A new digital tool offering fertilizer recommendations tailored to individual farm needs has been integrated into Rwanda's Smart Nkunganire System (SNS), which provides farmers with access to subsidized agricultural inputs. The system, managed by the Rwanda Agriculture and Animal Resources Development Board (RAB), is expected to improve fertilizer efficiency, crop yields, and sustainable farming practices.

The tool delivers site-specific recommendations for six staple crops, including cassava, maize, and beans. By analyzing soil data and farmer input, it ensures fertilizer is used efficiently, addressing Rwanda's unique agro-ecological conditions.

Small Farms Face Big Challenges

In Rwanda, 85% of rural households farm on less than one hectare of land. Many of these plots suffer from poor soil quality, which limits agricultural productivity. Low fertilizer usage further compounds the problem, with yields far below.

To address these issues, the government launched the Crop Intensification Programme in 2007, aimed at increasing crop productivity through land use consolidation and improved distribution of seeds and fertilizers. This initiative, combined with the SNS platform introduced in 2018, digitized the agricultural input supply chain, creating an efficient system used by over 1.5 million farmers.

Previously, farmers relied on blanket fertilizer recommendations that did not consider variations in soil and regional conditions. This resulted in inefficient fertilizer use and low profitability. The new tool, developed with support from CGIAR and the Bill & Melinda Gates Foundation, uses digital soil data and machine learning to provide tailored advice, improving yields and reducing environmental risks.

Farmers register on the SNS platform using their phones and receive fertilizer recommendations specific to their land, identified by a Unique Parcel Identifier. Subsidized fertilizers can then be ordered and delivered through agro-dealers, ensuring streamlined distribution.

The project's success highlights the potential for integrating additional agronomic advisory services into the SNS platform. With tools like the Fertilizer Recommendation Tool (FRT), Rwanda aims to create a sustainable model for boosting agricultural productivity while supporting smallholder farmers.

By digitizing agricultural support services and tailoring solutions to local needs, Rwanda is paving the way for a more efficient and sustainable farming future.