

Accelerating Sri Lankan Agriculture and Enhancing Crop Quality Through Affordable Protected and Automated Agriculture Kits

Project of Dialog Axiata PLC conducted in collaboration with University of Moratuwa and University of Ruhuna

Abstract

Smallholder-agriculture dominates rural Sri Lanka, home to 80% of the population. Agriculture employs 33% of the workforce and utilizes 44% of the land, yet contributing only 9% to the GDP. Being unable to invest, poor smallholders loath to risk unfamiliar new technologies, meaning low productivity and low returns. Research shows that the Sri Lankan agriculture sector is less efficient than comparable countries.

We are marching towards a food crisis due to the rapid ageing of the farming population, unattractiveness of the farming career to the youth, conversion of fertile land to non-agricultural uses, water depletion and land degradation, harvest losses due to increasingly adverse climatic phenomena, compounding pest and disease damage, high fluctuations in prices and crop diversification issues. Developed countries face similar issues and, their extensive research and development help them to overcome those challenges while better managing their food security.

One of the promising solutions is affordable climate-smart protected agriculture to liberate the smallholders from the tyranny of the weather and seasonality. Research shows a potential 50%-300% yield increase through environment-controlled agriculture. Under the current partnership with the University of Ruhuna, Dialog is building a crop parameter related knowledge base required for protected agriculture as well as conducting field testing to test the data in field conditions. Low cost sensors and actuator nodes are developed through a partnership with University of Moratuwa.

Main project components:

- Developing the knowledge base for local crop recommendations and agroecological zones
- Develop necessary materials and knowledge for farmer training on new practices
- Developing sensor and actuator kits that are fit-for-need and conditions, at one-tenth or below the current market price
- A data and knowledge management system on cloud
- Advisory content for crop managing and maintaining

Technology Used:

IoT (Internet of Things) will connect sensors and actuators while remotely controlling and monitoring the activities, with a monitoring panel accessible via smart phone. Further, agriculture know-how for regular operation (i.e. fertilizer application, water management, assessing growth and pest and disease identification) will be available at farmer's fingertips using mobile technology. Being cloud-connected, real-time roll-outs of rapid updates or interventions to respond to short-term phenomena in agricultural operations will potentially have a national level significance.

Keywords: IoT, Cloud-connected, Smart phones, m-platform

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