



Name of Solution:

Digital tools for precision rice cultivation

Submitter: (International Rice Research Institute - IRRI)

Solution Overview: *What is it, and what problem does it solve? Brief 2–3 sentence description.*

SeedCast: is an innovative digital platform designed to reliably estimate and aggregate the seasonal seed demand for better production and supply planning. This digital tool will facilitate coordination and build effective linkages among seed producers, distributors, farmers, and other stakeholders for a seamless, faster, and transparent seed inventory management. SeedCast, which was initially developed in South Asia is now customised for and launched in Tanzania in August 2023, and currently it is in pilot phase. IRRI is working on the evidenced interest to develop it for Bangladesh and Zambia. SeedCast which aims to bring improved, high-yielding rice varieties within reach of smallholder farmers, seed suppliers and other seed stakeholders.

Rice Crop Manager (RCM): is a decision support tool developed by IRRI and its partners in the early 1990 to promote site-specific nutrient management in rice farming. This tool helps farmers optimize fertilizer use, improve crop productivity, and reduce environmental impacts by providing tailored recommendations based on specific field conditions.

Dynamic Agro-advisory tool (AgDay): is an innovative, digital agro-advisory platform designed to provide dynamic, real-time, and location-specific agricultural guidance to farmers. Leveraging weather forecasts, crop stage data, and local agronomic practices, AgDay aims to optimize decision-making in farming operations.

Digital Monitoring, Reporting, and Verification (dMRV): The FarmLog app captures both real-time and historical farm data to support low-emission rice cultivation practices such as Alternate wetting and drying (AWD), Direct Seeded Rice (DSR), and improved nutrient management. By linking to an emissions calculator through the SECTOR API, FarmLog also calculates estimated seasonal emissions to support carbon credit generation.

Key Features & Benefits: *Main components and why it is useful? Bullet points summarizing methods, tools, and value added.*

SeedCast: This digital tool replaces manual seed indenting process which is often time consuming and less reliable. It enables farmers and dealers to digitally indent the seed demand atleast a season ahead and the collated seed demand at block and district is verified and approved by competent authority, before it goes production planning at state level. The digital record of seed demand helps produce and place the seeds in a planned and timely manner. SeedCast also facilitates the linkages between seed suppliers to ensure supply in a geography. In addition, the app helps users know about newest varieties and select best-fit variety based on the certain agronomic and ecological parameters.

Rice Crop Manager (RCM): The scientific backbone of RCM is the Site-Specific Nutrient Management (SSNM) approach, for smallholder rice production systems in Asia to address large variability among farms and fields in their seasonal plant nutrition needs. Instead of blanket fertilizer advice, it offered tailor-made recommendations based on each field's estimated crop response to applied nutrients, soil nutrient supplies, climate, crop variety, and farmer's practices.

Dynamic Agro-advisory tool (AgDay): it provides dynamic, real-time, and location-specific agricultural guidance to farmers.

FarmLog: The app serves as a central platform where historical and current management practices are documented. Low-emission farming practice implementation is verified using a series of geo-tagged, time-stamped photos. By inking key farm data to emissions calculations using the SECTOR API, farmers will have a better understanding of the current emissions scenario, the scope for emission reductions, and their potential to generate carbon credits with low-emission practices.



Where It Works and Where It Can Work: Existing and potential target regions, agroecologies, or farming systems. Include examples if available

SeedCast: Since the current seed indenting process is manual with several inherent challenges, SeedCast can be introduced in several countries in Asia. It is being piloted in Tanzania and customized for Bangladesh. This tool can further be scaled up in other African countries where manual seed indenting is still practised.

RCM: Since its inception in 2013, RCM has generated more than 4 million field-specific crop and nutrient management recommendations across five countries in Asia including Bangladesh, India, Indonesia, the Philippines, and Vietnam.

AgDay is mainly designed for Rice-Wheat system, and it works best in Indo Gangetic plains

FarmLog: Pilot conducted in Andhra Pradesh by farmers and community resource persons across different farming systems including Natural Farming, Integrated Nutrient Management, and Chemical Farming

Evidence & Impact: What results has it shown? Stats, pilot outcomes, or testimonials

SeedCast: This is being piloted in Tanzania, encouraging feedback from the users establishes its importance and benefits to digitize the seed system. In Bangladesh, BADC expressed their appreciation for the design, features and functionality of the application, and requested to customize it for the whole country.

RCM: In the Philippines, farmers using RCM saw an average yield increase of 0.3 to 0.4 tons/ha which translates to an extra USD 110 to 154/ha. In India, the gain was even higher at 0.5 tons/ha and USD 150/ha in added income. In Indonesia, the average gain in yield was 0.4 tons/ha and USD 173/ha in added gross return above fertilizer cost.

AgDay: Tested in pilot mode, it shows a 1.59 t/ha system level yield gain

FarmLog: Trial phase in pilot mode with 120 farmers

Scalability & Adoption Support: Why it can be scaled and what's needed to adopt it? Low-cost, adaptable, partner-ready, etc.

SeedCast: The app has high scalability in the regions as seed demand estimation and supply is mostly paper-based and manually managed. Moreover, SeedCast is a low-cost tool, easy to use by the agencies and can be quickly customized and developed.

RCM: Dissemination is fast; adoption is gradual: Farmers often need tangible evidence before trying out new practices, emphasizing that to see is to believe. Demonstration plots, field trials, and consistent extension support build trust and confidence over time. Adoption typically starts with easy, low-cost adjustments, such as changing fertilizer application timing, while more costly decisions such as additional fertilizer doses tend to happen later due to financial implications.

AgDay: Functional for Rice-Wheat system, it can be embedded with the existing advisories with NARES partners to wider adoption.

FarmLog: Functional for rice-based cropping systems in Andhra Pradesh; planned expansion to additional geographies (i.e., Haryana, Madhya Pradesh).

Partners & Contact Info: Who's involved and how to connect? List of key contact and partners + email / phone.

SeedCast: Tanzania Official Seed Certification Institute (TOSCI), Bangladesh Agricultural Development Corporation, Odisha State Seed Corporation (India)

Contact: Dr. Sk Mosharaf Hossain, Scientist-I, Seed System & Product Management
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RCM: PhilRice, National Rice Research Institute (India), Viama, BSIP (Indonesia)

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