



Cassava Strip Test

Challenge

Cassava Mosaic Disease (CMD), which is spread by the whitefly, has become a serious threat to Thai cassava plantations, resulting in significant or entire crop losses. In 2022, the disease was estimated to have harmed over 48,000 hectare of cassava farms. Resistant varieties provide a long-term and cost-effective answer. However, it is not widely commercially available due to a shortage of clean seedlings. Instead, diseased seedlings have been sold, resulting in rapid disease spread. Cassava growers should do frequent plant inspections for early detection, allowing them to act quickly and remove infected stems from their plots, preventing spread and loss. The traditional approach requires farmers to collect and send plant samples to laboratories for testing, delaying the timeline for early detection and action.

Solution

Providing cassava growers with portable, rapid, and self-use diagnosis would allow them to detect CMD in cassava stems more frequently, preventing the planting of contaminated stems and slowing the spread of the virus. Researchers at the National Science and Technology Development Agency (NSTDA) have developed an innovative strip test that can diagnose CMD within 15 minutes. Testing should begin at six months of growth and continue monthly until harvest. If a plant is infected, stems within a radius of one meter should be removed and destroyed. NSTDA is working with starch factories to determine most efficient testing protocols that balance adequate sampling size and cost.

Adaptation and Mitigation

Cassava test strips help farmers adapt to changing weather patterns which increase prevalence of insects, such as the whitefly, and the diseases they spread. Farmers can use strip tests to identify CMD throughout their plantation, especially within the first few months after planting. If it is discovered that CMD has contaminated their fields, they can quickly remove and destroy the stems, preventing the disease from spreading to neighboring fields and limit damage.

Business Model

NSTDA seeks to sell cassava strips to government extension agencies and private sector starch factories who are working to increase farmer yields. The strip test is faster than a lab test, but at 100 baht per strip, some farmers may hesitate. RAIN has supported NSTDA to host outreach sessions with value chain actors to introduce the product. Also, NSTDA is seeking to lower production costs to reduce the price.

Expected Income Gain for Smallholder Farmers			
	per rai	Lab Test	Test Strip
Detection speed		7 - 10 days	30 minutes
Loss from disease (kg)		1,200	840
Price (THB)		3.8	3.8
Yield (kg)		2,800	3,160
Revenue (THB)		10,640	12,008
Diagnosis Cost (THB)		400	1,200
			Income Gain
			568
			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>.