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RESEARCH ARTICLE

Tea Small Holders Perception on Technological Information Dissemination of Tea Small Holdings Sector in Sri Lanka with Special Reference to Matara District

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ABSTRACT

This study attempted to identify the tea stallholders' perception towards the advisory and system of transfer of technology (ToT) often small holdings sector and impact of Tea Small Holders (TSH) socio economics factors on the advisory and ToT system of tea small holdings sector. About 600 TSHs were selected by employing proportionate randomly sampling method from six DS divisions of Matara district to collect the primary data. Primary data were collected through personal interviews with the help of structured interview schedule by visiting to the tea small holders' fields/homes. Result of the study shows that majority of respondents indicated that tea small holdings development authority (TSHDA) is the most available source for getting information while few number of respondents indicated that TRI and the tea factories respectively, as most available source getting information. Further, majority of respondents have indicated that TSHDA is the most relevant source of getting information. Further, most believable source of getting information by the tea small holders also was TSHDA. Individual contact methods, group contact methods and mass methods are the most common extension teaching methods in the agricultural extension or ToT. Group meeting, individual visit to the tea field, field days at tea field and demonstrations are the most effective and commonly apply extension methods by the TSHDA. Majority of tea small holders preferred for the individual visit to the tea field while second rake goes to group meetings. Middle aged and more experiences tea small holders preferred to get the advice from the Tea Inspector / Extension Officer (TI/EO) of the TSHDA than others while relatively low educated tea small holders prefer to get advice from the tea Inspector / Extension Officer of the TSHDA. Further, relatively high educated and young tea small holders preferred to get the advices from the TRI and either land or mobile phone based extension than other tea small holders.

Key Words: Tea, Advisory Service, Transfer of Technology, TSHDA, TRI

INTRODUCTION

Sri Lankan agriculture was considered as self sufficient subsistence-based agriculture with paddy as the major crops and other crops viz vegetables, fruits, yams, pulses and spices crops until western colonial powered on Sri Lanka about five hundred years ago. The structure of the Sri Lankan subsistence agricultural sector has, however, been changed during the period of colonization (1510 – 1948) especially in British era with the introduction of plantation crops. Coffee, Tea and Rubber were recognized as prominent plantation crops introduced by the British. It was empirically proved that several socio-economic and physical changes were too taken place with the introduction of tea plantations relatively faster that contribute much to the overall production ,employment, and trade etc. in the country, Sandika (2015).The tea grown in Sri Lanka is classified in to three different elevation zones such as high grown (Up country teas) which teas are grown in the Badulla and NuwaraEliya districts generally fall above 1200 m elevation, low grown (Low country teas) are generally cultivated below 600 m elevation and found mainly in Galle, Matara, Ratnapura, Kegalle and Kalutara districts. Kandy and Matale districts falls in to the mid-elevation zone (600 and 1200 m) and

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teas that are grown are known as Mid grown or Mid country tea. Table 1 shows the total tea land extent and total tea production according to the elevation category in 2015.

Table 1: Tea extent and production in each elevation category-2015

Category	Tea land extent [Hectare]	%	Total Tea production[million kgs]	%
High Grown	41137	18.5	76.9	23.4
Mid Grown	71018	32	49.7	15.1
Low Grown	109814	49.5	202.3	61.5
Total	221,969	100	328.9	100

Source: Statistical Information on Plantation Crops, 2015

Tea as a plantation crop at present too contributes significant role not only for economy of the country but also socio-cultural and political scenario. Regarding performance of tea sector, contribution of tea for GNP is about 0.8 percent and tea is the third highest foreign exchange earning source in Sri Lanka. Foreign exchange earnings has been increased significantly from Rs million 24,638 (1995) to Rs million 182,054(2015) respectively. After 2007, Sri Lanka became the fourth largest tea producer. The total tea production of Sri Lanka has also increased continuously and it has increased by 33.7% from 1995 (245.9 Mn kgs) to 2015 (328.9 Mn kgs) while tea production of the tea small holdings sector has increased remarkably by 71% from 1995 (140 Million Kgs) to 2015(239.8 Million Kgs). On this context, tea as a crop is contributing to provide more than 1.5 million job opportunities directly and indirectly (Central Bank, 1995 - 2015).

Table 2: Total tea extent and tea production in Sri Lanka

Sector	Tea extent-ha	%	Total tea production million kg]-2015	%
Tea small holdings sector	132329	59.6	239.86	**72.9**
State sector	89640	40.4	89.1	**27.1**
Total	**221969**	**100**	**328.96**	**100**

Source; Statistical Information on Plantation Crops, 2015

Table 2 shows the tea extent and tea production sector wise in Sri Lanka and according to that table we can observe that the tea small holdings sector plays major role in the tea sector in Sri Lanka while contributing about 73 % to the total tea production, operating about 370,842 tea small holders with 397,223 tea holdings with nearly 60 % of the total tea extent in the island. About 46,241 tea holdings are less than the area of 20 perches which are very small in size. About 86 % of the small holdings is less than ½ ha in size and the extent covered by them is about 51.4 of the total extent in the small holding sector which is operated as a family enterprise. Therefore small scale tea small holders are very important in that sub sector (Census of Tea Small Holdings in Sri Lanka, 2005). It was recognized that advisory services and extension as pre requisite for development of the tea sector in Sri Lanka since colonial period. Therefore, Tea Research Institute (TRI) was founded in 1925 as an arm of Planters' Association to cater to the demand thus created. TRI is mandated to research into and investigate all problems and matters affecting the production and manufacture of tea and disseminate information. (Wanigasundara and Krishnapillai, 1992.) The main responsibility for the dissemination of agricultural knowledge to the tea plantations lies with the advisory and extension service of the TRI of Sri Lanka. In addition, the agricultural advisors (or visiting agents) appointed by the management organizations, Commercial firms and the NIPM undertake a certain amount of knowledge transfer in to Plantations (Wanigasundara, 1988 and Wanigasundara *et al*., 1989). The advisory and extension service of the TRI employ several channels to communicate with its clients, these include advisory visits, seminars, symposia, field days, advisory correspondence, advisory circulars, monographs, and bulletins (Wanigasundara, 1988) The Experimental & Extension Committee (E and E), and Stakeholder forum which consist of senior decision makers and senior planters in most organizations connected to the tea industry provide good opportunities to exchange ideas and experiences periodically with regard to the research needs of the industry as the contribution made by scientists. The Regional Scientific Committees (RSCs) consist of the representative group of Plantation Managers, Regional Directors and Officers of TSHDA and the Advisory officers of the TRI working together. This group is expected to act as the intermediary between the TRI and the general body of tea plantations. They assist the extension workers to feed back on the scientists' outcome and experience of the field level implementation of innovation and also the new problems faced at the grass roots level of tea cultivation and processing (Wanigasundara and Jones. 1989).Considering the various constraints faced by the present TRI technology transfer system such as dearth of staff, curtailment of funds and policy changes, there is an urgent need for a new suitable technology transfer strategy in order to meet the increasing technology needs of the gigantic corporate tea sector in the country, " Pluralistic Technology Transfer Strategy", a multi

stakeholder (government, private and non-government organizations) collaborative technology transfer approach was suggested as a feasible way out to address this issue (Sidhakaran, 2010).With the expansion of the tea small holdings sector in Sri Lanka, the Tea Small Holdings Development Authority (TSHDA) of Sri Lanka was established under the Tea Small Holdings Development Law No. 35 of 1975.TSHDA is the main organization responsible for dissemination of technology and information mainly generated from TRI of Sri Lanka to the tea small holdings sector in Sri Lanka. TSHDA delivers extension services to approximately 400,000 tea smallholders in the country. At present there are 143 TI/EOs, operate from the ranges do the all the activities at the village level. At the movement the ratio of the TI/EO to the tea small holder is 1 is to 2500 to 3000.In addition, the majority of smallholders in many areas obtain the services from the private channels such as the bought leaf factories that have closer contacts with smallholders as they supply inputs such as fertilizers, agro-chemicals on credit basis and transport of green leaf (Amarathunga, Wijeratna and Dharmadasa, 2006). Each factory employs one extension coordinator and he has to monitor 5-10 young Leaf Supervisors (in some cases more than 10 based on the factory capacity) who have adequate knowledge to monitor the leaf collection process, green leaf payment, distribution of fertilizer, dolomite and other tea related inputs to tea smallholders. However, the most of grass root level field staff of these private channels are not technically qualified to serve as extension workers like TI/EOs attached to Public Extension channels. Extension coordinator and Leaf supervisor are the key informants for the smallholders in the most remote areas where other public and private extension channels are inactive due to institutional limitations and poor infrastructure facilities. They have more credibility about Extension coordinator or Leaf Supervisor and depend on their opinions in practicing field activities such as plucking, pruning, etc, as well as in selecting inputs such as type of fertilizers, agro-chemicals, type of planting materials. In view of achieving the food safety measures and maintaining quality standards such Minimum Residual Level (MRL) of agro-ingredients in the made tea, the field operations, such as maintaining post harvesting intervals after chemical applications, have to be carefully monitored (TSHDA, 2007). Some extensionists in Sri Lanka have introduced extension models-focusing problems of the plantation sector (Navaratne, 1988; Wanigasundara, 1992; Mahaliyanaarachchi, 1996; Sidakaran, 2014). Three main subsystems such as Knowledge Generation, Knowledge Dissemination and Knowledge Utilization have been identified in the present extension model for tea smallholdings sector (Krishnapllai&Wanigasundara, 1992).The knowledge dissemination system has two major components namely public and private, operating through various channels for the transfer of technology to the small holding sector. It could be argued that both these types have strengths and weaknesses of their own. Each subsystems of this model have been associated with some problems and limitations (Mahaliyanaarachchi, 1996).The knowledge dissemination system has two major components namely public and private, operating through various channels for the transfer of technology to the small holding sector. It could be argued that both these types have strengths and weaknesses of their own. Each subsystems of this model have been associated with some problems and limitations (Mahaliyanaarachchi, 1996). However, study of the Samaraweera*et al* 2013 showed that very poor extension service in the tea sector. Author further revealed that majority of the smallholders (47%) had poor knowledge about tea cultivation, where 33% had moderate knowledge. There were only 20% of the smallholders with good knowledge about tea cultivation (Figure 2). Moreover, their knowledge about different practices was varying and they had good knowledge about plucking and field planting while very low knowledge about pest (15%) and disease management (10%), which can be considered as main, practices attentive for obtaining high productivity. On this background, this study attempted to identify the tea small holders perception towards the advisory and technology transferring system of tea sector and impact of socio economics factors on the advisory and technology transferring system of tea small holdings sector.

METHODOLOGY

Matara district was purposively selected for the study as it contributes 43 million kg of made tea annually for the total tea production that is around 13 % of the total tea production of the island. The district itself have more than 17% of the total tea small holdings and tea small holders and it has about 19 % of the total tea extent in the tea small holdings sector in Sri Lanka (TSHDA, 2015).

Out of the 13 Divisional Secretariat (DS) divisions in the district *Pitabeddara, Kotapola, Akuressa, Athuraliya, Mulatiyana* and *Pasgoda* are the key tea growing areas which contribute more than 90% of both the total production and the land extent of the district. Further, about 93 % of the tea small holders (58,943) are living in above six DS divisions (Census of Tea Small Holdings in Sri Lanka, 2005). About 600 tea small holders were selected by employing proportionate randomly sampling method from above six DS divisions and covering 16 Tea Inspector/Extension Officer (TI/EO) ranges.

Primary data were collected through personal interviews with the help of structured interview schedule by visiting to the farmers' fields/homes. In addition to the interview, direct observations at the fields were also employed to verify some of the information. Secondary information were collected from the compiled sources of THSDA and publications of Ministry of Agriculture, Department of Census and Statistics and the Central bank of Sri Lanka. Descriptive statistical tools were used to analyses the data while Chi-square test was used to find the associations between demographic variables and the interest on different sources of technical advices.

RESULT AND DISCUSSION

An attempt was made to identify the socio economic characteristics of respondents of the study because it will be helpful to recognize the present situation of the respondents. The findings in the Table 03 illustrate the socio-economic situation of the tea farmers in the Matara District. With regard to the gender of the respondents, majority was Male (74 %) while 26% were Female (26 %). Age of the respondents has been classified into young (below 25), middle (25 to 50) and old (above 50 year). Majority (67%) of respondents were in middle age category followed by 27 % in old age category. Nevertheless, few of the farmers reported as young category. This result is due to transfer of younger generation from agriculture other sector such as industrial and service sector under the present economics scenario. On the other hand this situation may be due to the negative attitudes of younger generation toward the profitability of agriculture sector. Similar result was found by the Sandika (2009), and Sandika and Withana (2010) under this situation deviation of younger generation from the agriculture sector may negatively affect the development of the agricultural sector because young blood has more potentials and energy to develop tea sector in Sri Lanka. Therefore, policy makers and other relevant authorities should take appropriate promotional techniques to attract the young group to the sector. Further, civil status of the respondents was also taken into consideration for this study and very high majority were married (92%).

Table3: The comparative study of entrepreneurial Characteristics of tea small holders

Socio economic variables	Percentage
Gender	
Male	74%
Female	26%
Age	
Young (<30 year)	06%
Meddle (30-050 year)	67%
Old (>50)	27%
Civil Status	
Married	92%
Unmarried	08%
Education	
Illiterate	06%
Up to GCE (O/L)	78%
Pass GCE (O/L)	09%
Up GCE (A/L)	07%
Pass GCE (A/L)	00
Nature of farming	
Full time	76%
Part time	24%
Experience	
Less than 05 years	08%
05 – 10 years	28%
Higher than 10 years	64%
Labour source	
Family labour	32%
Hired labour	54%
Both	14%
Source of planets	
From private nurseries	82%
Own plantlets	18%

Table 3 further reveals that large portion of the farmers (78%) have studied up to GCE Ordinary Level (O/L) followed by 9% passed the GCE O/L. About 7% have studied up to GCE advance Level (A/L) while 6% have no formal education. It shows the strength of the tea small holders' educational level.

Tea cultivating tea small holders can be categories in to two such as full time and part time cultivation in the Sri Lankan context. Some farmers are doing tea cultivation as full times while other doing it as part time cultivation. Therefore, an effort was made to identify the nature of tea cultivation of the respondents. It was observed that around three forth (76 %) of the respondents were full time tea growers. Other important point was majority (70%) of tea growers have indicated that tea cultivation as main employment whereas 18 % of respondents indicated that both Tea and other crops cultivation

as a main income source. Further 12 % indicated the main income as other jobs. Experience of the respondents related to tea cultivation was dividend in to three categories such as below five years, 05-10 year or above 10 year experience. Result of the study revealed that majority (64 %) have more than ten year experience in respect to tea cultivation while 28% and 8% were in the category of 05-10 year and below5 year categories respectively. This study focused to identify the cultivation related variables such as labour source, source of plantlets and cultivated clones. It was observed that almost half (54 %) of the growers have used hired labor, while (32 %) of respondents have used family labor only. Around 14 % of farmers have used both hired and family labor. It was observed that majority (82 %) of tea growers getting tea plantlets from the commercial nursery whereas others were getting from their own nursery (18 %).

Tea Research Institute of Sri Lanka has introduced 3000 and 4000 series of new clones for the Matara district growers during last decade to maximize the yield. It is therefore effort was made to identify whether tea small holders have grown these clones. It was observed that very high majority of farmers have not cultivated new clones of tea 3000 series and 4000 series. Only 8 % of respondents have grown 3000 series and 4000 series of VP while 92 % of them have not cultivated. This will negatively affect to the yield. This information can be considered as clear indication of the ToT in TSH sector. It is therefore relevant authorities should be taken into consideration and significant attempt should be made to popularize the cultivation of 3000 series and 4000 series of VP. Impact of transferring of technology information and advisory service is vital for tea small holding sector in Sri Lanka. Past literature showed that extension in tea smallholding sector recognizes the poor extension service in the sector (Karunadasa and Garforth, 1997). Samaraweera *et al*(2013) revealed that majority of tea stallholders were in the poor knowledge about tea cultivation. There were only 20% of tea small holders with good knowledge about tea cultivation. Extension officers of TSHDA visited once a three month with respect to technical knowledge transfer. On this background, following table 4 clearly illustrates the sources of technological information about tea cultivation by the respondents.

Table 4: The sources of getting technological information about tea cultivation;

Sources of technological information	Percentage
From the tea Inspector / Extension Officer of the TSHDA	76 %
From the officer of the TRI	11 %
From the Officer of Tea Factory	05 %
From the officer of the Agro-Chemical Company	04 %
From the another farmer	02 %
From the Agro-Chemical agent of the shop	01%
Others	-

Around 73 % of respondents indicated that TSHDA is the most available source getting information while 8 %, 4 % indicated that TRI and the tea factories respectively, as most available source getting information. Samaraweera *et al* (2013) showed that TSHDA, TRI, Chemical Industries Colombo (CIC), Tea factories, Fellow farmers and Mass media were main sources and group meetings, individual methods, hand bills, method demonstrations and informal discussions are the main modes used by these sources in tea smallholding sector in the study area.At same time majority of respondents (67 %) have indicated that TSHDA is the most relevant source of getting information. Further, 7 % and 3 % of respondents have indicated that TRI and tea factory, respectively as most relevant source of getting information. In addition to that an attempt was made to identify the most believable source of getting information by the tea growers. Most of tea growers (64 %) believe the TSHDA than TRI(6 %) or Tea factory (2 %).This results were however not aligned with the result of Samaraweera *et al* (2013). According to their ranking method, the most efficient source was Tea processing factory followed by TSHDA while CIC, Baurs ranked as 3rd and 4th respectively.Individual contact methods, group contact methods and mass methods are the most common extension teaching methods in the agricultural extension. Group meeting, individual visit to the tea field, field days at tea field and demonstration are the most effective and commonly apply extension method by the TSHDA. It is therefore timely important requirement to recognize the farmers view and perceptions regarding the different extension method apply by the TSHDA. Result of the study revealed that about 72% of farmers prefer for the individual visit to the tea field while 12% prefer to group meetings. However 8% indicated that demonstration and field days as more effective extension methods. Similar result were found by the of Samaraweera *et al* (2013) for their study. They have found that individual methods were the most effective mode followed by method demonstrations. Informal discussions were the

least effective mode for transferring the technical knowledge. Innovative technologies such as Internet, smart phones etc. as well as mass media now a day are popularizing for knowledge dissemination, technology transfer, and advisory service. Findings of study research done by Xiaolan and Shaheen (2013) showed that the amount and quality of the services and the speed of services delivery have been improved significantly as a result of the ICT intervention. There are also indirect benefits from this ICT-enhanced services delivery system not only in greater awareness and knowledge in agriculture technology and information but also in terms of farmers' attitudes towards trying new technology and new ways of life in the future. These findings are more relevant to the technology transfer of tea sectors too. Therefore, study made an additional attempt to analyze what extend tea small holders employ mass media, telephone and internet get advisory service. Though the mass media, telephone and internet are more popular in Sri Lanka, very negative results were observed in this regards. Majority of respondents (88 %) have indicated that they have not used mass media to get the information. Only few tea small holders have used mass media to get the information. (12%). Nevertheless, with regards to use of telephone to collect the technical information it was observed that majority of tea small holders (64 %) have used telephone either land line or mobile phone to collect information while considerable portion of respondents (36 %) have indicated that yet they are not using telephone to collect information. High majority farmer (94%) have not used internet to get the information whereas only 6% of them have used it to get technical information. It is therefore relevant extension agencies need to be considered this matter carefully. As Samaraweera *et al* (2013) pointed out strengthening the extension services in order to disseminate technical knowledge among tea smallholders and improving the contribution of mass media and ICT in order to make the tea sector more efficient, effective and sustainable. It was observed that there was association between age and experience with the source of extension. It mean that middle aged and more experiences (more than 10years) tea farmers preferred to get the advice from the tea Inspector / Extension Officer of the TSHDA than others while relatively low educated (studied up to GCE (O/L) farmers prefer to get advice from the tea Inspector / Extension Officer of the TSHDA. Further, relatively high educated and young farmers preferred either land or mobile phone based extension than other farmers.

CONCLUSION

Majority respondents indicated that TSHDA is the most available source getting information while few numbers of respondents indicated that TRI and the tea factory respectively, as most available source getting information. Further, majority of respondents have indicated that TSHDA is the most relevant source of getting information. Further, most believable source of getting information by the tea growers also was TSHDA than TRI or Tea factory. Individual contact methods, group contact methods and mass methods are the most common extension teaching methods in the agricultural extension. Group meeting, individual visit to the tea field, field days at tea field and demonstration are the most effective and commonly apply extension method by the TSHDA. Majority of tea small holders prefer for the individual visit to the tea field while second rake goes to group meetings**.** Middle aged and more experiences tea small holders preferred to get the advice from the tea Inspector / Extension Officer of the TSHDA than others while relatively low educated tea small holders prefer to get advice from the Tea Inspector / Extension Officer of the TSHDA. Further, relatively large scale, high educated and young tea small holders preferred to get the advices from the TRI and either land or mobile phone based extension than other tea small holders.

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