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## Mobile phone intervention for Sri Lankan mushroom producers

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### Abstract

It is well-known that traditional methods of technology dissemination are not cost-effective; and that extension agencies are limited very much by personnel resources in approaching the clientele they need to contact. Therefore, at present, many sectors of the world economies are attracted to the use of ICT for technology dissemination. However, such interventions are not common in the agricultural sector, especially in developing countries. Realizing this, the Department of Agricultural Economics and Extension at the University of Ruhuna, Sri Lanka, implemented a programme 'Lifelong Learning for Farmers' (L3F), employing ICT as one of its components. For this programme, the University of Ruhuna collaborated with the mobile phone company *Mobitel* (PLC) Ltd and developed an IVR (interactive voice response) system to approach clients.

Mushroom production is essentially small-scale and remains a cottage industry. In order to raise the living standards, it is necessary to provide scientific information to scattered production units. Such efforts will turn them into commercial producers and provide an opportunity to compete in the local and foreign markets. This investigation focuses on the use of mobile phones for technology dissemination to small-scale mushroom producers. The IVR system embedded different two-minute messages employing ODL techniques over six months. The entire series of lessons included the establishment of a mushroom shed; the preparation of the growing medium; filling bags and sterilization; inoculation and incubation of mushroom spawns; harvesting; pests and disease control; processing and preservation; seed production; and business planning and financial management. The results showed that 5,583 clients listen to the lessons; and, according to the spatial



distribution, the majority of them were from wet zone districts as the climatic conditions are favourable for the enterprise. However, feedback is still limited.

**Keywords:** intervention, mobile phones, mushrooms

## Introduction

Agriculture is the backbone of the Sri Lankan economy, and its present contribution to the country's GDP is 11.1% (Central Bank, 2012). Over the last decade, the growth rate of the agricultural sector has been insignificant, and almost stagnant, as it has been confined to 1.4 (2011). It has been found that even at present, the agricultural sector faces a number of issues, such as low productivity, a low level of technological innovations, and poor access to international markets. Also, there is a significant gap between the actual and potential yield of major crops, including the staple food crop: paddy rice. Concurrently, due to considerable changes in the country's administrative framework, the present agricultural extension system is inefficient, mainly due to a dearth of human resources. Further, the traditional knowledge dissemination systems require much investment, and the front-line extension workers have to serve large numbers of clients at the grassroots level. As a result of such conditions, the extension coverage is very limited; and consequently the scientific knowledge generated in institutes is hardly linked to the extension systems to deliver to the utilizers. Moreover, the research system cannot address either the emerging or actual needs of the country as the feedback is marginal. In this situation, ICT tools have become a very powerful mode of communication among different stakeholders. In fact, different network systems have evolved to reach a wide audience within a very short time. The components of such systems have been well explained in a working document from the University of British Columbia (2009).

The agricultural extension systems play a vital role in delivering technical know-how to the scattered rural farmers. Well-managed extension activities were launched to mushroom producers in southern Sri Lanka (Wijeratne & De Silva, 2010; Wijeratne & De Silva, 2011). However, it is now well recognized that traditional extension techniques are not viable, and give marginal benefits for the investment made. Therefore, it is essential to search for modern technologies to reach the target clientele. The use of agricultural extension in the modern context is well documented by Leeuwis (2004).

In order to increase the extension coverage, a mobile phone intervention was

launched focusing on mushroom producers in the *Kamburupitiya* area in the *Matara* district of Sri Lanka. This is one of the components of the programme started in 2009, leading to growing more mushrooms to enhance food security in collaboration with the Commonwealth of Learning [Lifelong Learning of Farmers (L3F)]. The Faculty of Agriculture at the University of Ruhuna, Sri Lanka, serves as the focal point of the programme. The voice mail system delivers technical messages during weekdays to the target group. On the fifth day, after a message clip, a simple question is asked and instructions are provided as a recording to enter the answers in a multiple-choice form. This paper summarizes the steps taken to implement the voice mail intervention and the outcomes experienced to date.

## Methodology

After having several meetings with *Mobitel* (PLC) Ltd, *Mobitel* partnered with Ruhuna University to develop an Interactive Voice Response (IVR) System for mushroom farmers of the L3F. Two agreements were made and an MOU was signed by the two parties (Mobitel, 2011<sup>a</sup>, 2011<sup>b</sup>). *Mobitel* provided the platform for the Agricultural Extension Programme in the form of an IVR with knowledge content provided by the Department of Agricultural Economics, Faculty of Agriculture, at the University of Ruhuna.

The first workshop was organized on October 28 2010, and it provided awareness to the farming community of this new development. Mushroom farmers in all divisional secretariat divisions in the *Matara* district in southern Sri Lanka, and all the Science and Technology Officers attached to the *Vidatha* Centres in the district, were invited to attend and were informed about the new extension method. *Mobitel* (PLC) Ltd. was represented by its technical team who described and demonstrated the technical aspects of the system. As an outcome, on February 28 2011, this programme was officially launched at the Faculty of Agriculture.

The IVR system facilitated two-minute voice recordings on mushroom cultivation from Monday to Friday. At the end of the week, multiple-choice questions related to the messages were sent to the registered farmers of the L3F programme over a period of six months and farmers were educated about a range of knowledge elements pertaining to mushroom production. Although it was expected to confine the programme to the registered farmers, on popular request the voice mail system was extended nation-wide (with Mobitel sim dial 8820) from September 2012.

Media coverage was given by all the national papers and television. A radio

programme was conducted prior to the event and it was broadcasted on all the radio channels on 28 February 2011. News items were also broadcast and the coordinator was interviewed on the national channels. Also, there was a two-hour live broadcast to cover the events in the launch programme by *Ruhunu Sewaya* of the Sri Lanka Broadcasting Corporation.

The technical team of the programme recorded the messages for the coming week in advance and stored them in the system. During the appropriate days, the messages were given to the IVR system for dissemination.

After six months of the voice mail programme, an investigation was carried out to find out its effectiveness and drawbacks. Feedback on the interactive voice responses was extracted from the database and a checklist was employed for the target group. In addition, a questionnaire survey was conducted to get the farmers' ideas about access to, and the success of, this novel intervention (De Silva & Wijeratne, 2011). Also, after the nation-wide implementation, an analysis was done to reveal the accessibility of the clients to the programme (September 2012–March 2013).

## Results

### The dissemination mode

The programme developed a series of messages with knowledge elements in connection with mushroom cultivation and all the recorded messages were included in the electronic media. Farmers, and any other stakeholders, can listen to the messages as they were uploaded to the website. There are two pathways to visit the website and listen to the messages.

- 1 Visit the Faculty website (*www.agri.ruh.ac.lk*) and go to the section 'News and Events', and then find the mobile phone intervention by the Department of Agriculture and Economics and Extension. Access it and look for further information.
- 2 Visit the L3F Ruhuna website directly at  
*http://wikieducator.org/Sri\_Lanka/L3\_Farmers/University\_of\_Ruhuna*

### Content development

Since the introduction of the voice mail system, efforts have been made to deliver technical information on different aspects of mushroom cultivation. The entire script was divided into four main modules: (1) scientific mushroom production and management practices; (2) the production of mushroom seeds; (3) developing value-added products; and (4) marketing,

entrepreneurship, and managerial skills. Each module contained several units, covering all the relevant theoretical and practical information.

### **Access to knowledge**

The IVR system provides several facilities for the recipients. Farmers can get access to the voice mails at any time of the day and they are free to listen several times to the same message clip. All such contacts were automatically recorded in the database. According to the recorded figures, 65% of the farming community have accessed the knowledge system. However, the results revealed that none of the farmers had regularly listened to the voice mail on all five days. The average number of days on which they listened to the voice mail was three. It was expected that the programme would have a high level of feedback, but this component has still not fully materialized.

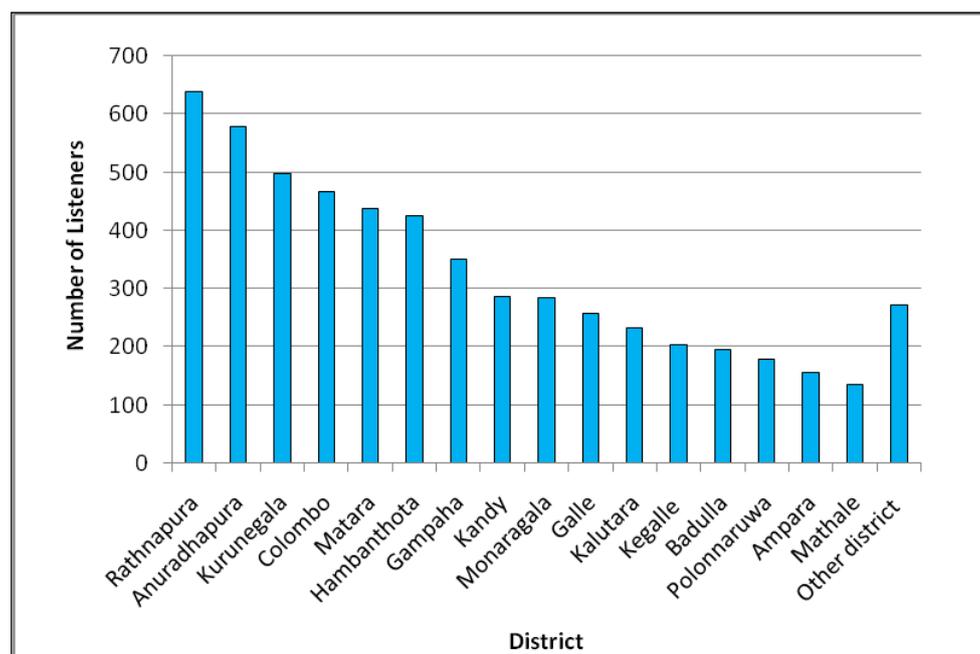
### **Sustainability of the income**

The results of the questionnaire survey showed that farmers have acquired knowledge through the voice mails. Also, the field observations indicated that they were inclined to scientific mushroom production. Farmers used to cultivate mushroom bags, ranging from 1,000 to 3,500 on average and keep 2,000 bags for which they could receive a monthly net income of USD 200 (SLRs 25,000). This is a significant income to sustain a family and, in most instances, can be regarded as an additional income.

### **Outcome of the national-wide coverage**

As mentioned earlier, the voice mail system was extended nation-wide from September 2012, and the feedback evaluation was carried out from September 2012 to March 2013. The results demonstrate that the distribution of the clientele in the country was confined to 5,583. The classification by district indicates that 47% of the listeners were from *Ratnapura* (638), *Anuradhapura* (578), *Kurunegela* (498), *Colombo* (465), and *Matara* (437) districts (see Figure 1). Almost all the districts are in the wet zone, except *Anuradhapura*. The wet zone's climatic conditions are favourable for mushroom production. Also, the *Colombo* and *Gampaha* (349) districts consist of large-scale production units which produce fresh and value-added products for export markets. Further, the local market demand is comparatively higher in these districts and consumers are very concerned about healthy pesticide-free food items. The *Matara* district is very much influenced by the present intervention as almost all the mushroom cultivators are linked to the programme. It is interesting to note that much of the efforts were incorporated to mushroom growers in the adjoining district of

*Hambanthota* and, as a result, benefits were also trickled down to nearby locations.



**Figure 1** Mobile phone intervention: listeners by district

## Conclusion

The mobile phone intervention has had a significant impact on the livelihood of mushroom farmers in several respects. First, as a dissemination mode, it has extended the coverage to a significant number of mushroom cultivators, providing knowledge related to scientific production. Second, farmers have obtained needed information quickly and accurately, using ICT which is a new activity for them. Third, farmers have received a sustainable income as the monthly net revenue stands at USD 200 (SLRs 25,000). Finally, the investment made for the mobile phone intervention can be well justified as during six months 5,583 mushroom farmers have accessed the programme and obtained relevant knowledge elements for the enterprise.

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