

## Current and Potential Usage of Information and Communication Technology for Agriculture among Farmers in Bingiriya Area

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### ABSTRACT

Information and Communication Technology (ICT) plays a vital role in all stages of agriculture industry. Usage of these valuable and easy ICT facilities for agriculture is not clearly apparent from rural farmers. But farmers have less awareness on Agricultural Information Communication Technology (AICT) and only few studies have been carried out on this subject. Therefore a study was planned to evaluate the status of the adoption of ICT among farmers in a selected area. It was carried out in Bingiriya area with a representative sample of 100 farmers. Samples were selected from five Grama Seva (GS) divisions out of 52 GS divisions of Bingiriya. All the agricultural information sources of farmers identified in this study was categorized into conventional and modern methods. The studies revealed that usage of conventional methods were higher than modern methods. Telephone and televisions were identified as the most preferred information accessing tools. Due to convenience, trend of using mobile phones was high. Most of the farmers were educated only up to G.C.E Ordinary Level and have a low level of income. Low level of education, low level of income and reluctance to change their attitudes towards ICT were the major reasons for low usage of ICT in agriculture. Television, radio and mobile phones were the mostly used methods of information dissemination among farmers in Bingiriya area. There is a potential to improve AICT knowledge among farmers by incorporating AICT into existing communication media.

**KEYWORDS:** Agricultural information communication technology, Bingiriya, Extension service

### INTRODUCTION

Agriculture is an important factor for economic growth in Sri Lanka. As the rapid development of Information and Communication Technology (ICT) such as electronic mail (email), mobile communication, telefax, Decision Support Systems (DSS) and the World Wide Web (WWW), agriculture sector has to concern more towards modernized and ICT based information sharing in modern world. Dissemination of information is very important for agriculture because it promotes competition and market performance and it also offers the ability to increase the amount of information provided to all participants and decrease the cost for information dissemination the information (Thompson and Sonka, 1997). ICT in agriculture sector allows sharing knowledge among variety of agricultural networks such as researchers, exporters, extension services and farmers.

Adoption of ICT is strongly associated with education level of the farmers (Batte *et al.*, 1990; and Warren *et al.*, 2000) and it is usually not spontaneous. Implication and adoption of ICT in agriculture can be found all over the world. Among them, Philippine use innovative technologies to provide information on agriculture to rural farmers through e-Farm, e-AGRIKultura and K-AgriNet. Kenya

Agricultural Commodity, Exchange (KACE), e-Choupal in India, Thailand Agricultural Information Network (AIN) is harnessing ICT technology to disseminate information on agriculture (Anon, 2008).

Demand for agricultural products in Sri Lanka is increasing annually with the population growth and achieving the increasing demand is the major challenge in agriculture sector in Sri Lanka. Integrating ICT into agriculture sector could facilitate achieving this increasing demand. In Sri Lanka, ICT is not extensively used in agricultural sector, but there are few occasions where we can relate it such as the official web sites of Tea Research Institute, Rubber Research Institute and Coconut Research Institute. These web sites offer common advices on methods of planting, soil types, diseases, fertilizer applications, and other important facts in all three languages; Sinhala, English and Tamil. The issue of using ICT in agriculture is that the rural farmers are not familiarized with internet.

Information and Communication Technology Agency (ICTA) of Sri Lanka trains the rural farmers to use ICT for their agricultural purposes through E-Nenasala centres situated in rural areas. But ICTA alone cannot improve the awareness of the farmers about importance of ICT in agriculture, thus

there should be more methods to improve the awareness of the farmers about ICT. This study was conducted to seek the awareness of the farmers on AICT.

**METHODOLOGY**

The study was conducted from February to March 2013 in Bingiriya area which has 52 Grama Sewa (GS) divisions. A representative sample of 100 farmers (n=100) who are engaged in fulltime agriculture were selected from randomly selected five GS divisions including two GS divisions from urban area and three GS divisions from rural area. Sample size for each division was obtained by dividing the population in the division from the total population in that five GS divisions and multiplying it with total number of samples (Table 1). Descriptive statistics was used to analyse the information gathered from the survey.

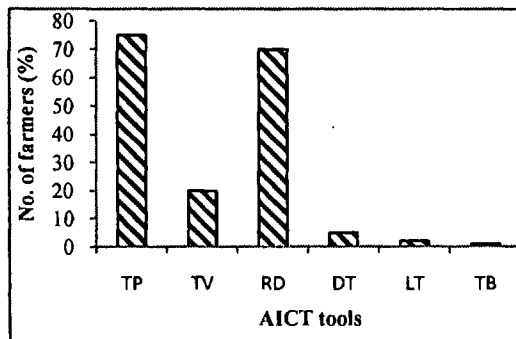
**Table 1. Details of GS divisions in Bingiriya area**

GS Division	Population Density	Population	Sample size
Ihala Konkandawala	3.49	1768	24
Weerapokuna	5.71	1188	16
Pahala thalampola	2.69	1383	18
Bowatta	5.7	1874	25
Kosagama	1.66	1270	17

Source: Sampath Pathikada (2012), Divisional Secretary Office, Bingiriya.

**RESULTS AND DISCUSSION**

All the agricultural information sources of farmers, identified in this study were categorised into two as conventional and modern methods. Tools used as conventional methods of receiving information are, television, telephone, and radio. Desktops, laptops, and tabs are considered as modern tools, for accessing information.

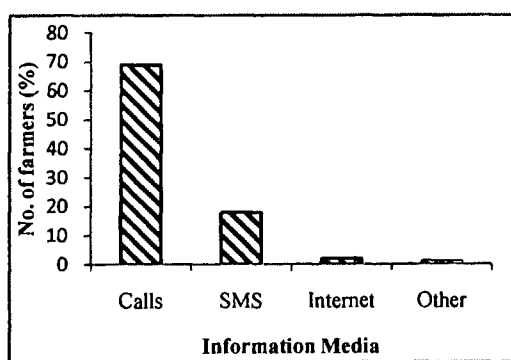


**Figure 1. Usages of the different AICT tools**  
 TP-Telephone, DT-Desktop, TV-Television, LT - Laptop, RD - Radio, TB- Tab

Results revealed that the conventional methods of receiving information were higher than modern methods among tested farming population (Figure 1). Telephones and Televisions were identified as the most preferred information accessing tools, when accessibility for agricultural information is considered, telephones were the mostly utilized tool by the farmers in Bingiriya area. The Sri Lankan government offers certain information services through telephones by the Government Information Centre (Dial code 1919) and "Govi Sahana Sarana Sevaya" (Dial Code 1920). Among the farmer population tested 15% has used 1919 service and four percent has used 1920 service.

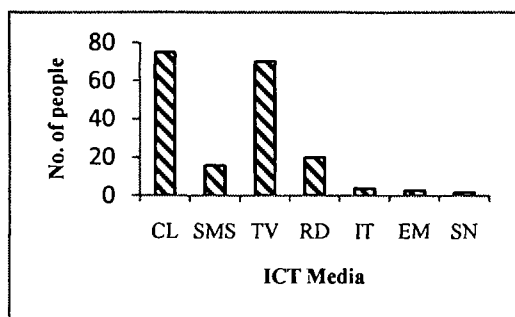
Farmers have a low computer literacy and their income level is not sufficient enough to afford a computer, thus usage of television to get information on agriculture is high among the farmers.

There is a trend for using mobile phones by the farmers to receive information on agriculture. Convenience of using the mobile phones could be a reason for this trend. If the usage of mobile phones for AICT is considered, majority of the farmers use the mobile phones to make calls (Figure 2). The usage of mobile phones for AICT through internet is very low while no farmer uses social networks through mobile phones for AICT. Unavailability of devices which have internet or General Packet Radio Service (GPRS) could be a reason for this.



**Figure 2. Media usage in mobile phones**

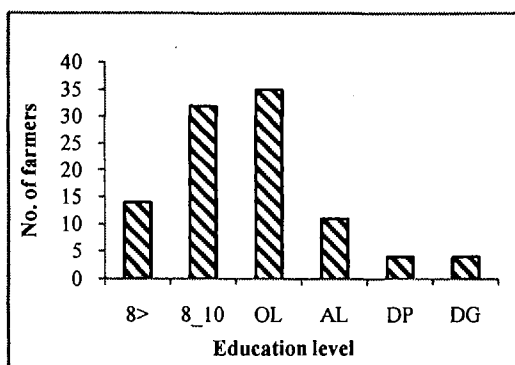
Among different AICT media, calls and television is highly used than other media, while internet, E-mail, social networks were the least used AICT media. This explains the high usage of conventional AICT methods than the modern AICT methods. Among modern media, the usage of Internet and E-mail is higher than the Social Networks and significant difference between the usage of Internet and E-mail could not be observed (Figure 3).



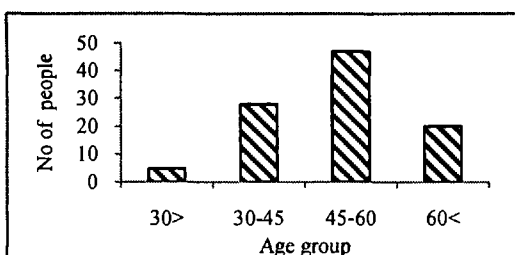
**Figure 3. Usage of different AICT media**  
 CL- Calls, SMS-Short Message Service, TV- Television, RD- Radio, IT- Internet, EM- E mail, SN- Social network

Gathering of AICT depend on, several factors including, level of education and annual revenue.

Majority of the farmers have studied only up to G.C.E. Ordinary Level (Figure 4), this could be a reason for the lack of usage of modern techniques on AICT. If the farmers had a higher educational level they would have the knowledge on using the modern AICT tools.



**Figure 4. Education levels of the farmers**  
 8>- Studied only up to grade 8, 8\_10- Studied only up to grade 10, OL- studied up to G.C.E O/L, AL- Studied up to G.C.E A/L, DP- Diploma holder, DG- Degree holder.

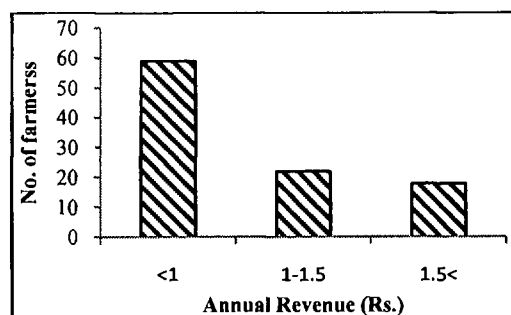


**Figure 5. Age groups of the farmers**

When the age group is considered, majority of the farmers are between 45 and 60 (Figure 5). And farmers whose ages are below 30 are very low; this could be also a reason for the high usage of conventional AICT methods. The age group is directly related with the

attitudes towards using modern AICT methods. Further young farmers had more knowledge on modern AICT methods.

Majority of the farmers have less than 100,000 rupees annual revenue (Figure 6). Modern AICT techniques are not used by the majority of the farmers mainly due to low annual revenue of the farmers.



**Figure 6. Annual revenue of farmers from agriculture**

<1- Less than 100000, 1-1.5-Between 100000 and 150000, more than 150000

From the total farmer population 60 % of the farmers use mobile phones for both common use and for AICT purposes, and eight percent of the farmers use mobile phones only for common use, while other farmers do not use mobile phones. This suggests that mobile phones are more successful for distributing AICT among the farmers. Twenty percent of the farmers use radio for both common use and for AICT purposes while 61 % of the farmers use radio only for common use. This suggests that radios are least successful method for distributing AICT (Table 2).

**Table 2. Different usage of ICT tools**

	AICT with common use	Common use only	Not using
Mobile	60	8	32
Fixed Line	32	30	38
Computer	3	5	92
TV	70	24	6
Radio	20	61	19

Further "community media" can be used to improve the awareness of AICT among farmers, for example a community radio channels can be broadcasted by farmer groups which discuss about matters regarding the agricultural issues on their region and which give useful information on agriculture, in Sub-Saharan Africa a community radio "Farmer Voice Radio" is successfully used in this regard (Anon 2013).

Agrarian service centres which farmers access often to receive agricultural information can be re-established with improved ICT facilities thus farmers can easily access them and obtain AICT information and extension services from them.

Even though Department of Agriculture (DOA) disseminate agricultural information through their official web site and through web applications such as “e goviya” and “wiki goviya”, farmers are not familiarized with these web sites and need a special training and publicity to make the farmers aware on the usefulness of those web sites.

Since there is a trend for using mobile phones by the farmers, government with the DOA can implement a special SMS service for the agricultural extension services. Further, a special programme can be implemented to distribute mobile devices which support services such as internet, GPRS, and Global Positioning System (GPS) and AICT services helpful for farmers.

It is important to improve the positive attitudes of the farmers toward AICT by conducting special workshops, and especially school children must be given a good exposure to AICT.

### CONCLUSIONS

It was identified that ICT has not penetrated into the agricultural sector broadly. Even though digital divide in the agriculture sector is remarkably high lack of tertiary education, seasonal and lesser income levels of the farmers, reluctance to change the attitudes towards ICT due to sole trust on self experiences of the aged farmers (age between 45 – 60) are identified major reasons for this situation. The internet access is not widely available to farmers than other broadcast technologies such as radio and television. However, tendency to use mobile phones for AICT by the farmers, if managed successfully can be used for the improvement of the AICT sector.

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