



Rice Disease LINEBot system



RiceBot

Challenge

Rising temperature due to climate change has led to increased insect infestations and disease outbreaks across rice fields in Thailand. This situation worsens the outlook of rice farmers, who already suffer from high input costs and stalled yield growth. Most Thai farmers use chemicals to control insect and disease. Inaccurate and slow diagnosis of rice disease has led to excessive and unnecessary use of chemicals that reduce crop productivity, degrade soil quality, contaminate the environment, and increase greenhouse gas emissions. It also increases the farmers' health risk due to chemical exposure.

Solution

RiceBot offers free diagnose of rice diseases and treatment recommendations within 3-5 seconds. RiceBot uses AI to process images through a chatbot application operating on the LINE group platform. By using Line, farmers can access RiceBot from mobile phones, accessing diagnostic services at any time from any location. RiceBot, co-developed by the National Electronics and Computer Technology Center (NECTEC) and Kasetsart University, has a diagnostic accuracy over 99 percent.

Adaptation and Mitigation

RiceBot helps farmers respond to increased instances of insect infestations and diseases outbreak due to climate change. The application allows for fast, accurate diagnosis and provides recommendations for treatment, increasing farmer access to improved integrated pest and disease management and reducing greenhouse gas emissions from overuse of chemicals.

Business Model

RiceBot recently reached a milestone of over 1,000 farmers across Thailand. While RiceBot has no competitors in the digital extension market, it would benefit from being integrated into offerings from input suppliers or other platforms that engage with farmers. The current platform does not allow a pay-for-use by farmers. Instead, a licensing model for firms who engage farmers may be the most viable option.

Expected Income Gain for Smallholder Farmers				Notes
per rai	Manual	RiceBot		
Detection speed	7 days	5 seconds		RiceBot can detect disease earlier
% Accuracy	??	97		No statistics on manual inspection
Loss from Disease (kg)	144	48		
Yield (kg)	336	432		
Price (THB)	13	13		Using main season price
Revenue (THB)	4,368	5,616	1,248	
Savings				
Input cost (THB)	300			Appropriate use of chemical
Labor cost (THB)	200	500		Acting sooner requires less labor
		Income Gain	1,748	
		per rai		

USDA Thailand Regional Agriculture Innovation Network (RAIN) project, funded by United States Department of Agriculture Food for Progress and implemented by Winrock International, strives to facilitate adoption of 30 climate smart innovations by 30,000 farmers. For more information, visit <https://winrock.org/project/using-tech-to-support-thailands-transition-to-climate-smart-agriculture>.