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PHILRICE R&D HIGHLIGHTS



Rice Business Innovations System



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EXECUTIVE SUMMARY

The Rice Business Innovations System (RiceBIS) program aimed to develop rice and rice-based enterprises in key provinces nationwide to address men and women farmers' recurring problems of low productivity and competitiveness as well as cross-cutting issues of food insecurity and poverty in rural farming areas. It promoted productivity through improved technology adoption and agripreneurship. The program intensified the deployment of technologies to the ground level; spurred the agroenterprise potential of farmers; and promoted integrated, diversified, and intensified farming, and varied rice and rice-based sources of income. RiceBIS serves as a convergence point for government programs including the Department of Agriculture's (DA) New Thinking for Agriculture in terms of modernization of agriculture and consolidation of smallholder farms to bring about economies of scale.

The program has five projects: (1) strategic communication (StratComm); (2) community engagement (CommEngagement); (3) capacity building; (4) rural agroenterprise development (AgroDevelopment); and (5) monitoring and evaluation. StratComm inculcates better mindsets, attitudes, and behaviors among farmers in the target communities toward agroenterprise development. CommEngagement organizes them into clusters for unified and efficient production, and collective marketing.

Capacity building empowers them with technical, managerial, and entrepreneurial skills while under AgroDevelopment, committed farmers are assisted on entrepreneurship, product development, and market linkage. Monitoring and evaluation captures farm-level data through baseline and end-season monitoring surveys. All these components interplay to carry out essential services that are critical for smallholder farmers to increase their productivity and income. The RiceBIS program was implemented to increase household income by 25% through the following: (a) an increase yield by 1t/ha in irrigated and 0.5t/ha in rainfed areas; (b) to reduce unit cost to P8/kg and postharvest (PH) losses to 12%; and (c) to develop one to two rice-based enterprises.

RiceBIS had two phases of implementation. First phase was carried out beginning in 2017 wherein eight RiceBIS communities were established with 50 farmer-clusters covering about 900 hectares and 807 farmer-members. With additional funding from the Department of Agriculture-Bureau of Agricultural Research (DA-BAR) in 2020, phase two and expansion sites were launched. The program then reached out to eight more provinces, 15 sites, 105 farmer-organizations, and 164 farmer-clusters covering 6,696 farmers, and 8,663 hectares of rice farms. Existing farmer organizations were tapped as clusters to facilitate agroenterprise development (AED). From 2017 to 2022, the program organized 23 rice-based farming communities comprising 214 clusters, involving 7,503 farmer-members cultivating a total of 9,563 hectares; and trained 7,503 farmers through capacity-building and business development activities.

Farmers in Phase 1 irrigated areas averaged 5.20t/ha in 2022 dry season (DS), which is 12% higher than the baseline yield of 4.63t/ha. Unit cost fell from P12.74/kg (baseline) to P10.29/kg. Harvest in 2021 wet season (WS) was 4.69t/ha, which is 0.53t/ha higher than the baseline yield of 4.16t/ha. Unit cost dropped to P9.57/kg from P13.69/kg. Phase 2 yields increased by 8% and 2% in 2022 DS and 2021 WS, expansion sites produced 6% and 13%, respectively. To reduce postharvest (PH) losses to 12%, RiceBIS focused on mechanizing harvesting, piling, and threshing operations, which account for 4.29% of the 16.47% total PH losses. In 2021 WS and 2022 DS, PH losses from harvesting to threshing were at 3.10% and 2.49%, which are lower by 4.29% than the baseline level.

The communities in Phase 1 achieved a 0.15% change in real income due to improved rice production and rice-based agroenterprises such as brown and pigmented rice, inbred seed production, milled rice trading, and custom service provision, among other ventures. Income in areas under Phase 2 grew by at least 30%—more than 100% in the expansion sites. Twenty-three RiceBIS communities and 214 rice clusters were established this year. Yield-enhancing technologies such as high-quality seeds, and nutrient/water management were successfully demonstrated, alongside cost-reducing innovations such as mechanization of planting and harvesting operations. Strategic communication plans and information, education, and communication (IEC) materials such as farm record books were produced. RiceBIS production clusters covering 2,483ha were formed across Phases 1, 2, and the expansion sites, with extensive farmer training, organizational development, and management initiatives undertaken. Two profitable agroenterprises were developed and technological advancements were prominent, including the development of a mobile application for database management and geo-tagging.

HIGHLIGHTS OF ACCOMPLISHMENTS

Objective 1: To establish partnership with farmers' organizations for unified production and agroenterprise development (AED)

A Site Working Group (SWG) was organized in each of the 23 RiceBIS communities, composed of government and private organizations such as DA-Regional Field Offices (RFOs), Office of the Provincial Agriculturist (OPAg), local government units (LGUs), Philippine Center for Postharvest Development and Mechanization (PHilMech), Department of Agrarian Reform (DAR), Land Bank of the Philippines (LBP), National Irrigation Administration (NIA), National Food Authority (NFA), Cooperative Development Authority (CDA), Agricultural Training Institute (ATI), academe, and some traders and millers. The SWG provided the base of support in catalyzing the AED process and met quarterly to talk about project updates, development needs, and other services.

The RiceBIS community adopted a tripartite structure: PhilRice, its partner agencies, and farmers signed a Memorandum of Understanding. PhilRice provided technical assistance and seeds, while partner agencies facilitated farmers' access to fertilizer and other agricultural inputs, technology, credit, and support services. The farmer-clusters performed the ground implementation from production to processing to marketing. To help ease the COVID-19 pandemic restrictions, community development facilitators were deployed in the targeted sites, and cluster leaders coordinated activities within the cluster.

Objective 2: To enhance farmers' capacity on production and processing, organization building and management, and agripreneurship

The training program for farmer-clusters covered technical, organizational, and entrepreneurial aspects. The PalayCheck System was the first training topic introduced to level up farmers' yields and produce the needed surplus for collective marketing. A total of 557 farmers trained in Phase 1; 1,951 in Phase 2; and 1,451 in the expansion sites. The training aimed to guide leaders and members into improving their production practices as well as entrepreneurial and management skills. The trained farmers greatly contributed to the organizational effort of pursuing collective marketing. Coaching sessions through regular consultation meetings were conducted as well, which enabled farmers to link and deliver products to prospective markets.

Objective 3: To increase yield by 1t/ha (irrigated) and 0.5t/ha (rainfed) by applying yield-enhancing technologies

The program promoted these technologies: (a) use of high-quality seeds; (b) better nutrient management; and (c) good water management. These technologies were emphasized during training and coaching activities, and showcased in the techno-demo farms. In Phase 1, average yield shot up from 4.63t/ha (baseline) to 5.20t/ha in 2022 DS; from 4.16t/ha (baseline) to 4.69t/ha in 2021 WS. Yields also climbed in Phase 2 sites. Farmers in the expansion sites benefited from average yield increments of 0.21t/ha in DS and 0.45t/ha in WS (irrigated and rainfed ecosystems). Field days and/or farm walks were conducted to showcase the effects of high-yielding technologies, with more than 1,000 farmers in attendance.

Objective 4: To reduce cost of production to P8/kg by applying cost-reducing technologies

The unit cost of production of farmers in Phase 1 was reduced to P10.29/kg (2022 DS) and P9.57/kg (2021 WS) from the baseline level of P12.73/kg and P13.69/kg in 2017 DS and 2016 WS, respectively, partly through their higher yields. Phase 2 farmers also reduced their unit costs. In irrigated areas, average cost was P12.42/kg in 2022 DS, lower than in 2020 DS. In rainfed areas, cost also went down.

Farmers in the expansion sites spent P13.38/kg in 2022 DS and P11.91/kg in 2021 WS, lower by 12% and 23% than the baseline unit costs. The use of combine harvesters contributed to the lower cost. All farms in expansion sites also reduced their spending. In 2021 WS and 2022 DS, PH losses from harvesting to threshing were at 3.10% and 2.49%, respectively (baseline level of 4.29%).

Objective 5: To develop 1-2 viable and profitable rice-based enterprises for additional income.

The enterprises included marketing of milled rice, pigmented and unpolished rice, and inbred seed production. Farmer groups that acquired farm machinery from DA-PHilMech and DA-RFOs provided custom hiring services. Four market linkages/partnerships were established: Mayani PH, Nutridense Food Manufacturing Corporation, Pangasinan Government Employees Multipurpose Cooperative, and FV Dysico Rice Mill, to provide farmers greater access to market opportunities. Farmers' annual real net income was increased.

Photo Documentation



Cluster meeting in (a) Alfonso Lista, Ifugao and (b) RTRomualdez, Agusan del Norte



(a) Fish-processing training for women members in Bayambang and (b) Purchase of fresh *palay* for milled rice in RTRomualdez



Field walk in (a) Castillejos, Zambales and (b) Gerona, Tarlac