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An e-pest surveillance and advisory system to empower farmers in managing rice pests and diseases in Sri Lanka

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Abstract

An e-pest surveillance and advisory system called "*Govi Vedaduru*" was developed with two broad objectives in mind; to enable rice farmers in Sri Lanka to manage pest and disease problems efficiently and in a cost-effective manner and to facilitate relevant authorities with better monitoring and control of pest and disease incidents. Many farmers are not competent to identify pests and diseases related issues and decide the correct management practices themselves. They expect the assistance of the field officers of government agriculture extension services for this purpose. However, lack of officers and the knowledge gaps that exist among them hinder the achieving these expectations. Hence, farmers do not receive the correct advice in time and crop get damaged leading to higher production cost. The *Govi Vedaduru* mobile application was designed to provide an advisory service through smart phones enabling the farmers to obtain expert guidance from the Rice Research Stations of Department of Agriculture (DOA), in identifying their field problems and remedial measures to follow. A user friendly mobile interface was developed in local languages (initially Sinhala) to upload data about the pest and disease problems. The system was initially piloted in five areas (*yaya*) of rice cultivation representing two agro-ecological zones in Galle district in Sri Lanka. A follow up survey of the participant farmers indicated that they received timely, useful and trustworthy advice that helped them with correct remedial measures. The reports generated via web application with limited incident data showed the system's capability of providing valuable information to relevant authorities for monitoring and planning purposes.

Keywords: Mobile and smart computing, Pest and disease surveillance

Introduction

In rice farming, 10-20% of the production is lost due to pests and diseases annually, making rice farming unproductive and unprofitable (Nugaliyadda et al., 2000). Pest and disease problems should be identified early as possible and remedial measures should be taken immediately. However, most farmers are not competent enough to recognize the pest or disease problem correctly and are not aware of the recommendations. In this context, the field officers of agriculture extension services are responsible for providing necessary advice to farmers in solving their field problems. However, lack of officers to meet the demand and the knowledge gaps among them are considered as serious issues. This hinders the farmers to receive correct identification and remedial measures immediately by making a considerable damage to the crop yield. Incorrect identifications and recommendations lead to unnecessary and excessive agro-chemical usage by farmers leaving farmers with higher production cost and agriculture eco-systems being damaged. There is no established local or island-wide system to monitor pest and disease incidents and