



Access and Use of Information by Smallholder Rubber Farmers in Warakapola Divisional Secretariat Area

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ABSTRACT

Although Sri Lankan Rubber smallholders contribute 77% to the total production, the average productivity remains with 65kg ac⁻¹month⁻¹ compared to the potential 140kg ac⁻¹month⁻¹. One of the major reasons is the inefficiency in access and the use of technical information by farmers. This study determines the access and the use of information by rubber smallholders in Warakapola Divisional Secretariat area in Kegalle district. The multistage random sampling was applied to select 60 respondents. The Descriptive analysis showed that 75% of farmers received information mainly from Rubber Development Officers. Tapping and post-harvest (30%), management practices (20%) and pest and diseases (17%) are the key information demanded by farmers. The Study found that, 90% of farmers are well aware of the importance of information on yield increase and cost reduction but 75% reported that essential information cannot be obtained quickly. Similarly, 65% of farmers reported that new information is not easily applicable. This is due to the lack of facilities and reduction of academic qualification of officers. The Regression analysis showed that the age and the education level showed positive relationship to the access of information on yield. The average yield of the farmers having information was 63.8 kg ac⁻¹month⁻¹ and it was 51.3kg ac⁻¹month⁻¹ for other farmers which are statistically significance at 5% level. The study concludes that the access to information affects yield increase and farmers heavily depend on government extension service despite the delay in supplying information and low accessibility and stresses to improve the government extension service by providing facilities such as office equipment, field transport to the extension officers.

KEYWORDS: *Information access, Rubber smallholders, Rubber yield, Warakapola Divisional Secretariat Area*

1. Introduction

Sri Lankan rubber sector consists of estate and smallholdings. Land holdings of 10 hectares or less is defined as a rubber small holding while lands more than 10 hectares refer to estates. Around 85,983 hectares (63%) belong to smallholder sector representing 63% of the total rubber growing area in Sri Lanka. (Ministry of Plantation Industries – Progress Report 2014). These statistics show that rubber smallholding sector plays a leading role in country's rubber production. Under this situation it is important to facilitate the development of the rubber smallholdings sector in Sri Lanka.

Low yield is one of the major problems affecting the development of the rubber sector. Yield of 2000 Kg/Ha can be taken from well-maintained rubber plantation but now it is 1000 Kg/Ha due to wrong use of tools (knife), wrong method of tapping and unskilled labor (Newsletter RRI volume 28-2011). Although the wrong usage is controllable, the rubber smallholders have low interest in utilizing new techniques (Ministry of Plantation Industries – Progress Reports 2013, 2014). Yield gap between actual and potential is due to inefficient technical knowledge transferring system (Samaraweera, Ping and Yanjun, 2013). According to the RRI Sri Lanka the reason for this yield gap is due to lack of knowledge of farmers about proper maintenance, use of rain guards in rainy days, new techniques for tapping, use of new technological information, correct time of tapping. The yield variation as against potential is due to different external and internal factors. To enhance the production, one of the options would be to increase farmers' access to and the use of rubber production information.

Even though the access and the use of information are very important issue, a very few researches have been carried out in this regard yet. Hence, there is a need of assessing the access and the use of information by rubber smallholders to address the yield gaps. Therefore, this study attempts to capture the existing technical knowledge transferring sources to rubber smallholders with the aim of increasing productivity, while evaluating the effectiveness of different modes used by different sources to disseminate knowledge and suggesting recommendations to improve technology transferring system in the rubber smallholding sector in Sri Lanka.

2. Methodology

The Kegalle District of the Sabaragamuwa Province in Sri Lanka was purposively selected for the study because it has the highest number of rubber smallholders in the country. In Kegalle district, around 50% of farmers use RRIC 121. The expected yield per tree per day is 12- 14 Kg. Tapping should not be done daily because it directly causes to reduce the yield. It is normally done as one day after one tapping day. Accordingly, there are 15 days of tapping. And the expected yield is 120-140 Kg/ac/month. But the achieved yield is around 65 kg/ac/month. Hence farmers growing RRIC 121 was taken into account for the proposed study. Multi stage random sampling procedure was employed in the selection of farmers.

At first stage, Warakapola Divisional Secretariat area which has recorded as one of the Divisional Secretariat areas with highest rubber extent under smallholdings was selected. At the second stage, Warakapola and Algama rubber regional office areas were selected out of six such regions that recorded the highest number of rubber smallholders. At the third stage, two Grama Niladhari (GN) divisions having the highest number of rubber smallholders were selected from each selected regional office area. At the final stage, fifteen farmers were randomly selected from each selected GN division making a total sample of 60 rubber smallholders.

Primary and Secondary data sources were used to collect data for the study. Primary data collection strategy is a household survey and farmers were contacted in person method. A pre-tested questionnaire was used as a data collection tool. Both open ended and close ended questions were included in the questionnaire. Secondary Sources include books, internet, government department web sites, internal records and journal articles. The articles used for this purpose were ones that either dealt directly with the subject of the research or sought to discuss the implications of an external and seemingly unrelated variable on the subject of the research. The descriptive statistics such as frequencies and dispersion were used to analyze the data related to identify and characterize the sources of information used by smallholder rubber farmers. Lickert scale was used to ascertain strengths and weakness of the present information dissemination systems. In Lickert scale a range with 1 = strongly agree and 5 = strongly disagree was applied.

The effect of the access to information on rubber yield among small- holder rubber farmers in Warakapola was analyzed using t-test where the sample was split into two sub-groups with one composed of the farmers that had access to information on rubber production and the second was those who did not. The mean yields of each group were also determined and the difference was compared. The socio economic factors that affect the yield of smallholder rubber farmers those who access information on rubber production were analyzed using multiple regressions. The independent variables considered are age, household size, level of education, size of land and farming experience. That the model was specified as follows;

$$Y = \beta_0 + \beta_i(X_i)$$

Y- Dependent variable

β_0 - Intercept

β_i - Parameter estimates

X_i - A vector of socio economic variables

Table 1: Variable Measurement

Variable name	Description	Unit of measure
Average yield (Y)	Total production/total extent	Kg/ac
Age (X ₁)	Age of the farmer	Years
Education level (X ₂)	Education level of the farmer	Years of schooling
Household size (X ₃)	Household size	Number members in the family
Size of land (X ₄)	Farmer owned land size	Acres
Income (X ₅)	mean annual income from rubber	Rupees

3. Results and Discussion

Agreeing with the results of Banmeke and Ajayi (2008) who noted that the extension agents and fellow farmers were established as some of the major sources of information for farmers, study showed that majority (75%) of the farmers got information from extension agents in Rubber Development Department (Figure 1). Farmers ranked extension agents as a priority source of information and this result was in conformity with Opara (2008) and Odoemenem and Obinne (2010). This finding was also found to be similar to the cases in another study in India (Conroy *et al.*, 2004).



Figure: 1 Sources of Information

In addition to the formal group extension method used by RDOs, they visit and provide farmer extension advisory service for the individuals. Under this service, RDO and individual farmers communicate different agricultural issues. This individual communication method helps to identify and analyze the main problems faced by an individual farmer or household and to provide advice on the best actions to overcome them. Besides, it serves as one means of introducing new agricultural information to the farmers. But it has become uneasy for the officers with the limited facilities. Farmers ranked fellow farmers and parents as the second most important sources of information as shown in Figure 1. This may be attributed to their easy access. The choice of communication channels is to a large extent a factor of farmer's circumstances (Mohammed and Wanaso, 1993). Further EddaTandi Lwoga *et al.*,(2011) found that local and informal contacts of parent/family, personal experience and neighbors / friends were the dominant sources of knowledge in the local communities.

The methods of information dissemination and need of information were analyzed in this study. The Results of the methods of receiving Information by the sample farmers are explained in figure 2. Majority (55%) of farmers get information from practical sessions. Even though television and radio is appropriate in reaching information quickly with fairly simple ideas such methods were not popular among the farmers. This finding is compatible with the empirical studies of Venkatesan, (1995) and Djojmartono and Pertini(1998). It is also found that only few farmers (5%) used modern information technology such as internet. Findings from Nigeria (Adomi *et al.*, 2003) and Tanzania (Chilimo, 2009) showed that few farmers had used internet and email services for knowledge acquisition.

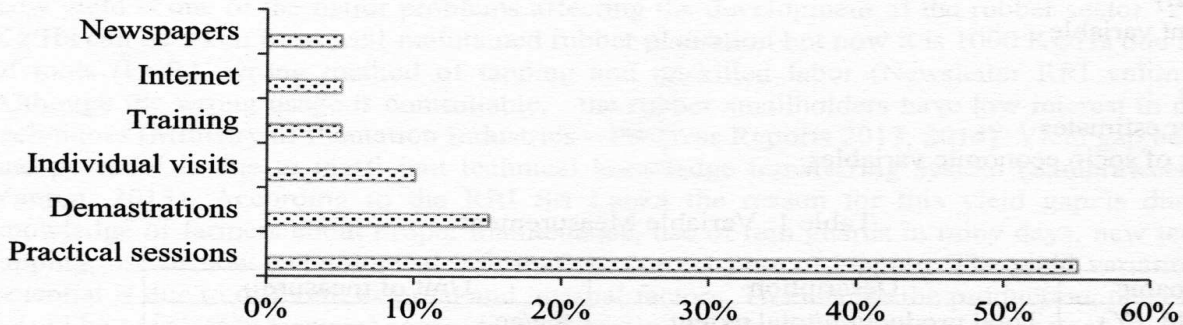


Figure 2: Methods of Receiving Information

For information access to be effective, dissemination channels need to be oriented towards the user's needs, as well as the types and levels of information and in forms and language preferred by the user (Barbara and White, 2001). Hence information needed for farmers was also assessed. According to the results of the study 30% of farmers need information on tapping and post-harvest as shown in Figure 3 followed by 20% need information on management practices and 17% on pest and diseases.

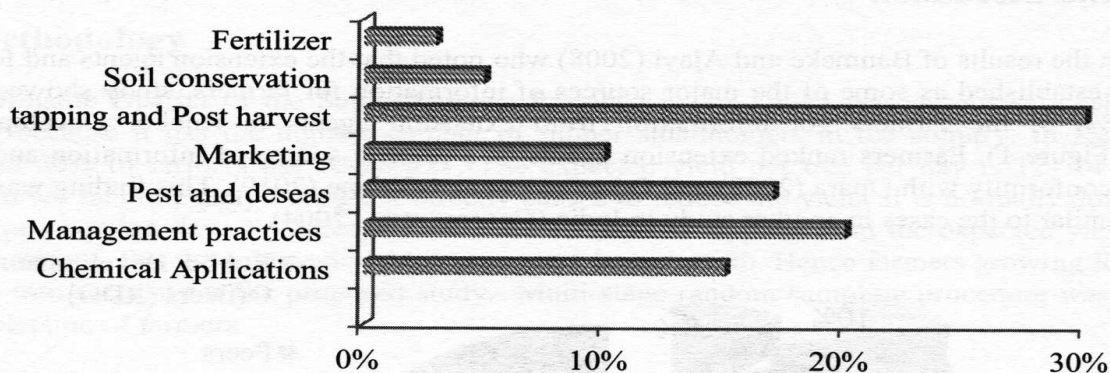


Figure: 3 Information needs of farmers

Following criteria were measured using five point Lickert scales to investigate the strength and weakness of the information dissemination system. Selected criteria were ranked considering the frequency tables. The Results of the frequency analysis are summarized in table 2.

Table 2: Attitude of Farmers on Quality of Information

Criteria	Percentage	Response
A. New information is more valuable	90	Agree
B. New knowledge implementation results in increase our yield	92	Agree
C. New practices increase cost of production	90	Disagree
D. We can get essential information quickly	78	Disagree
E. We can get sufficient information	50	Disagree
	20	Neutral
F. New information can be easily applicable	65	Disagree
G. There is a follow up process	65	Disagree

According to the results obtained new information are more valuable and new knowledge implementation results in increase the yield. For instance, information on new rubber clones, high yielding rubber clones are important for the farmers and the use of high yielding varieties with recommended methods help to increase the yield. Meanwhile 90% disagreed with the statement of that the new practices increase cost of production. For example, the use of plastic cups instead of using coconut shell, reduce the cost of production by reducing losses.

It further showed that the present information dissemination system is less capable in providing information quickly and supplying required information. These issues were discussed at the key personal interview and the focused group discussion. Accordingly this is due to the gap between the ratios of standard and actual of RDO to farmers. Considering the ratio in Warakapola DS Division, actual is remaining 1:3000 while standard is remaining 1: 1000. Meanwhile the transport facilities for the RDOs are not enough. On the other hand the educational qualification required for the post of RDO has been reduced up to just A/L pass but earlier it was at least having a diploma in Agriculture. Both farmers and officers are of the views that qualification should be upgraded again because extension staff needs professional qualification in addition to academic qualification.

It was found that 65% of farmers have said that the new information cannot be easily applicable. For an instance, the use of rain guards for a sloppy land during rainy period is not practicable due to the slip down effect. On the other hand farmers have an attitude that the use of rain guards reduces the tapping efficiency. According to 65% of farmers, there is no flow up process. This may be due to one direction of flow of information confirming that there is only top down approach of the information dissemination but no bottom up approach to get the feedback from the users. Based on the analysis of percentage in farmer attitudes toward the information dissemination system strengths and weaknesses can be summarized as follows (Table 3).

Table 3: farmer attitudes toward the information dissemination system strengths and weaknesses

Strengths	Weaknesses
New information is more valuable	Essential information can be obtained when required
New knowledge cause to increase yield	New information can be easily applicable
New practices do not increase cost of production that results in increase of yield	Sufficient information can be obtained
	There is a flow up process

Relationship between Access to Information and Yield

The impact of technology on yield was further examined by making comparison of yields with and without access to information. Results found that average yield of farmers having access to information amounted to 63.8 kg per acre per month and the corresponding figure with the no access to information farmers was 51.3 kg per acre per month. The significance of yield difference between two groups were tested using t – test. Accordingly, there is a significant difference between two yields at 1% level. It implies that there is a significant difference between the farmers who have access to information and no access to information. This result agrees with the findings of Banmeke and Ajayi (2008) who noted that utilization of relevant, accurate and up-to-date information ensures increased productivity.

Preve (1999) also noted that an adequate information supply was required for a successful agricultural business and emphasizes that relevant and timely information has to be organized according to language and format understood by farmers. This infers that access to information contributes to the increase in yields. Owuor *et al.*, (2001) noted that access to information is a potential avenue for improving yield among the small holder tea farmers. Information is a powerful tool in addressing the quality and quantity of agriculture (Lesaoana, 2001). It is a resource that must be acquired and used for the improvement of agricultural production (Samuel, 2001). Without good quality agricultural information, bad decisions are made (Ducombe and Heeks, 2001).

The Factors influencing the yield of the farmers who have access to information on rubber productions in Warakapola Divisional Secretariat area were examined in this study by using regression analysis. The results are shown in Table 3. Accordingly age of the rubber farmer showed a positive relationship

with the yield of the farmers' accessed information. This study showed that the more the age of the household head is more the farm yield. With regard to age, different studies report the same results. In a study by Wireduet *et al.*, (2010) on rice cultivation in Ghana, age had positive effect on yield in rice cultivation that implies accumulated knowledge has an impact on rice production. Further, Thamaga-Chitja, Hendriks, Ortmann and Green (2004) showed that older household heads had greater access to resources than households headed by younger members, thus could afford to facilitate production on the farm. In addition, Musemwa & Mushunje, (2012) found that older household heads may also be having children who may be working in various sectors of the economy and may be financing them in agricultural production hence resulting in older households utilizing more of their arable land than younger people. Musemwa & Mushunje (2012) further stated that older farmers are able to utilize most of their available land in agricultural production than younger farmers because they have more access to labour as they have larger families. Edward OduorObiero, (2013) showed that age is a proxy for a farmer's experience and could prove positive for farm yields, and age can either be positive or negative towards adoption of new technology which could increase yields. According to Mangasini Atanasi Katundu *et al.*,(2013)as farmers' age increases yields also increases. This is because aged farmers have accumulated huge experience about the crop and therefore, are capable of managing well the crop hence got more output.

Table 4 : Regression Results

Variable	Value of Coefficient	Standard error	Pr> F
Intercept	20.28102	10.6385	0.0631
Age (X1)	0.39063	0.07303	<.0001
Household size (X2)	0.91870	0.63525	0.1552
Education (X3)	0.73951	0.31496	0.0234
Land extent (X4)	-0.32314	0.24531	0.1946
Income (X5)	0.00036113	0.00053	0.4988

As shown in the table 4, the education level of the rubber farmer showed a positive relationship with the yield of the farmers with access to information. This agrees with the findings of (Kilonzi, 2011) who found that those who had tertiary education had the highest level of land utilization, closely followed by those that had reached secondary level of education and primary level of education. Improved land utilization should improve farm yields. This means that farmers who are able to read and write may have access to more farming information. Educated farmers may adopt newer technology and better farming approaches because they understand their advantages, which in turn leads to improved farm yields. According to Babatunde *et al.*,(2007) education is a social capital which could impact positively on household ability to take good and well-informed production and nutritional decisions. Further Sarris *et al.*, (2006) found that education of household head is a significant positive determinant of agricultural production Nimoh Samuel & Yeboah, (2012) reveled that an improvement in education level defined by the shift in educational level from illiterate to literate will therefore increase the probability of a household being food secure. Kipkemei (2001) found that farmers with secondary school agricultural knowledge perform significantly better in all farming aspects as compared to farmers without the secondary school agricultural knowledge. This implies that secondary school agricultural knowledge not only broadens farmers' capacity but also makes them more effective, self-reliant, resourceful and capable of solving farming problems. Evenson and Mwabu (1998) found that the effects of schooling on farm yields are positive. On the other hand Edward Oduor Obiero, (2013) showed that education could impact positively on household head's ability to take good and well-informed farm production decisions improving yields.

4. Conclusions and Recommendations

Smallholder rubber farmers mainly depend on Rubber Development Officers (RDO) in obtaining required information. Accordingly, the government information flow plays a major role in the development of rubber sector. With regard to the information needed, major types of required information are tapping, preservation, management practices and information on pest and disease. Socio economic factors such as age and education affect positively on the yield but income, household size and land extent did not show strong relationship with yield of the farmers who had access to information. The present information dissemination system is less capable in providing required information at the time farmers required. Similarly there is no follow up process to obtain farmers

views. The Study recommends the extension service needs to be strengthened by upgrading academic qualification, filling vacancies and providing transport facilities to the Rubber Development Officers. And also there is need of further research to critically analyze factors affecting the adoption of technologies among smallholder rubber producers. This will provide further solutions to low technology adoption among smallholder rubber farmers which has led to a wide gap between research and actual farm yields. The technical knowledge, specially the knowledge on planting material selection, nursery management, and pest and disease management should be disseminated mainly through the individual methods (Field to field method). Extension officers should play a prominent role in this regard.

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