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RESEARCH ARTICLE

Major Problems Encountered by the Coconut Growers who visit Coconut Technology Park of Coconut Research Institute of Sri Lanka

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ABSTRACT

The study was carried out to identify and rank the main problems of the growers who visit Coconut Technology Park of the Coconut Research Institute of Sri Lanka. Two questionnaires were used to collect data. First questionnaire was to identify the growers main problems and the second was to assess the intensity of the identified problems. The survey was carried out during the months June to November 2011. For the data collection, 153 respondents who visited Coconut Technology Park were randomly selected. The severity of the problems was estimated by developing average problem score. The study reveals that growers' were confronted with four critical problems. The most critical problem was lack of seedlings, followed by pest damage, farm gate nut price and access to technology. Amongst the identified problems, the "access to technology" has become a problem only to part-time growers, which implies that there is a necessacity of an extension approach that can cater to the part time growers who do not find sufficient time to spend on coconut cultivation. The cyber extension or internet based extension may be a future solution to cater the part-time growers.

Keywords: Coconut growers, Critical problems , Technology transfer

INTRODUCTION

Coconut (*Cocous nucifera*) is a perennial tree crop, which is referred to as the "Tree of Life" and contributes significantly to the economy of Sri Lanka. Coconut cultivation spans about 402,649 ha which accounts for 21% of agricultural lands in the country. The cultivation of coconut is concentrated in the coconut triangle which includes the Puttalam, Kurunegala, and Gampaha districts. Coconut is predominantly a smallholder crop with 75% of the area below 8 ha (Sri Lanka Coconut Statistics, 2006). It contributes 1.1% to Sri Lanka's GDP and Rs. 19,593 million of export earnings (Central Bank of Sri Lanka, 2010) and 5% to national employment (National Plantation Industry Policy

Framework, 2006). The domestic consumption in 2009 was 2269 million nuts and exports only 562.5 million nuts. However, coconut is an important food crop in Sri Lanka in that, it provides about 22% of the per capita calorie intake in the diet, being second only to paddy, the staple food of Sri Lankans.

During last two decades, the coconut growers have been facing many problems, which has ultimately resulted in declining the production and profits from their estates (Peiris *et al.,* 2006). Inadequacy of technical knowledge, planting materials and absentee landlordism are among the main problems faced by the growers.

The Coconut Technology Park of the Coconut Research Institute (CRI) which was established in 2009 is an effective participatory extension tool for the growers to see the technical recommendations applied in the field. Over the past two years, there has been a remarkable increase in the number of visitors to the Coconut Technology Park to get technical advice on their problems and to purchase planting materials, CRI publications and other inputs. Approximately 1000 coconut growers and school children visit to the Coconut Technology Park per month. The present study was conducted with the aim of identifying the main problems of the growers who visit the Coconut Technology Park, rank them according to the intensity and to make recommendations.

METHODOLOGY

The data were collected using two questionnaires from the growers who visited the Coconut Technology Park. Initially open ended questionnaire was used to identify grower problems. It was carried out during June 2011. Randomly selected 25 growers, who visited to Coconut Technology Park, were interviewed to identify the main problems. Based on the problems mentioned by the growers the second structured questionnaire was prepared to assess the intensity of the problems. It was used to collect data from the growers who visited the Coconut Technology Park from July to November 2011. Questions related to farmer problems were assessed based on a five point Likert scale and information on the background variables were collected from the open ended questions. The sample frame for the study was the growers who visit the Coconut Technology Park during July to November 2011. Simple random sampling technique was adopted to collect data. Each selected grower was personally interviewed. The total sample size was 153.

In the present study, the problem scores (PS) were measured in five points response category namely "Strongly disagree", "Disagree", "Neutral", "Agree" and "Strongly agree" with corresponding score of 5, 4, 3, 2 and 1. The questions were stated as positive statements. The frequency of the responses from each problem was tabulated and multiplied by concerned score values. Then all values were summed to obtain the relevant problem score. The average problem score (APS) was calculated by dividing each problem score by the number of respondents. The APS rangers from 5 to 1 which represents "highly critical problem" to "not a problem" respectively. The scoring system was adopted from the study conducted by Ravichandran et.al., (2000). The data were analyzed using Tabular analysis, Spearman Rank correlation and Mann Whitney U test.

RESULTS AND DISCUSSION

Demographic Characteristics

The average age of the respondents was 40 years, the youngest was 21 years while the oldest was 68 years. All farmers have attended school and 49% have received at least primary education and only 11% of the respondents have received tertiary education. The majority (79%) of them were part time farmers. The majority of the respondents were male farmers (86%). The average farm size was 4.3 acres and 80% of the respondents belonged to less that 5 acres category. Average yield per acre is 269 nuts per pick. The majority of respondents (76%) were the growers within 20 km and 7% of growers visited the park from a distance of more than 50 km.

Intensity of the problems faced by the growers

The average problem score (APS) gives an idea about the intensity of the problems that the growers have faced (Table 1). The most critical problem was the lack of seedlings. Almost all the growers (89%) mentioned that they do not have a place to buy certified seedlings or there are no sufficient seedlings available in the Coconut Research Institute or Coconut Cultivation Board nurseries. All the growers prefer to purchase seedlings from government nurseries. Since lack of seedlings is a severe problem, and it cannot be overcome within a short period of time, a well planned seedling production programme is vital. Increase the number of seed gardens is a costly and long term method to increase the seedling production. The immediate and cost effective strategy would be issuing the pollens to large estates to produce high breeds in their estates.

The next decisive problem was pest damage. The majority (85%) of growers stated that their plantations were being affected either by black beetle, red weevil or mite damage. They also stated that the recommended control measures were not effective in reducing the pest damages. Damages of black beetle and red weevil have been visible in the field for more than half a century. But, still their damages are very prominent in the field. Therefore, it is important to find out the cause for it. It may be a problem with the pest control measures itself, technology transfer mechanism or attitudes of the growers.

The next most common problem was low market price for coconuts. Growers mentioned it as a critical problem, due to the low coconut price prevailing during the surveyed period. Since the market price is determined by demand and supply, lots of factors influence demand and supply. Desiccated coconut requirement in the world mainly determines the demand while the supply is determined by coconut yield which is influenced by weather, soil fertility, pest damages, management practices etc. As a result, market price of coconut fluctuates throughout the year. This is an inherent problem with coconut. However, tariff on export and import of coconut based products, substitute and complementary goods for coconut are capable of regulating the coconut price. Therefore, proper fiscal policy adjustments are needed to have a reasonable price for growers as well as for consumers.

The last critical problem was access to technology. Growers stated that they do not have easy access to new technology. Misha and Dubey (2009) and Jethi (2008) reported that, the vegetable farmers' in India were lacking of knowledge in plant protection aspects of various crops. Thippeswamy (2007) reported that only 28.75% of coconut farmers in India possessed high knowledge level. In spite of the majority (76.4%) of the respondents were the growers who reside near to (within 20 km) the Coconut Research Institute, they reported that, they do not get proper technical assistance. This is because they expect the government officers to visit their estates and provide the necessary technical assistance. The time spent on farming, availability of labor, capital and access to inputs were not critical problems as their respective APS were less than three.

Availability of seedlings, the most critical problem has significant and positive relationship with farm size and yield. This problem is critical to large farms with high yield, as they need to develop their estates for better profits. Basically, these estates are managed as commercial ventures. Therefore, they need seedlings at proper planting time. The study indicates that, growers who have large farms with high yield badly suffer due to lack of seedlings.

Pest damage was negatively and significantly related with education. This indicates that the estates of less educated growers have been affected by pests. Pest damage was also significantly associated with large farms.

Table 1: Average problem score and rank of the growers

No	Problem	Average Problem Score (APS)	Rank
1	Access to technology	3.05	4
2	Access to inputs (fertilizer, agro chemicals)	1.76	8
3	Availability of seedlings	3.86	1
4	Availability of labor	2.03	6
5	Time spent on farming	2.73	5
6	Farm gate nut price	3.17	3
7	Availability of capital	1.93	7
8	Pest damage (Black beetle, Red weevil, Mite)	3.18	2

Source: Survey data, 2011

Relationship between problems and socioeconomic characters

Table 2 shows the Spearman Rank correlation between selected problems and socioeconomic characters.

Table 2: Relationship between selected problems and socioeconomic characters

Problem	Age	Education	Farm Size	Yield	Distance
Availability of seedlings	0.062	-0.077	0.394**	0.233**	0.010
Pest damage	0.074	-0.110**	0.223**	0.109	0.089
Farm gate nut price	0.101	-0.064	0.192*	0.154	-0.047
Access to technology	0.277**	0.335**	-0.053	0.033	0.009
Time spent on farming	-0.053	0.341**	-0.040	-0.014	-0.029
Availability of labor	-0.060	0.104	-0.145	-0.048	0.015
Availability of capital	-0.047	-0.006	-0.101	-0.144	0.005
Access to inputs	-0.033	0.104	-0.103	0.113	0.013

*. Correlation is significant at the 0.05 level (2 tailed)

**. Correlation is significant at the 0.01 level (2 tailed)

Source: Survey data, 2011

Farm gate nut price was positive and significantly related with farm size. All the growers desire to have higher prices for their coconut. But a result indicates that growers with large estates are mainly concerned about the farm gate price.

Access to technology has a positive significant relationship with age. *I.e.* older growers have more problems of accessing new technology. This may because the aged and experienced growers are reluctant to change and willing to practice what they have been doing for long time. Misha and Dubey (2009) reported that young farmers in India and Gockowski and Ndoumbe (2004) also reported that younger farmers in Southern Cameroon are significantly more responsive to new knowledge than older farmers. Interestingly education has shown a different relationship with access to technology. Educated growers have less access to technology. It may be that the educated growers are interested on their occupations rather than coconut cultivation. Therefore, they do not have time to access coconut technology. It implies that access to technology has become a problem to part-time growers, as they are involved in other activities than coconut cultivation.

Time spent on farming was significantly related with education. Growers who were educated can not find sufficient time to work or inspect their estates. According to the Peiris and Fernando (1999), about 90% of coconut land owners are absentee landowners and 85% of owners' main source of income was other than coconut cultivation. This shows that involvement in farming (full-time, part-time) has many significant relationships with growers' problems. Therefore, Mann Whitney U test was carried out to analyze whether full-time growers and part-time growers belongs to statistically different groups.

Table 3: Mann Whitney U test for part-time and full-time growers

Problem	Part-time Median (APS) (IQR)	Full-time Median(APS) (IQR)	Sig. (M-W) (2 tailed)
Access to technology	3 (3-4)	2 (2-3)	.000
Access to inputs	2 (1-2)	2 (1-2)	.923
Availability of seedlings	4 (3-5)	3 (3-5)	.089
Availability of labor	2 (1-3)	2 (1-2)	.133
Time spent on farming	3 (2-4)	2 (1-2)	.000
Farm gate nut price	3 (3-3)	3 (2-4)	.880
Availability of capital	2 (1-3)	2 (1-3)	.376
Pest damage	3 (3-3)	3 (3-4)	.001

Source: Survey data, 2011

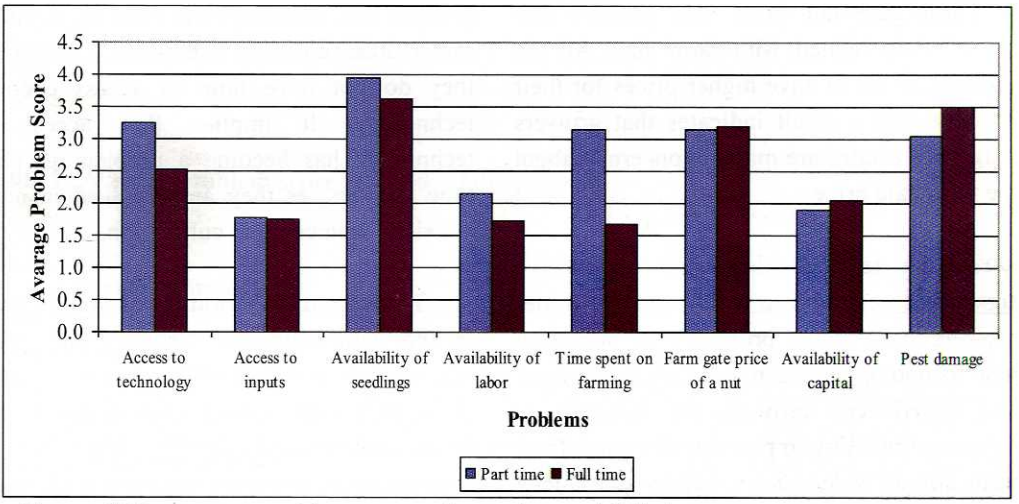

Figure. 1 The average problem scores of part-time and full-time growers
APS = (5 - 3.1) = Problem, 3 = Neutral, (2.9 - 1) = Not a problem, (John, 1963)

Source: Survey data, 2011

The results show that, (Table 03) full-time growers and part-time growers belong to statistically different groups in regard to access to technology, time spent on farming and pest damage. Further, APS of both groups were plotted separately to analyze the intensity of the problems.

Unlike other problems, access to technology shows different behavior (Fig:3). APS shows that access to technology is not a problem to full-time growers (APS value is <3) while it is a problem to part-time growers (APS value is >3). As a result, the problem of access to technology affects differently to growers. Since access to technology was not a problem to full-time growers, it indicates that, the existing extension system is capable of addressing the full-time growers. Therefore, extension approaches have to shift to suit the part-time coconut growers. The cyber extension or internet based extension may be a future solution to cater the part-time grower. When the total sample was considered, the time spent on farming was not a problem. But when the full-time and part-time growers were considered separately, APS shows that time spent on farming was a problem to Part-time growers (APS value is >3) and not for full-time growers (APS value is <3). It is because, part-time growers are involved in other off farm activities and they do not find sufficient time to spend on their estates.

CONCLUSION

The study identifies four main problems that the coconut growers who visit to Coconut Technology Park are confronted with. The most critical is the lack of seedlings, followed by pest damage, farm gate nut price and access to technology. The access to technology has become a problem only to part-time growers who represent the majority among the coconut growers. Therefore, immediate policy decisions have to be taken to overcome these problems which are necessary to empower the coconut industry.

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