

2023

PhilRice R&D Highlights



SMARTerRice Program



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SMARTFarm

Dindo King M. Donayre

EXECUTIVE SUMMARY

The Program aligns its goal with the DA-PhilRice Strategic Plan 2023-2028: Better Rice-Farming Communities and the Masagana Rice Industry Development Program (MRIDP). The SMART Farm leverages the support provided by PhilRice branch stations. With an 800-ha target area in the first and succeeding years, the program needs a strong management system that helps attain its target of around 4,000 ha in its 5th year of implementation.

The SMART Farm Program is composed of: (i) Program Management; (ii) Scaling out Rice ICM Technologies for increased yield and reduced production cost (SMART-ICM Project); and (iii) Scaling Modern and Adaptive Technologies through Digital Transformation (SMART-Dx). The Project management facilitates collaboration and coordination among stakeholders, including other implementing agencies, farmers, researchers, extension workers, and policymakers. This lays down the necessary framework, coordination, and technical oversight to overcome yield gaps, enhance technology adoption, and improve productivity.

SMART-ICM project scales out technologies for transplanted rice (TPR) and direct-seeded rice (DSR) through a focused technology transfer and farm-cluster approach to be managed by each PhilRice station. The goal is to achieve nationwide adoption of 5-6 mature technologies, with productivity increases and reductions on cost of production monitored relative to baseline levels. The project will involve local government units (LGUs) and other partners in the rice value-chain. Meanwhile, the SMART-Dx component capitalizes on digital transformation to boost operational efficiency in rice farming and improve the governance and policy environment through the development of the PalayCheck App and the Ricelytics.

The focus involves bolstering the existing data analytics platform for comprehensive planning, monitoring, and decision support within the rice industry. Additionally, the SMART-Dx project aims to seamlessly integrate existing rice apps and solutions, using the PalayCheck System to optimize rice crop production. Output-wise, the project envisions establishing a robust warehouse for rice-related data, creating data products and services for informed policy decisions, and introducing the PalayCheck App.

PROGRAM MANAGEMENT

The Program Management Team (PMT) is the key to steering the SMART Farm Program. It spearheads the conduct of workshops, participation in meetings, and ensures efficient utilization of the budget. Meanwhile, the drone seeding technology unlocked promising results, topped by the 40kg/ha seeding rate. The uniformity of crop stand provided by drone broadcasting helped reduce fertilizer rates while maintaining yields levels. The drone team then strongly recommends scaling in multiple locations to further magnify the impact of drone technology on rice farming.

SMART-ICM: Scaling out Rice ICM Technologies for increased yield and reduced production cost

Mark Angelo A. Abando

Each PhilRice station had organized a SMART-ICM cluster with: 61 farmer-cooperators (FC) cultivating 101.55ha Banna, Ilocos Norte (Batac); 58 FC planting 100.4ha in Alfonso Lista, Ifugao (Isabela); 68 FC with 107.5ha in Gerona, Tarlac (CES); 35 FC with 103.9ha in Lucena City, Quezon (Los Baños); 45 FC with 55ha in Ligao City, Albay (Bicol); 115 FC with 155.3ha in San Carlos City, Negros Occidental (Negros); 60 FC with 102.2ha in Cabadbaran City, Agusan del Norte (Agusan); and 79 FC producing rice from 100.25ha in Libungan, North Cotabato (Midsayap).

The cluster served as the take-off point for introducing and advocating PhilRice's advanced technologies encapsulated in the PalayCheck System. The Minus-One-Element Technique (MOET) and Rice Crop Manager (RCM) were introduced as the non-conditional technologies for nutrient management. To advertise the advantages of these mature technologies in terms of yield and production cost, a demonstration site was established to heighten the awareness of farmers on the innovations.

MOET adopters in Banna harvested 4.06t/ha, which is 0.23t/ha and 0.46t/ha higher than non-adopters and baseline yield, respectively; Batac adopters yielded 4.80t/ha, higher by 0.18t/ha and 0.25t/ha, in the same order. Adoption rate of fertilizer recommendations by cluster members was 38% in Banna, and 35% in Batac. Production cost/kg palay diminished by 5.94% in Banna. In Sanghan, Cabadbaran City, 51.61% yield increase (3.1 into 4.7t/ha) was recorded both in farm cluster and techno-demo; 25% yield increase (3.6 into 4. t/ha) in farm cluster and 36.11% (3.6-4.9t/ha) in techno-demo in Calamba, Cabadbaran City.

As to fine-tuning the riding-type boat tiller (RTBT), two sets of reversing mechanism and paddy field leveler attachments were 100% completed. These were deployed to PhilRice Batac and Isabela with demonstration and hands-on training.

SMART Dx: Scaling Modern and Adaptive Technologies through Digital Transformation

Leylani M. Juliano

The notable accomplishments of this project include: (i) Successful migration of the data warehouse to the Laravel platform; (ii) Initiatives in data product generation, including Natural Language Processing (NLP) and exploration of the K-Means Clustering algorithm and PRIME data through R Studio; and (iii) Integration of key functionalities in the RiceLytics dashboard, coupled with an active promotional strategy. These milestones have led to the development, pilot-testing, consultations, refinements, and eventual launch of the PalayCheck App, which acquired 482 registered users by December 29, 2023. These accomplishments underscore the SMART-Dx Project's commitment to advancing digital solutions and fostering positive transformations in the rice-farming landscape.

