influences relationship (r=-0.54) between the age of the farmers and the education level of them. Another important fact that middle aged farmers (40-60 years old) who had been through GCE (O/L) were involved in sugarcane cultivation than that of the younger generation between 20- 30 years age as they showed a hesitation to involve in sugarcane cultivation (Figure 2). This revealed that, the younger generation had not shown any interest in sugarcane cultivation in Sevenagala area.

3.5 Education with experience
According to the Figure 3, there was a significant and negative correlated (r=-0.523) relationship in education of the farmer to the experience of them in sugarcane cultivation. It stated that with the enhancement in the level of education, there was a tendency to go for an alternative other than sugarcane cultivation. People with a general education, engaged in sugarcane cultivation as they had no other option to be occupied.

3.6 Profit with land size
In here, an attempt was made for the identification of the relationship between the profit gained by sugarcane farming and the size of the cultivated land (Figure 4). Furthermore, when the land size increased, the profit received from sugarcane farming was increased due to the increment of economics of scale. According to the results, positive relationship with a correlation coefficient value of 0.543 was obtained for this study. It meant that the profit of the cultivation was increased with the expansion of the cultivated area. In sugarcane, intense management practices were done during the first three months from the establishment in the field. As a result, considerably higher profit was gained by cultivating a large extend of land. However, Figure 4 showed that the majority of farmers were in practicing sugarcane cultivation in the land extend of 2-4 acres.

3.7 Profit with satisfaction
There was a significant and strong positive relationship between the profit and farmer satisfaction related to sugarcane cultivation. It showed that they became more satisfied with the increment of the income from sugarcane cultivation. The higher number of farmers was recorded with high level of satisfaction in terms of higher profit compared to dissatisfy level which shown in Figure 5.

3.8 Limitation and suggestion of sugarcane cultivation
Some limitations of sugarcane cultivation were seen by the farmers compared to other crop cultivation. Here, the higher labour cost (48%) had become the most prominent problem in sugarcane cultivation. This is followed by the absence of a proper irrigation system (28%) and low labour availability (22%). Further, 2% of respondents mentioned as the period of cultivation to harvest were high in sugarcane cultivation (Figure 6).

Proper mechanical power should be used to overcome the higher labor cost. A combination of good extension services and new technology introduction can be applied to overcome lack of new technology. Further, the new water pumping systems in rain fed areas should be introduced and the irrigated canal system should be repaired to solve the lack of irrigation. In addition, the high yield varieties should be introduced which are tolerant to pest and diseases and, the fertilizer subsidy must be provided to the sugarcane cultivating farmers to reduce the cost of production.

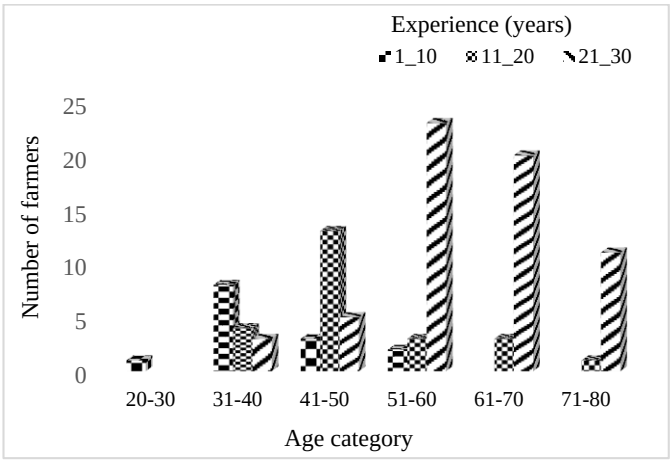

Fig 1: Relationship between sugarcane farmers' age and their experience

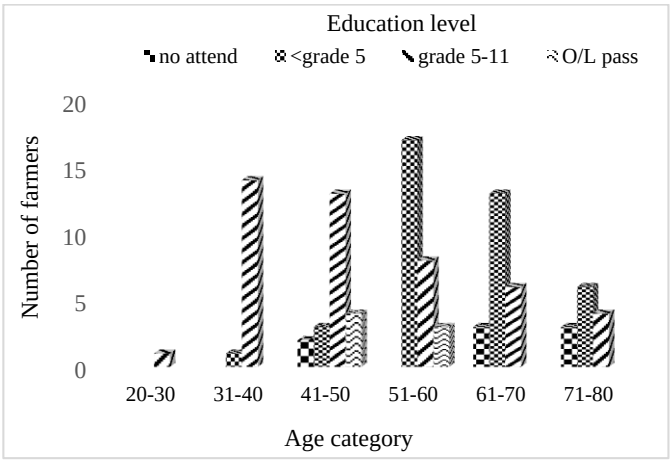

Fig 2: Relationship between sugarcane farmers' age and education level

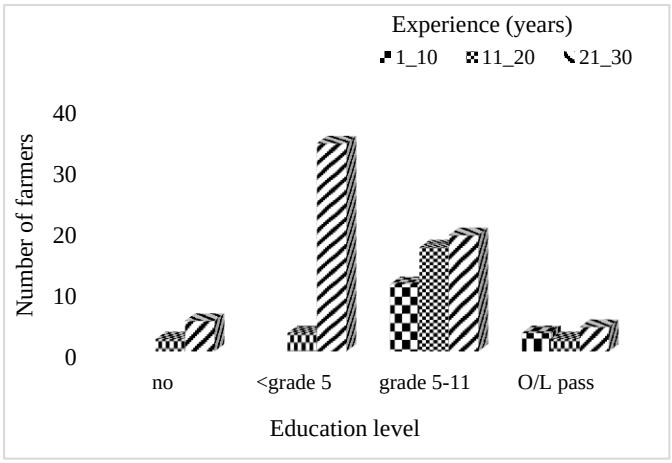

Fig 3: Relationship between sugarcane farmers' education level and their experience

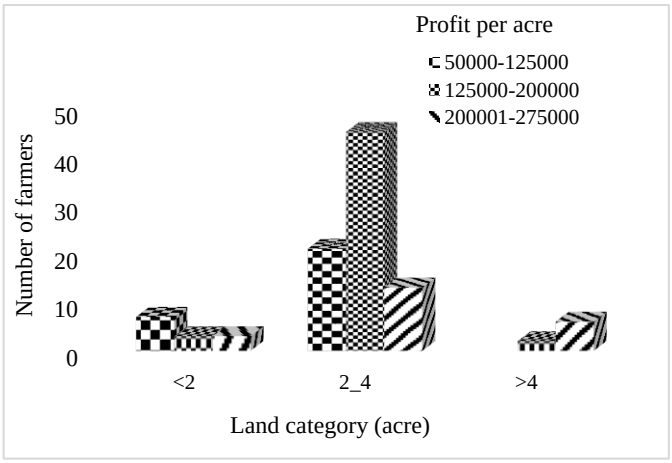

Fig 4: Relationship between sugarcane farmers' land size and profit

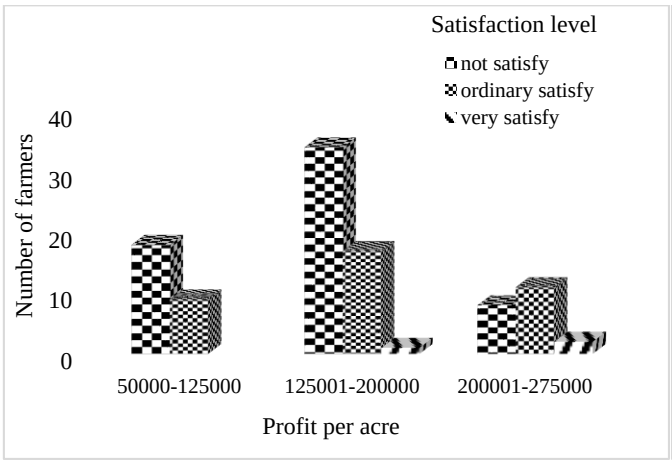

Fig 5: Relationship between sugarcane farmers' profit and their satisfaction levels

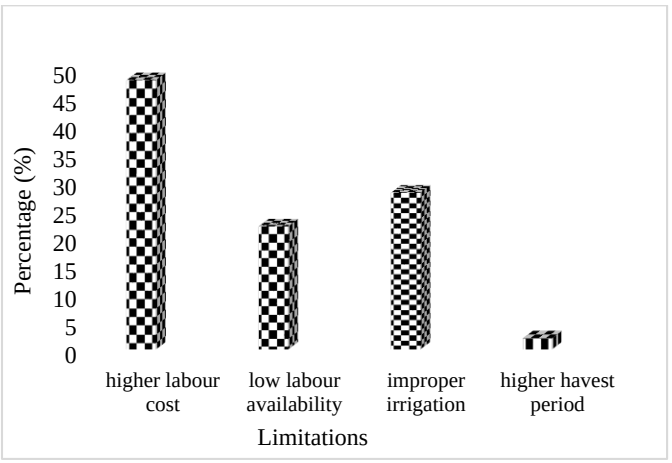

Fig 6: Limitations of sugarcane cultivation compared to cultivation of other crops

4. Conclusion

Farmer' perception on sugarcane cultivation depended on various factors at Sewanagala area in Monaragala District of Sri Lanka. Income and the farmer satisfaction in sugarcane cultivation had a greater impact on the positive perception towards the sugarcane farming in Sewanagala area. Further, positive relationships were identified between age and experience, profit with land size. On the other hand, there

were negative relationships between age and education as well as the education with experience. However, it could also be suggestive to introduce the new technology and implement the proper extension services to encourage farmers to produce higher sugarcane production.

5. Acknowledgment
We gratefully thank for the Sewanagala sugarcane factory, Sri Lanka for providing valuable information and support to conduct this research.

6. Reference

1. Dahlia L, Kurniawan I, Anggakusuma D, Roshetko JM. Consumers' knowledge of and preference for indigenous vegetables: A market demand and consumption behavior analysis. Vegetable Agroforestry Systems in Indonesia, Special Publication. 2012; 6c:231-246.
2. Department of Census and Statistics. Present situation of the sugar industries in the Sri Lanka, 2015.
3. Duarte-Almeida JM, Negri G, Salatino A, De Carvalho JE, Lajolo FM. Antiproliferative and antioxidant activities of a tricin acylated glycoside from sugarcane (Saccharum officinarum) juice. Phytochemistry. 2007; 68(8):1165-1171.
4. Licht FO. World Sugar Statistics, 2005.
5. FAO. Crop production. Food and Agriculture Organization of the United Nations, 2011.
6. Keerthipala AP. Sugar industry of Sri Lanka: Major issues and future directions for development. Sugar tech. 2007; 9(1):1-10.
7. Peiris TDGJ, Abeynayake NR, Perera MS. Socio-economic factors affecting the technology adoption level of sugarcane in rainfed sector in Sevenagala. Journal of Food and Agriculture. 2012; 2(2).