



# FEED <sup>THE</sup> FUTURE

The U.S. Government's Global Hunger & Food Security Initiative



## FEED THE FUTURE BANGLADESH RICE AND DIVERSIFIED CROPS ACTIVITY FINAL PERFORMANCE REPORT: SHARING EVIDENCE AND INSIGHTS

JULY 13, 2016, TO DECEMBER 12, 2021



**USAID**  
FROM THE AMERICAN PEOPLE



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JULY 13, 2016 – DECEMBER 12, 2021

AGREEMENT NUMBER: AID-388-A-16-00002

AGREEMENT OFFICER REPRESENTATIVE

USAID: JACOB MORRIN

CHIEF OF PARTY: CUAN OPPERMAN

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# ACRONYM LIST

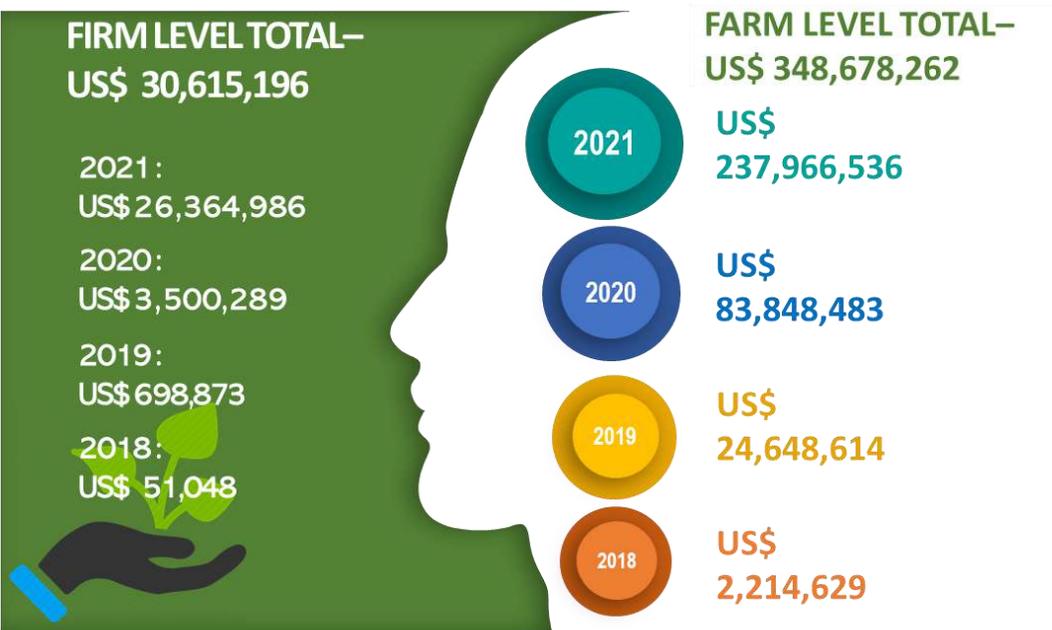
|           |   |
|-----------|---|
| APS       | Annual Program Statement  |
| BBS       | Bangladesh Bureau of Statistics   |
| BSCL      | Bombay Sweets & Co. Limited   |
| CSISA-MEA | Cereal Systems Initiative for South Asia - Mechanization Enhancement Activity |
| CLA       | Collaborating, Learning, and Adapting   |
| EMMP      | Environmental Mitigation & Monitoring Plan                                    |
| EOI       | Expression of Interest  |
| FTF       | Feed the Future   |
| GAP       | Gender accelerator program  |
| Ha        | Hectare   |
| HYV       | High Yield Varieties  |
| ICT       | Information and Communication Technology                                      |
| KSA       | Konika Agro Seed  |
| LOA       | Life of Activity  |
| MEL       | Monitoring, Evaluation, and Learning  |
| MFI       | Microfinance institution  |
| MSME      | Micro, small-, and medium-sized enterprise                                    |
| MT        | Metric Ton  |
| NCPL      | Northern Consumers Private Limited  |
| PAL       | Partex Agro Ltd   |
| PCL       | Petrochem Ltd   |
| PS        | Private Sector  |
| RDC       | Rice and Diversified Crops Activity   |
| SME       | Small- and Medium-Scale Enterprise  |
| UOMCS     | Uzirpur Organic Multipurpose Co-operative Society Ltd.                        |
| USAID     | United States Agency for International Development                            |
| USG       | United States Government  |
| ZOI       | Zone of Influence   |

# SUMMARY PROGRESS

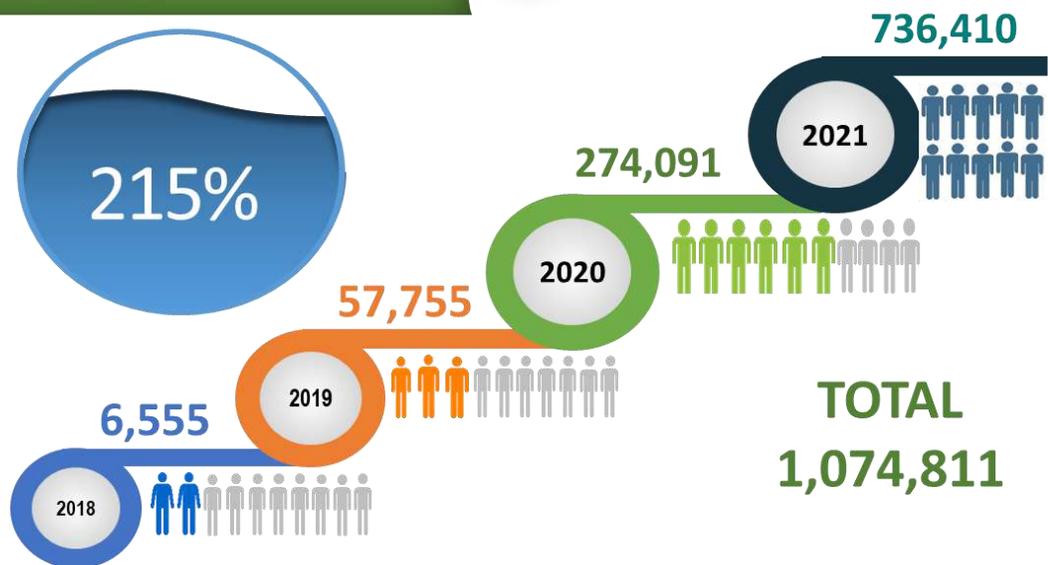
INVESTMENT (US\$)



ANNUAL BUSINESS



ACCESS OUTREACH



# I EXECUTIVE SUMMARY

## I.1 GOALS AND OBJECTIVES

The USAID-funded Feed the Future (FTF) Bangladesh Rice and Diversified Crops (RDC) Activity increased incomes and improved food security and nutrition in 21 southern Bangladeshi districts included in the FTF Zone of Influence (ZOI) through systemic market changes that promoted a diversified farming system based on intensified rice production and the introduction of higher-value, nutrient-rich crops. Rice intensification allowed farming households to secure greater quantities of affordable rice, to transition to profitable and diversified rice-based cropping patterns, and to generate off-farm income opportunities. These outcomes positively impacted food security by increasing and diversifying incomes, improving availability and access to nutrient-rich crops, and improving resilience to economic shocks and natural disasters (such as Cyclones Amphan, Bulbul, Yaas, and Nargis). RDC reached its goals through facilitative interventions and market sector partnerships, and enhancing and expanding private sector engagement that created scalable market system impacts, ultimately benefiting rural households and expanding opportunities for women and youth. Furthermore, RDC integrated its activities to other USAID-funded programs.

RDC's anticipated results were as follows:

- 500,000 farmers in the FTF zone with access to new and improved products, services, and market channels
- 50 percent expansion of commercial outreach in the FTF zone of production and post-harvest-related inputs and services
- 50 percent expansion of commercial procurement by collaborating companies in the FTF zone.

Against these anticipated results, RDC achieved the following:

- 1,074,811 farmers in the FTF zone with access to new and improved products, services, and market channels. ***A 215 percent achievement over the targeted 500,000 beneficiaries.***
- 100 percent of districts (21 districts) and 88 percent of sub-districts (out of 138 sub-districts) expansion of commercial outreach.
- 71 percent of districts (out of 21 districts) and 36 percent of sub-districts (out of 138 sub-districts) expansion of commercial procurement by collaborating companies.

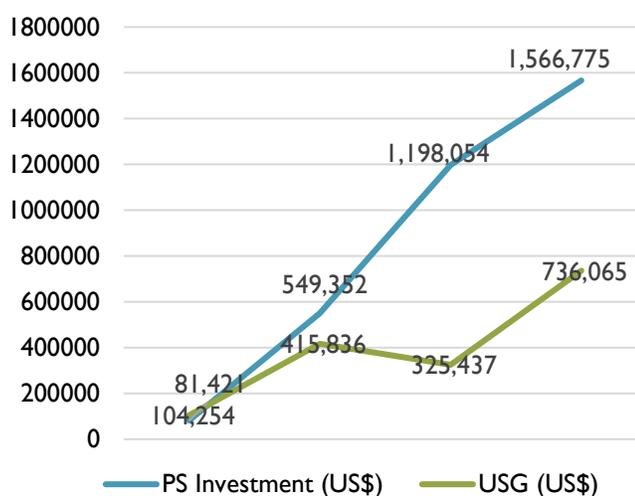
## HIGH-LEVEL OUTCOME SNAPSHOT

### **Agriculture and Incomes**

Over the Activity period, RDC facilitated 80 interventions through 43 private partners, covering inputs (e.g., seeds, crop protection products, and micronutrients); procurement (e.g., grain and seed); mechanization; information, communication, and technology (ICT); and access to finance. Under the collaboration, private sector companies distributed improved inputs and transferred production technology to producers, procured grain for food processing, and sold agriculture machinery to promote mechanization services and established banking services for beneficiaries.

It is important to note that activities were curtailed by the advent of COVID-19 in March 2020 (with a hard lock-down only terminating in August 2021) but continued and thrived based on the strong collaborative

nature of the Activity and the mature and productive relationship the Activity established with the private sector. RDC invested \$1.58 million U.S. government (USG) funds to facilitate 80 interventions, leveraging an additional private sector investment of \$3.39 million (fund ‘matching’). This included \$2.56 million in cash contribution and \$0.83 million in kind contribution. Over the life of activity (LOA), private sector investment increased steadily while USG funding reduced. In FY2021, however, private partner investment decreased because of COVID-19, whereas USG facilitated additional resource to stimulated private partner business. USG spending increased 2020/21 slightly, as the Activity opened a specific funding window to address COVID-19 mitigation measures<sup>1</sup>.



**Figure I: Investment Pattern: Private Sector Versus U.S. Government**

Through these investments, private companies sold 3,104 metric tons (MT) of improved seed and planting materials for rice, maize, mung bean, sesame, groundnut, lentil, and mustard. They also supplied 2,234 MT of non-durable inputs (e.g., crop protection products and biofertilizers) and 316 durable equipment (primarily combine harvesters and rice transplanters) in the FTF zone. As a result of Activity support (financial and technical guidance), **private companies earned an additional \$30.61 million (roughly 38 percent from non-durable inputs, such as bio fertilizer and pesticide; 28 percent from durable equipment; 25 percent from seed and planting materials and 9 percent from financial support). Farmers earned an additional \$348.68 million from grain sales, indicating approximately \$378 million of new income generated from the USG investment.**

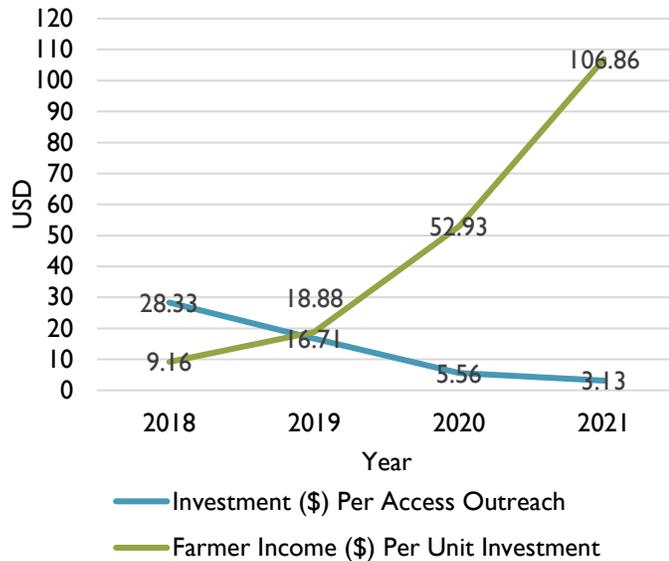
Based on inputs, services, and market systems established over the LOA by RDC-supported private companies, the Activity reached **1,074,811 people — a 215 percent achievement over the targeted 500,000 beneficiaries.** Among the outreach participants, 954,106 were producers involved with cultivating RDC crops, 114,836 farmers were involved with cultivating other crops, and 5,869 were value chain actors. Value chain actors benefited from income generated from selling seeds, crop protection products, biofertilizers, mechanization services, and acting as micro-merchants, improving financial access to farmers in collaboration with the formal banking sector. Moreover, participant producers also benefited from improved quality inputs, which helped increase their farm productivity and incomes. Over the LOA, participating producers sold 1,340,034 MT of commodities and received \$348,678,262 from grain sales.

The results broken down by value chain include the following:

- Rice: 959,801 MT, worth \$257.26 million
- Maize: 357,800 MT, worth \$73.36 million
- Sesame: 12,464 MT, worth \$10.3 million
- Mung bean: 6,320 MT, worth \$5 million
- Sunflower: 940 MT, worth \$500,000
- Lentil: 981 MT, worth \$803,382
- Groundnut: 1,712 MT, worth \$1.42 million

<sup>1</sup> <http://www.acdivoca.org/2021/04/supporting-farmers-access-to-inputs-in-bangladesh-during-covid-19/>

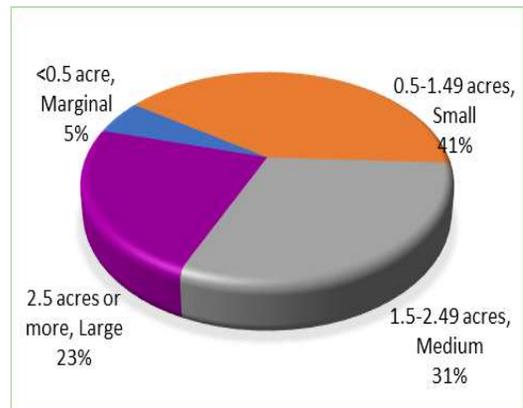
Figure 2 shows the results of Activity outreach and its impact on farmers' incomes over the past three years. The cost of access outreach was \$28 in 2018 and gradually reduced to \$3 in 2021. During the same period, farmers' incomes dramatically increased from \$9 to \$107 (an average of \$65 per farmer). The breakeven point occurred in FY2019. This reflects the results of a successful market systems development approach, as private sector companies increased their investments in scaling products and services into the FTF ZOI thereby reducing USG investment and creating more efficient and cost-effective service delivery. More cost-effective delivery reduced total product costs and increased the profitability of farmers.



**Figure 2: Access outreach and farmer income per USD investment**

Based on the Annual Performance Survey (APS), which adopted the classification system used by the Bangladesh Bureau of Statistics (BBS)<sup>2</sup>, 72 percent of farming households have access to small to medium landholdings (see Figure 3). The study also found that 5 percent of households had marginal landholdings. In comparison, 23 percent were large landholders. All beneficiaries fall into the USAID definition of “smallholder farmers” (below five hectares).

The 2021 APS results indicates that 51 percent, 50 percent, and 41 percent of producers come from small and marginal categories for maize, rice, and sesame. Larger farmers prefer to cultivate groundnut, mung bean, lentil, and mustard. Additionally, women's participation in farming activities of RDC-targeted crops was four percent, reflecting gender division of roles in farming activities, societal norms that discourage women from cultivating field crops, and gender inequalities in access to and control over productive assets, such as land. However, as shown by the women’s empowerment learning intervention conducted by the Activity, RDC has positively influenced the division of roles in production, increased women’s participation in value-adding and decision-making roles across the different crops targeted by the Activity.<sup>3</sup>

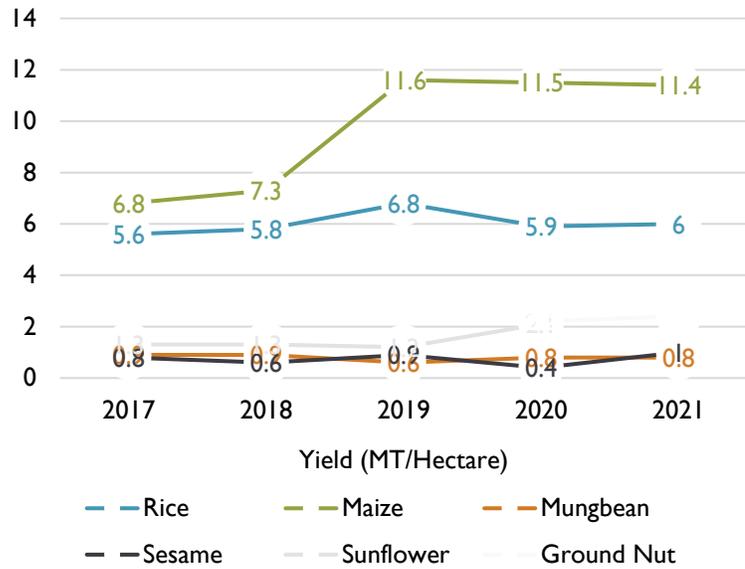


**Figure 3: Distribution (%) of producers based on landholding**

<sup>2</sup> BBS landholding classification: <0.5 acre, Marginal; 0.5-1.49 acres, Small; 1.5-2.49 acres, Medium; 2.5 acres or more, Large

<sup>3</sup> <http://www.acdivoca.org/wp-content/uploads/2021/12/ACDI-VOCA-RDC-Final-Report.pdf>

Over the LOA, yield performance increased for most of the targeted crops (see Figure 4). Maize yield increased 68 percent because of access to high-quality hybrid seed varieties. Sesame increased by 25 percent and rice by seven percent. However, mung bean yields decreased by 11 percent, likely because of a lack of high-quality seed varieties and climatic conditions at harvest, such as flooding.



**Figure 4: Crop yield performance by year**

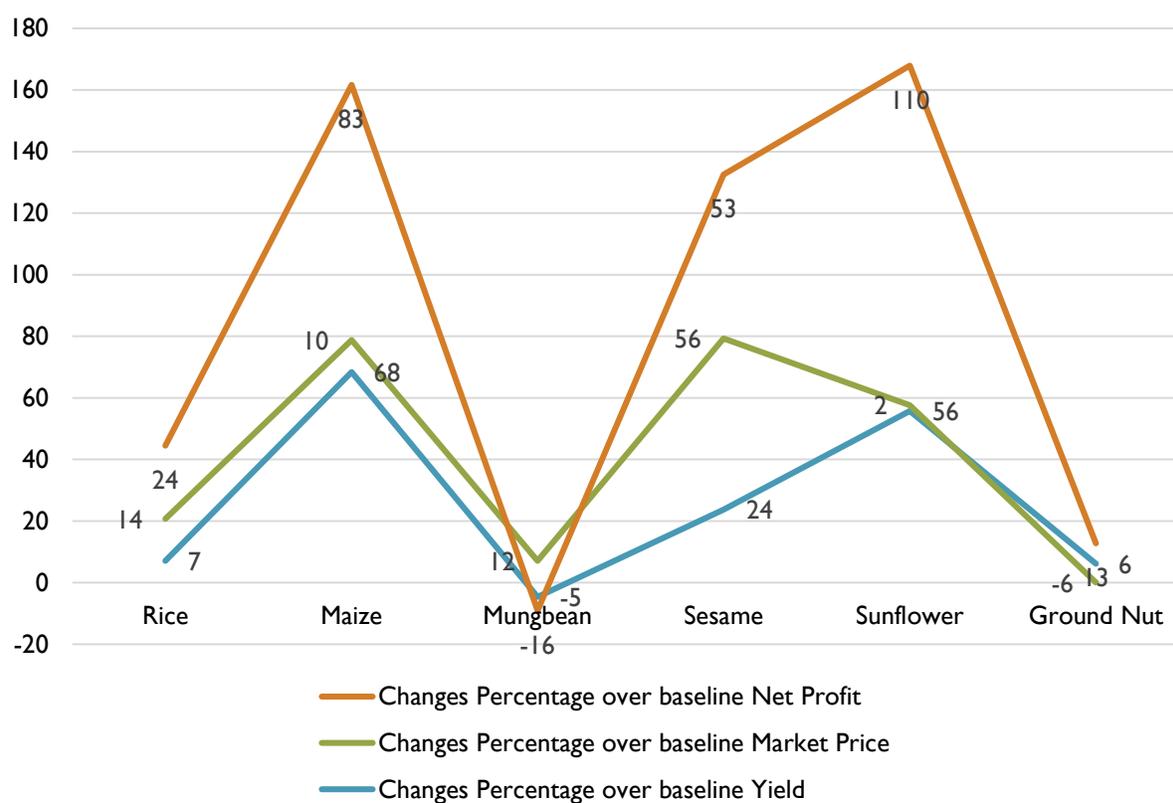
**Table I. Net profit in USD per hectare by crop**

|           | FY2017<br>(Baseline) | FY2018   | FY2019   | FY2020     | FY2021   |
|-----------|----------------------|----------|----------|------------|--|
| Rice      | \$624.10             | \$699.20 | \$498.80 | \$790.10   | \$772.50   |
| Maize     | \$646.60             | \$781.70 | \$908.80 | \$1,268.10 | \$1,182.50   |
| Mung bean | \$475.10             | \$419.00 | \$236.20 | \$391.50   | \$398.70   |
| Sesame    | \$217.80             | \$172.40 | \$692.60 | \$61.50    | \$333.70   |
| Sunflower | \$333.10             | \$332.40 | \$253.00 | \$700.40   | Sunflower activities were dropped in 2021 due to a lack of availability of seed. |
| Groundnut |                      |          |          | \$1,200.50 | \$1,353.20   |

Table 1 reflects the LOA net profit per hectare per crop variety for participants. Net profit over baseline increased the most for sunflower (100 percent), followed by maize (83 percent), sesame (53 percent), and rice (23 percent). Mung bean was the only crop that showed a decline over baseline (16 percent), primarily because of flooding and reduced access to improved seed, which, again, was related to flooding in seed production areas.

**Table 2. Grain market prices in USD per MT over LOA**

|           | FY2017<br>(Baseline) | FY2018   | FY2019    | FY2020   | FY2021          |
|-----------|----------------------|----------|-----------|----------|-----------------|
| Rice      | \$249.70             | \$255.10 | \$199.10  | \$251.30 | \$283.90        |
| Maize     | \$190.60             | \$199.00 | \$170.60  | \$204.20 | \$210.40        |
| Mung bean | \$742.20             | \$620.30 | \$719.20  | \$776.10 | \$828.70        |
| Sesame    | \$497.90             | \$602.90 | \$1044.70 | \$849.90 | \$774.80        |
| Sunflower | \$536.90             | \$541.50 | \$484.00  | \$547.00 | Dropped in 2021 |
| Groundnut |                      |          |           | \$849.60 | \$797.70        |



**Figure 5: Comparative status in changes in yield, market price, and profit**

Changes in grain market prices over the LOA are reflected in Table 2. Sesame had the most significant market price increase of 55 percent, primarily due to a surge in exports. Rice, maize, and mung bean prices increased between 10 to 13 percent over baseline.

Figure 5 shows the relative changes of yield, market price, and profit targeted value chains, with positive changes reflected for all except mung bean. The lack of change for mung bean is likely because of the reduction in productivity.

### Accessing Loans (See lessons learned section for more detail on access to finance activities.)

The APS data showed the following:

- 48.95 percent of the producers took a loan within the last year.
- The average loan size was approximately \$924 per loan receivers.
- The average household loan was approximately \$349.
- Producers of different crops accessed loans proportionately.
- Females accessed loans at a significantly higher rate than men (80.95 percent).
- The average loan size for male producers was 40 percent higher than female producers.
- The average loan size for males was 40 percent higher than for women.

One in three loan recipients (33.17 percent) indicated they acquired loans to purchase agricultural inputs, including inputs required for improved management practices. Other reasons mentioned for accessing loans included family expenditures (24.25 percent), buying assets or land (12.87 percent), or other assets (9.43 percent). Nearly nine percent (8.84 percent) of households accessed loans to purchase agricultural equipment. No notable difference was observed in the reasons for acquiring loans based on producer or crop type.

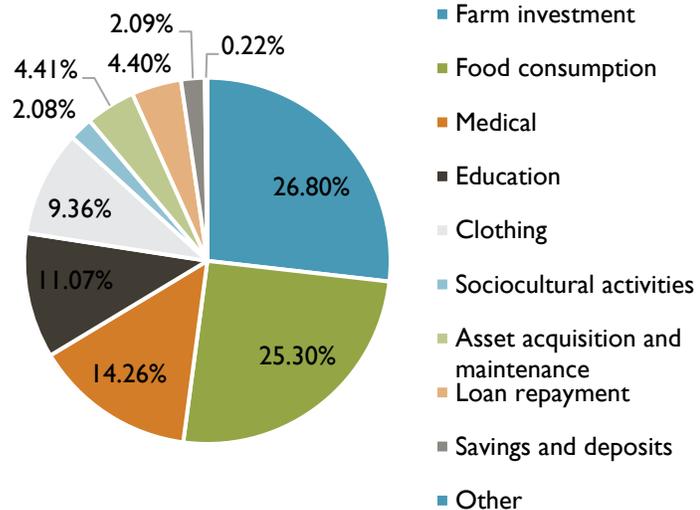
### Income Changes

Changes in agro-farm income from last year to the prior year included:

- 44.43 percent increased income
- 26.86 percent decreased income
- 28.70 percent had no income change

Figure 6 shows how households allocated their farm income. The majority (77.44 percent) spent farm income on farming costs for the next season, maintaining food consumption, medical expenses, and education expenses for their children. Respondents were asked to rank the priority use for farm income, with the following results:

- farm investment (26.80 percent)
- maintaining household food consumption (25.30 percent)
- medical expenses (14.26 percent)
- educational expenses for children (11.07 percent)



**Figure 6: Household's Allocated Farm Incomes**

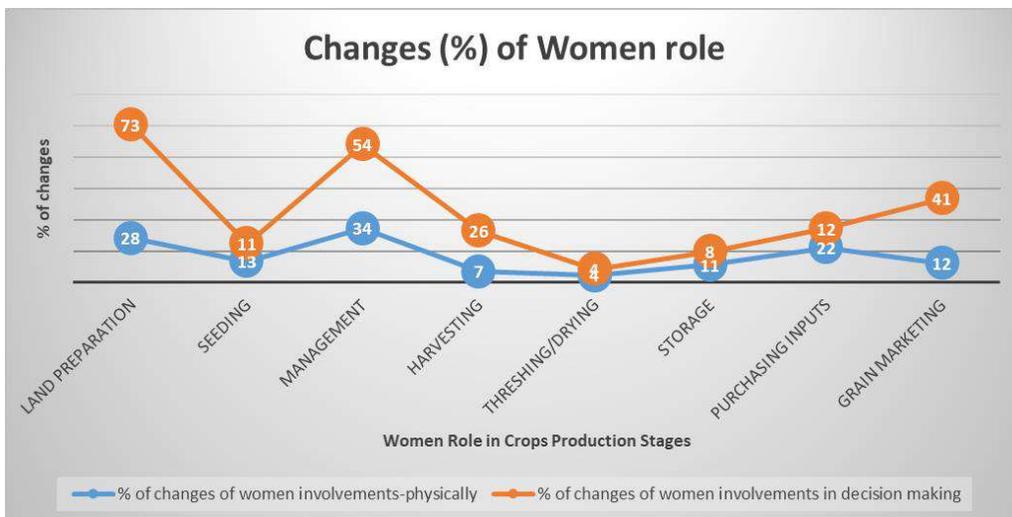
Other priority areas of expenses included clothing, sociocultural activities, asset acquisition and maintenance, loan repayment, and savings and deposits. Very few respondents indicated that miscellaneous expenses were a priority.

### Women's Empowerment

The APS also asked questions to understand "changes of women's engagement in agricultural activities in terms of physical engagement labor and in their participation in decision making" over the last two to three years. As shown in Figure 7, women's participation or physical engagement in production activities has increased over the last two to three years and across all stages of production. The largest percentage changes

are observed in land preparation (28 percent), management practices (34 percent), and purchasing inputs (24 percent). This upward trend in women’s participation in production activities shows that women are playing a more active role in the production processes, which, in turn, makes their contribution in income important.

With respect to women’s participating in decision making, data from the APS showed that men continued to dominate household decision making related to farming, except in post-harvest management, where nearly half (47.6 percent) of



women were involved. Less than a third of the respondents mentioned that consultative decision making between men and women happened while selecting technologies. In the case of technology adoption, males alone made household decisions as follows: pest and disease management (71.9 percent), soil-related technologies (71.8 percent), and cultural practice-related technologies (71.3 percent). Approximately one percent of households confirmed that women alone made decisions in this area. As shown in Figure 7, women are actively participating in decision making in areas like land preparation and management and grain marketing. This is reassuring because access to information and forward market interventions targeted women through various channels and, as such, improved their roles. The analysis from APS is reconfirmed through targeted and structured qualitative research on understanding the improvement in Women’s Economic Empowerment parameters.<sup>4</sup>

Qualitative evidence from gender learning studies conducted by RDC supports positive contributions of the Activity to women’s participation in decision making, economic activities, and value-adding roles in the value chains targeted by RDC. For example, 71 percent of the respondents who participated in the women’s empowerment learning study conducted by Light Castle Partners for RDC agreed that RDC has played a pivotal role in influencing the division of roles in farming activities. Specifically, the data showed that participation of women in decision making, economic activities, and value-adding roles increased for 50 percent of the study participants (total sample of 67). This increased participation of women in economic activities was attributed to RDC’s facilitative activities with partners to promote gender-inclusive business models and practices as well as gender-sensitive information dissemination platforms and mechanisms. Women’s increased participation in economic and value-adding activities has led to an increase in their revenue and income. However, this has also increased their workload. According to the study participants, their workload can be significantly reduced through mechanization and other labor-saving technologies, such as harvesters, tillers, irrigation, and sowers.

Fifty-seven percent of the households that participated in the women’s empowerment learning activity observed that income is pooled in their households. Major household expenditure categories include health, education of children, food and clothing, and investment in crops. The study found that control over income

<sup>4</sup> <http://www.acdivoca.org/wp-content/uploads/2021/12/ACDI-VOCA-RDC-Final-Report.pdf>

allocation decisions is gendered and based on the expenditure category. Women are more likely to be responsible for decision making on the allocation of income to health and education expenses, while food, clothing, and crop investment expenditure decisions are mostly dominated by men.

Another learning activity conducted on the gender accelerator program (GAP)<sup>5</sup> implemented by RDC also shows that the Activity has empowered women entrepreneurs in RDC's project zone by building their skills in entrepreneurship, leading to increased capacity to make business and household decisions. The results include increased income from their businesses, greater self-confidence, and increased respect within their communities as well as increased support from their spouses and families and greater equity in the division of household and childcare responsibilities.

### **Nutrition and Food Security Impacts**

RDC had a significant impact on dietary quality and food security over the course of the Activity. Over the four-year period from 2018 to 2021, household diet diversity increased from 6.2 to 6.9 food groups. Women also benefitted from this improvement, with average minimum diet diversity for women increasing from 4.7 groups in 2018, with an estimated 43 percent of women not consuming an adequately diverse diet, to 5.2 food groups in 2021, when we estimate that 66 percent of women were able to achieve adequate dietary diversity. Besides this significant time effect, we also find that increases in gross margin from RDC-supported crops had a significant impact on improvements in diet quality. For each quintile of increased income, a household was able to earn through sale of an RDC-supported crop, the adult female of that household was five percent more likely to consume a minimally adequate diet. Improvements in women's dietary quality were driven by increased consumption of food groups that were not within the RDC scope of investment – particularly fruits, vegetables, dark leafy greens, and meats, especially fish. This indicates that the primary means by which RDC improved diets was through income, where households had increased purchasing power to afford more diversity in their diet.

While COVID-19 had an impact on food security across the country, participation in RDC had a shielding effect, with households experiencing a mean increase in both household and women's dietary diversity in both 2020 and 2021. However, households were not immune. An internally conducted Activity study observed that the COVID-19 pandemic has negatively impacted one-third of households in terms of food security and nutrition, with 29.66 percent of respondents reporting a decrease in the quantity of food they consumed and 33.77 percent reporting reduced food diversity. This negative impact is likely due to pandemic-related movement restrictions and market closures, which made food purchases difficult. Most households experienced no change in food security (66 percent) or diet diversity (59.3 percent) during the pandemic. Some households experienced increased food security and diet diversity during the pandemic, with 4.34 percent reporting increases in the quantity of food they consumed and 6.96 percent reporting increases in the diversity of their diets. These impacts are likely attributable to income brought back to the households, as over two million Bangladeshis returned from overseas work during the pandemic. In general, food insecurity was low in the study region. Only nine percent of respondents indicated they were worried about having enough food for household consumption in the past four weeks before the interview day. Of them, 81.85 percent of respondents faced this issue only once or twice (rarely), 13.01 percent faced it three to 10 times (sometimes), and 4.45 faced this crisis more than 10 times in the past four weeks (often).

Similarly, on a general basis (pandemic aside) only eight percent of respondents indicated that they were concerned about not having enough food stocks or the ability to acquire enough food to meet household consumption needs. Out of those, 77.54 percent said they faced this situation rarely, 15.94 sometimes, and 5.4 percent often during the last four weeks. These results indicate that most RDC participants were not vulnerable to food insecurity. Likely, they produce enough to meet household consumption and even have a surplus that could be sold to maintain quantity, quality, and diversity of food consumption.

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<sup>5</sup> <http://www.acdivoca.org/wp-content/uploads/2021/12/ACDI-VOCA-RDC-Final-Report.pdf>

The study results depicted household members of the interviewed producers consumed an average of 2.51 food items. Among these, household members of male respondents (3,285) consumed more food items than household members of female respondents (2.41 types of food). There was no significant difference between household diet diversity for adult versus youth households. There was a positive correlation between diet diversity and land holding, with marginal landholding households consuming on average 2.41 food groups in the past 24 hours as well as small, medium, and large categories of landholding households consuming 2.44, 2.55, and 2.60 types of food, respectively.

## 1.2 HOW RDC HAS "MOVED THE NEEDLE" ON THE STAPLES MARKET SYSTEM

The Activity commissioned an outcome harvesting exercise with support from the Canopy Lab to help answer the questions below.

- Which business models promoted by RDC have resulted in systemic changes?
- What are the scope and characteristics of these systemic changes?
- What influences contributed to these systemic changes?

Upon further exploring agent- and relationship-level characteristics in agro-input distribution and advisory services, agri-machinery and integrated services, and digitalization of agribusinesses and financial inclusion through a two-phased approach, the team developed an initial list of 133 outcome statements. They then refined them to 12 outcome statements representing the most significant and evidence-driven impacts of the activity. Note that the substantiation and final outcome harvest report are still being developed, and we should be cautious of drawing population-level conclusions from this information. Below are some of the most important takeaways from the preliminary outcome harvest exercise.

### 1. A focus on services and buying down the risk of business model expansion has led to significant firm growth.

As a result of Activity support, partner companies such as Metal went from selling 17 combine harvesters in 2018 to 81 in 2021. Additionally, KONIKA expanded its business by almost 300 percent by offering integrated services (seed, Trichoderma and buy back arrangements) with RDC support. UOMCSL has more than doubled its business growth by adopting a community-based service provider model to expand improved rice seed into rural areas.

This business growth is directly attributed to online and offline marketing support from the Activity. Additionally, the Activity helped partner companies develop more integrated services and a trader-driven procurement model by developing collaboration between firms. Partner companies have already expressed interest in scaling these successful models post-Activity and supporting, along with government subsidies, in mechanization.

### 2. The Activity's interventions have increased consumer demand for zinc rice.

As a result of the Activity's support, production, and sales of zinc rice in the FTF ZOI have significantly increased. For example, Ali Seeds went from procuring 50 to 60 MT of zinc rice seed to 130 to 140 MT of zinc rice seed with RDC support. Additionally, with RDC support, Ali seeds sold 57 MT of zinc rice in 2021. Increased consumption of zinc rice among farmers resulted from RDC's awareness-building programs, including NutriChamps. Through this sensitization, larger institutional buyers, such as Agora, Labaid, Schwapno, Chaldal, and Reneta, all demonstrated interest in purchasing zinc rice grain from Ali Seeds. Consumer demand is still low and scattered in rural areas; however, continued mass consumer awareness by the public and private sector as well as a stronger

focus on the commercialization of zinc rice in the retail market holds tremendous potential for expansion.

### **3. The Activity has supported financial service providers to expand outreach to rural areas.**

As a direct result of Activity support, banks tested and expanded a range of financial services targeting rural areas in the FTF region, with 55,000 new accounts created, BDT 12.9 million deposited, and BDT 500,000 disbursed in loans. Twenty-eight banks are directly offering agent banking services, with a rapid rise since the Activity's inception. Agri-value chain actors are being engaged as agents and micro-merchants, with farmers and agents having confirmed a growth in formal banking services in rural areas and new farmers demonstrating interest.

For example, partner firm Bank Asia established a micro-merchant model with Activity support. Bank Asia plans to expand from 500 to 11,000 agents and micro-merchants to further increase financing in rural areas. According to Bank Asia, the agent banking and micro-merchant model has been instrumental in onboarding new customers, especially during the COVID-19 pandemic. It has also reduced their dependency on solely targeting urban corporate clients. The expansion plans of this model include bundling ancillary additional services via agent bank distributorships, including cash-in and cash-out to utility payments, bank account openings, savings products, remittances, fund transfers, and government bonds. With the trust and convenience that customers received from agent banks, there was a crowding in of SMEs trying to diversify their portfolios by opening agent bank distributorships. There were also new customers added every day. Now as people are seeing the benefits of utilizing agent banks as part of meeting their future financial goals, Bank Asia expects the demand for agent banking services to grow, even in hard-to-reach locations like river chars. At the close of the Activity, Bank Asia has more than 5,000 agents, which is the highest in the country.

The Activity was key in supporting the scaling up of the agent banking model and establishing the business case for micro-merchant banking. The Activity helped Bank Asia leverage an agri-input retail network to onboard micro-merchants to disburse loans and provided COVID-19 mitigation and digital tools to broaden the agent bank footprint. The success of Bank Asia's model already influenced other banks, such as Prime Bank, which recently introduced agent banking services this year<sup>6</sup>.

### **4. RDC's work improving farmers' access to information, helping actors experiment with new promotion strategies, and promoting the use of digital platforms has significantly boosted the flow of information between market system actors.**

As a result of Activity support, agro-companies are increasingly using a combination of different platforms to (1) share new information and reinforce good practices, (2) address queries, and (3) monitor farmer activities on a consistent basis. This includes a growing use of virtual platforms, such as phone calls and social media, to reinforce best practices and address any issues. The Activity's private sector partners are a key source of information for male and female farmers, which increases trust due to improved information flow and extension services.

Additionally, Activity supported promotional activities, such as Petrochem's van miking, farmer meetings, retailer point promotion, and linkages with rice millers, were found to be effective in reaching farmers and reducing risks and costs to pilot the promotion activities for private sector partner firms.

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<sup>6</sup> <http://www.acdivoca.org/2021/11/are-we-too-focused-on-access-to-credit-agent-banks-boost-resiliency-during-covid-19-pandemic/>

Lastly, the Activity supported digital platforms to help partner firms expand sales, coordinate, and transact. This includes (1) digital services to farmers, such as information sharing and promotion of products and services; and (2) streamlining processes, such as internal data and management, coordination and learning, and due diligence to improve cost efficiencies.

Throughout these examples, Activity support enabled private companies develop more inclusive value-added services (e.g., women farmer clubs targeting female farmers (Bayer). It also helped companies to continue farmer-level interactions, even during the COVID-19 period. The support also demonstrated the cost and time benefits and identified challenges to inform improvements in services being offered to farmers.

**5. As a result of RDC's efforts, a significant number of actors have crowded into the FTF zone; there's a strong likelihood that these actors will stay and continue to expand their operations.**

As a result of Activity support, partner firms have increased their presence in the FTF Zone. For example, buyers, such as PRAN, established eight “Krishi Hubs” and procured more than 4,500 MT of green mung bean from the FTF zone. Agri-machinery suppliers, such as ACI Motors, increased sales of combine harvesters by over 200 percent in the FTF zone, and e-commerce service providers, such as Chaldal, procured over 12 MT of products<sup>7</sup>. With Activity support, these companies shifted their operations from the north to the southwest due to support in strengthening supply chains, creating awareness activities for mechanization services, and supporting partner firms’ market linkages to expand procurement operations. For example, RDC introduced Chaldal to a whole new line of secondary millers and dealers in the FTF zone. This helped Chaldal understand the different varieties of rice, strengthening its supply chain and procuring quality rice to meet the demand of health-conscious Dhaka consumers during the COVID-19 pandemic. This allowed Chaldal to reduce transaction costs, while also getting closer to farm-to-fork goals.

## 2 KEY LEARNINGS

### 2.1 PROCESS-RELATED LEARNINGS

#### 2.1.1 ANALYSIS

Effective market system activities should identify and place resources in the most viable leverage points for change. In the case of the Activity (and as indicated above), this included the following: (1) more integrated service provision and mechanization; (2) agent and micro-merchant banking; (3) improved access to information for farmers through promotional strategies and digital platforms; and (4) game-changing technologies and innovations that have the potential to “disrupt” the system, such as Chaldal’s e-commerce platform. Although RDC conducted initial assessments, these should be conducted regularly and reassessed as market dynamics change. This process should be done in consultation with market actors, through broader consultations and feedback from key stakeholders, which will generate key buy-in and a commitment to gender and social inclusion and improved nutrition outcomes.

#### 2.1.2 CO-CREATION

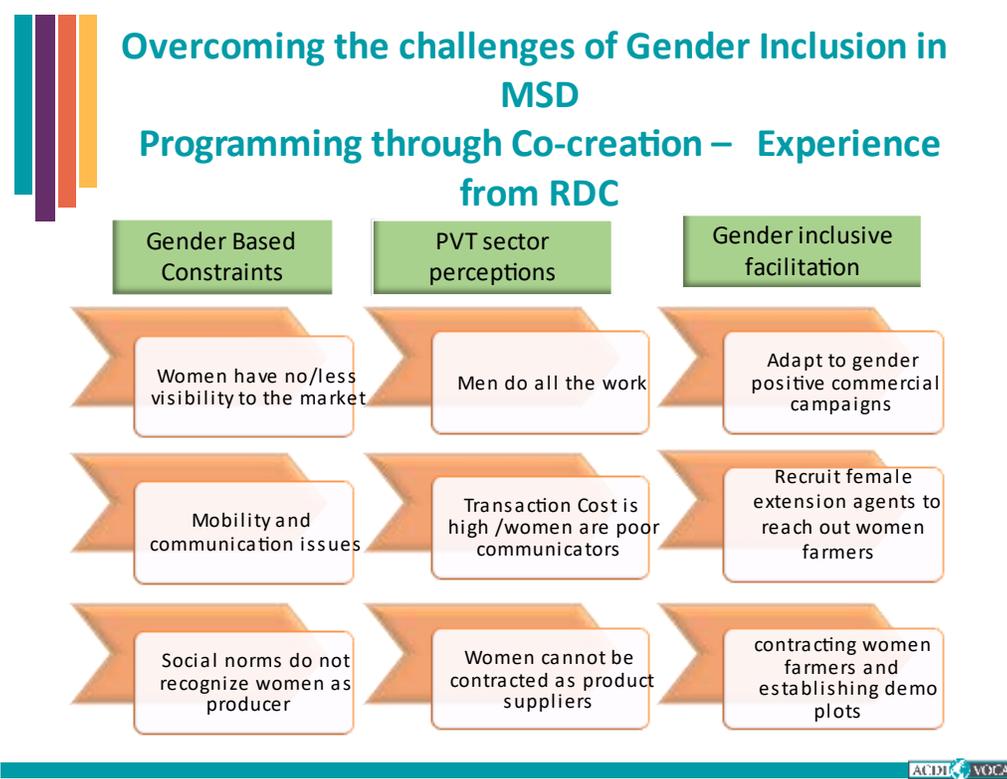
To increase buy-in and accountability of interventions, the Activity placed continuous emphasis on the co-creation process with USAID and private sector firms to ensure alignment in expectations and understanding of how the Activity will achieve results. Working with businesses to help them identify and select opportunities they might not have thought about has proven to be an impactful exercise. The key to this approach is soliciting innovative ideas from businesses rather than imposing ideas and helping assess

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<sup>7</sup> <http://www.acdivoca.org/2021/04/feed-the-future-supports-bangladeshs-largest-online-grocer-in-offering-food-rations-for-covid-19-recovery/>

capacities and incentives to support new activities while also remaining flexible and adaptive during implementation. Proposed interventions should address a root cause from the market analysis and contribute to the Activity's systemic change objectives.

Women's roles in various market contexts need to be considered and integrated within partnership activities to create more inclusive practices. Based on findings from the gender business case research, which explored the roles of women in various sectors and the perceptions limiting gender-inclusive business models and practices, the Activity co-created interventions with firms to ensure their business models were gender-inclusive and had commercial benefit. As a result of the gender-focused facilitations, partners extended their services to female producers as suppliers of crops, included female value chain actors (e.g., retailers, traders, and service providers), and targeted market campaigns for female customers of inputs.



**Figure 8. Programming through Co-Creation**

## 2.2 SCALING INNOVATIVE BUSINESS MODELS

### 2.2.1 PROCUREMENT BUSINESS MODELS:

Through procurement-related interventions, it was observed that grain selling or buying was not the primary constraint; sustaining quality was.

- **The procurement market** is constrained by limited buying, low market prices, and traders' limited working capital. This can be addressed by integrating an access to finance and a credit component within procurement operations. For example, the commodity exchange platform being piloted by Activity partner firm Chaldal and the advent of a warehouse receipts system could increase transparency in the trading system and allow traders and farmers to access much needed credit.
- **New channel creation**, such as aggregation or contract farming, cannot perform sustainably against established procurement channels. Future interventions should consider a mix of existing and new channels and how these channels may create opportunities for rural farmers. A prerequisite for the establishment of a new channel is the ability to incentivize delivery — either

through a premium paid for the crop quality or discounted inputs should requisite volumes and quality be delivered. Markets work more efficiently when incentives are in place and through those incentives farmers are encouraged to ‘step up’ and adopt improved input technologies, mechanization and improve market access.

- **Established channels** may be weak or informal but are necessary to create opportunities for farmers as entry points into new sectors. There are opportunities to enhance efficiencies in established channels.
- **End market buyers**, such as intermediaries (e.g., traders and farias), always have an intention to buy low and sell high and are less concerned with quality. Firms should engage more closely with intermediaries and develop quality incentives that could be passed through to the farm level.
- **Contract farming** was appropriate for the initial stages of sector development (e.g., improved quality seeds) or for procuring specific grain quality but not applicable for most of the Activity’s sectors or interventions, as there was no real market differentiation, specifications, or premiums paid for better quality. While different rice varieties attracted different pricing (e.g., bold grain versus fine and fragrant varieties), within those segments, there was no quality distinction; farmers were paid base prices rather than for quality improvements. Innovative business models that increase the quantity and quality requirements of buyers should be considered. Premiums paid based on volume and quality can bring about change to farmers as well as benefit and improve farm gate pricing. In part, specifications developed for the proposed trade portal/commodity exchange are the first step in this direction, as there are no commonly accepted commodity standards.

### 2.2.2 INPUT BUSINESS MODELS:

Farmers' focus often remains on the price of inputs rather than the quality or yield benefits from the improved inputs. The introduction of low-cost bio remedies (e.g., Trichoderma and inoculants) that improve yields significantly has had a relatively slow uptake because of general resistance to new technologies and supply-side issues currently being addressed. A BDT 100 investment can increase yields between 15 and 35 percent. However, when these inputs begin to scale and producers witness adoption benefits, uptake increases significantly. The significant uptake of new technologies (and an expansion of beneficiary numbers) stems in part from farmers having witnessed the improved yields in their neighbors’ fields and as a result have ‘moved’ to these inputs.

- **Push selling by dealers and retailers** is one of the major constraints for quality product marketing, where non-branded companies offer higher commissions to dealers and retailers because they do not have advertising or branding overhead costs. Quality product price points are comparatively higher and offer reduced margins to the dealers and retailers and as a result are not pushed with the same vigor which reduces higher quality crops and greater yields for farmers. An ensuing Activity could focus more on promoting brand loyalty and business behaviors, ethics, and norms, which may create a long-term business opportunity targeting supply and distribution networks. This was experienced in support of NAAFCO, which now includes a product number on every pack, and a farmer can phone in and verify that the product is genuine.
- **Closer collaboration between research institutions** (e.g., Bangladesh Rice Research Institute, Bangladesh Agriculture Research Institute, and Bangladesh Institute for Nuclear Technology) and the CGIAR groupings, such as International Food Policy Research Institute, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), and the International Maize and Wheat Improvement Center (CIMMYT) **and private firms** should be encouraged to engage more closely. Firms are often unaware of the advances these institutions have made in seed development, crop nutrition, and crop protection that could be successfully commercialized. Research should be industry- or farmer-led, as in other countries, to address specific industry (larger high oleic groundnuts) or farmer (disease or salinity tolerance) requirements. The various FTF Innovation Labs should also be utilized more. The Activity had great success working with the FTF Peanut

Innovation Lab. The Innovation Labs usually work in collaboration with local research institutions, building capacity and the latest approaches.

- **Provision of advisory services alongside input supply is** one of the best ways to create loyal customers and enhance sales. Embedded services accelerate business growth. With advances in the use of ICT and social media platforms, this becomes relatively easy to do and inexpensive. Embedded advisory services present a major market opportunity for businesses to increase profitability and for the Activity to increase its farmer outreach numbers.

## 2.3 ENGAGING WITH DIVERSE PARTNERS

The Activity has worked across many interventions and achieved its scale and development impact due to its focus on a portfolio approach that diversifies the size and type of market actor. The size of the company does not necessarily correspond with how successful an intervention is.

### 2.3.1 NATIONAL OR LARGE COMPANY:

**Interventions with national and large companies are easily scalable due to** their resources and ability to manage larger activities. However, these companies are frequently **less adaptive** because of bureaucratic decision-making processes, and development interventions may not align with core business strategies. Large firms are also frequently compartmentalized, with a siloed approach that doesn't leverage synergies between divisions.

### 2.3.2 REGIONAL OR SMALL COMPANY:

**Regional and smaller companies are often more willing to try new strategies.** They are more adaptive because of **flatter management structures**, resulting in less bureaucratic decision-making processes. The companies tend to be more responsive and flexible. However, there is **less opportunity to scale** because of limited resources, company footprint, and management capacity. These companies have an important role in piloting innovative approaches that create learnings and can be replicated and scaled by larger firms. Their local engagement and standing within communities are a positive factor that can be leveraged. These firms are also more open to joint ventures and collaboration, particularly when linking companies to banks and mechanization firms.

## 2.4 GENDER INCLUSION

- **Instilling gender-positive thinking:** The Activity facilitated and provided routine technical guidance to private sector actors/partners, resulting in shifts in perceptions about women's roles and participation in the market system, moving from seeing women as less involved and having little or no roles in value chain activities to seeing their participation in markets as vital to market growth and to Activity outcomes and results.
- **Building the business case:** Showcasing evidence-based research and demonstrating how gender-inclusive business models can benefit private sector market actors (increased profits and market expansion) are pivotal to encouraging market actors to recognize value and commit to inclusivity.
- **Improving access to information for women:** When women serve as providers (community-based service providers, trainers, and advisors.), they are more likely to reach other women value chain actors, such as farmers, suppliers, and customers, and to facilitate access to markets and information for other women. Including women service providers also resulted in a loyal customer base for input companies and committed suppliers for out-growers.
- **Scaling agent banking:** Expanding the agent bank network, especially when women are service providers, can play a crucial role in catalyzing women's adoption rates of formal financial services and reducing their dependency on informal channels for credit. More women are opening new accounts through agent banking networks, as they are more comfortable seeking these services from female agents. Increasing the number of female agents at agent banks reduces the gender gap in access to

finance, increases credit access for women entrepreneurs and producers, and, therefore, women's ability to participate in market systems.

- **Taking a targeted approach:** Gender accelerator models have boosted business planning, financial awareness, and marketing knowledge among women entrepreneurs who were previously excluded from many capacity-building opportunities. GAP graduates were more resilient to COVID-19-related shocks because of smart business planning and portfolio diversification. Results of the learning study indicated that 60 percent of women program graduates increased their business revenues.<sup>8</sup>

## 2.5 MONITORING, EVALUATION, AND LEARNING (MEL):

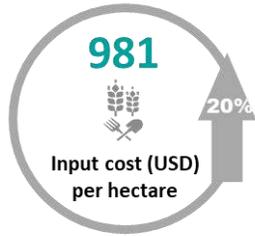
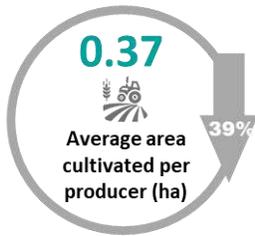
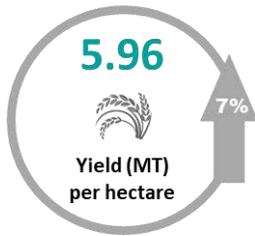
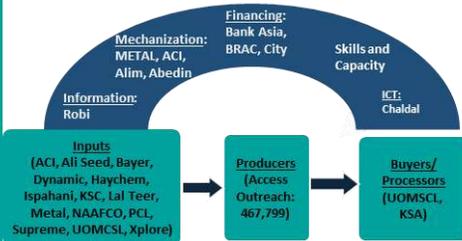
**For claiming attribution and contribution of activities,** it is necessary to have a clear understanding of what has changed, why it has changed, and the Activity's contribution toward the change pathway. The recently conducted outcome harvest exercise is a great example for other market systems development programs to follow, as it provides guidance or framing questions, a systemic change framework, and an outcome harvest methodology with which the findings are based. Rather than focus on all possible changes, activities should focus on a few outcomes and explore the depth of those changes to discover an activity's possible attribution toward creating broader market change.

- **A private sector-led MEL system** should be developed in the design phase of interventions to establish accountability and ownership. By including the private sector in the design phase, partners will have input into intervention objectives and can better understand the benefits of evidence and learning processes. Their inclusion will also increase their sense of ownership and valuation of project data, leading to more sustainable and scalable interventions. Additionally, data gained from partners will better inform the project and its efforts to adapt, adopt, expand, and tailor interventions based on market dynamics.
- **Establishing links to households:** RDC's interventions have proven to impact household productivity and incomes and, by extension, the quality of the diets that they are able to procure. However, without any route to provide information to consumers on beneficial ways to invest increased incomes, households made suboptimal food purchases from a nutrition standpoint. For example, fruit and vegetable consumption increased over the course of RDC, but — except for dark green leafy vegetables — consumption of vitamin A-rich fruits and vegetables increased only nominally. More emphasis on how facilitative market interventions can improve household outcomes of food security and nutrition, which, in turn, contribute to increased productivity, will maximize the impact of future activities. This could be done by developing a results chain for each intervention, which the private partners should lead, to increase their accountability and understanding of how the proposed activities contribute to household productivity, incomes, food security, and nutritional outcomes.

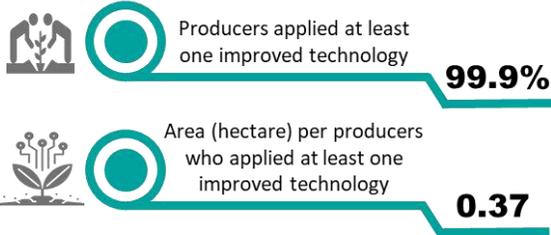
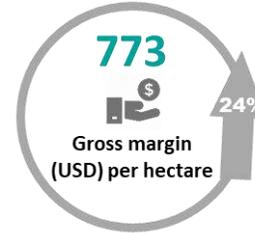
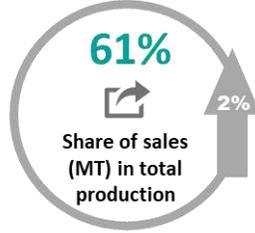
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<sup>8</sup> <http://www.acdivoca.org/wp-content/uploads/2021/12/ACDI-VOCA-RDC-Final-Report.pdf>

# RICE



Yield increased due to use of GAP and hybrid seeds



The average area cultivated per producer for rice production decreased because farmers struggled with the continuously increasing input cost, fluctuating market price of rice and profitability

## Seed Sales

|   |                   |                         |
|---|-------------------|-------------------------|
| Inputs: Seeds and planting material sales | <b>1,715 MT</b>   | <b>US\$ 314,668,991</b> |
| Inputs: Other non-durable inputs sales    | <b>583 MT</b>     | <b>US\$ 697,776,572</b> |
| Inputs: Durable equipment                 | <b>Number 280</b> | <b>US\$ 8,881,548</b>   |
| Services: Business Services               | <b>Number 423</b> | <b>US\$ 3,087,844</b>   |



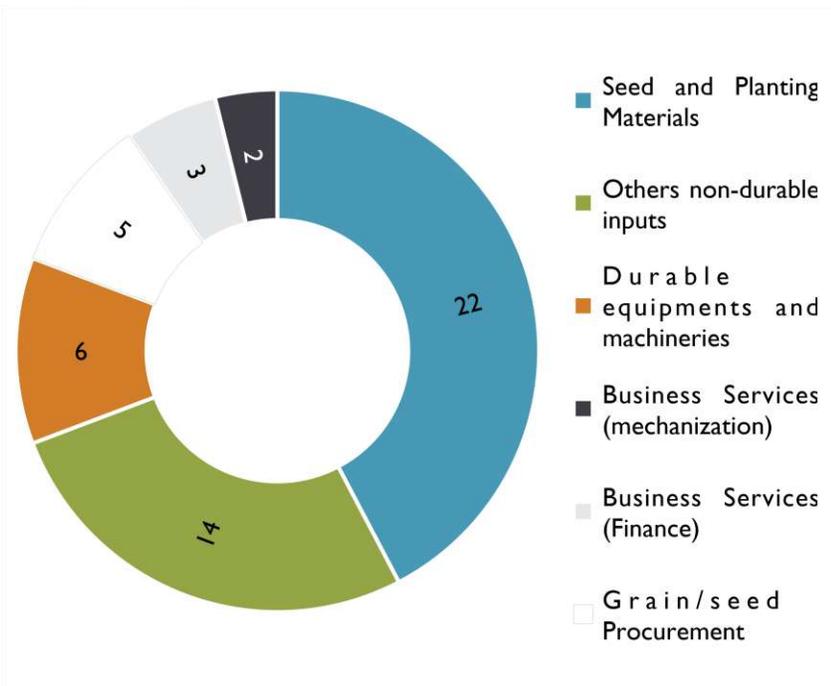
# 3 RDC APPROACH

## 3.1 CORE MARKET SYSTEMS

### 3.1.1 RICE

Rice is a staple food in Bangladesh. Since the country's independence, this sector has improved significantly. Despite positive changes, sudden lockdowns imposed by authorities during the COVID-19 pandemic, posed multiple challenges. Rural farmers are losing interest in growing paddy due to lower profitability and the volatility of grain market prices. The Activity continued to facilitate and support national and regional private sector firms in the sector. Rice has become an even more vital crop for ensuring food security and improving income generation for different value chain actors amid the COVID-19 pandemic. Over the

LOA, the Activity facilitated 39 interventions in the rice sector, including 22 interventions for seed and planting materials; 14 interventions for other non-durables inputs; five interventions for grain procurement; six interventions for durable equipment purchases; and three interventions for business services (finance and mechanization). These interventions were designed and implemented to create a more significant farmer impact through supporting firms in the following ways:



**Figure 9. Number of interventions for rice sector**

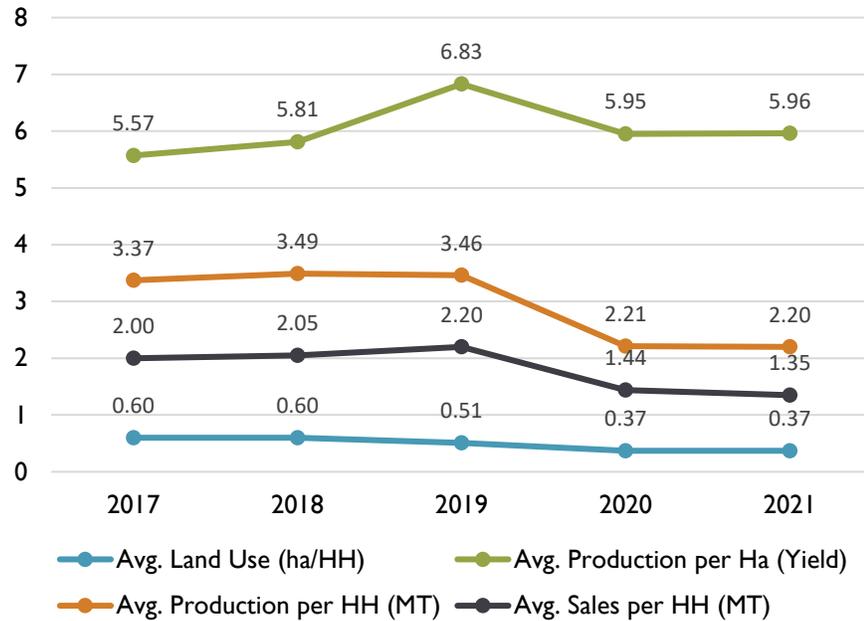
- **Expansion of customer demand-driven, value-added services with input and procurement companies:** This strategy supported business expansion to new geographic areas with advisory activities and engagement with additional dealers, retailers, and influential farmer points. It helped companies reach more rural producers and customers, increasing farmers' access to quality inputs and real-time information and improving farmer yields and profits.
- **Expansion of integrated support services where input companies play a crucial role in aggregating services from market actors for the smallholder farmers:** Expanding integrated service provision improved farmers' access to quality inputs, such as inbred and hybrid seeds, nutrition-dense rice seeds (zinc rice), information during input procurement, after-sale services (e.g., mechanical tilling, advice on protection of the whole crop life cycle, and combine harvesting, etc.), and agreement to purchase the farmers produce. The combined efforts of input companies and institutional buyers increased farmers' interest and investment in farming inputs (and their yields), which ultimately increased sales volume and profit margins for companies and buyers.
- **Expansion of the use of digitalization technologies:** The Activity promoted the adoption of technologies and communication channels (e.g., WhatsApp, Viber, various messenger platforms, company-owned apps, Facebook, use of TV networks) by companies to promote their products

and services. This approach was beneficial during the pandemic, and its use will likely continue, given its success.

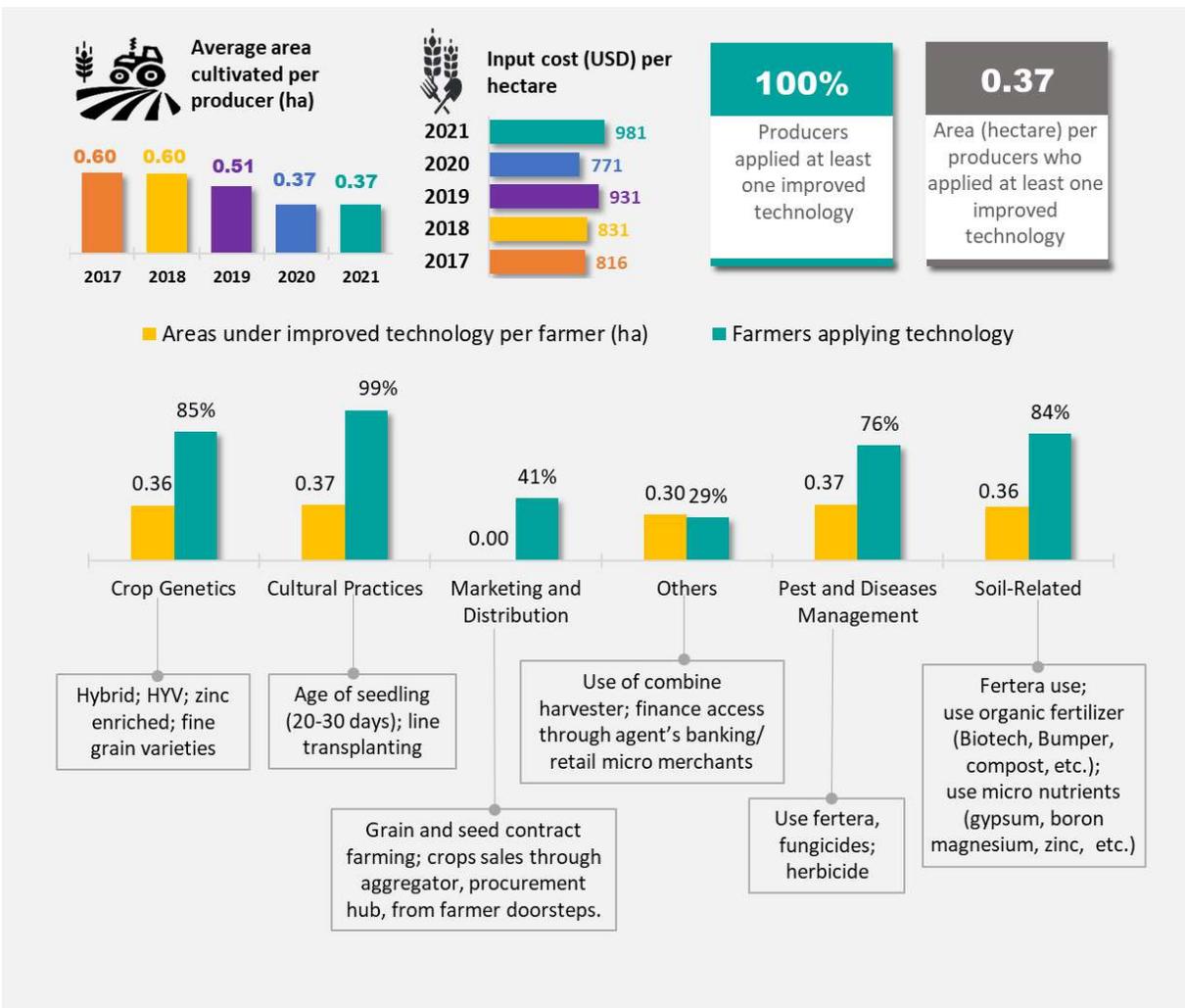
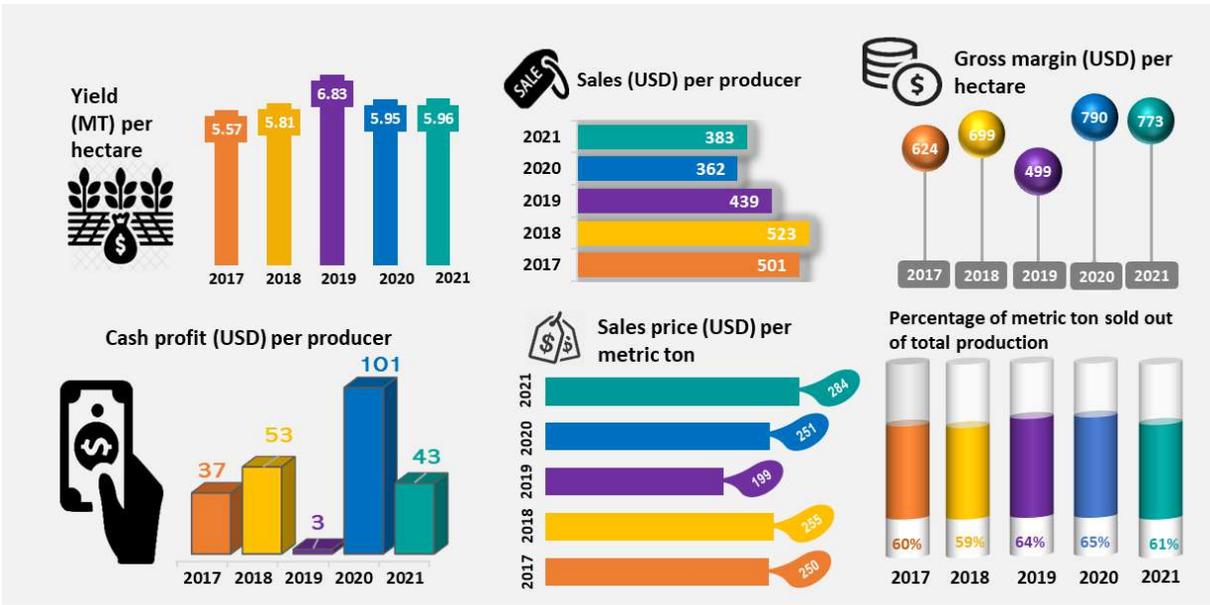
**Key Results:**

The 2021 survey results indicated, on average, a participant farmer who cultivated rice on 0.37 hectares of land and attained a yield of 5.96 MT/ha — 1.90 times that of the national average (BBS 2020). By investing \$981.21/ha, a farmer received approximately \$1,753.74 in revenue, including paddy rice straw sales. Thus, on average, farmers earned \$772.53 of net profit per hectare. The study also revealed that paddy farmers had a cost-benefit ratio of 1.79, suggesting rice production is a profitable sector.

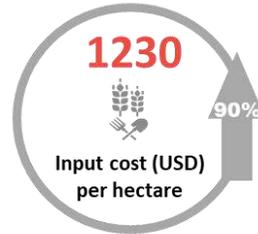
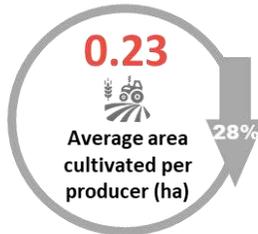
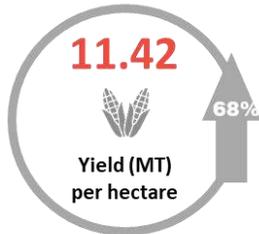
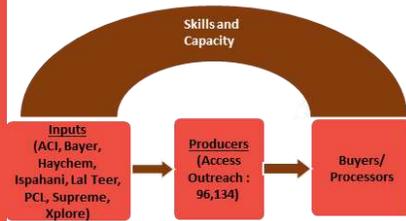
Over the past five years, the average land used by rice producers decreased by 39 percent per farmer from the baseline in 2017 (3.37 hectares) to 2021 (.60 hectares). Though average production per hectare increased by seven percent over that period, household-level production decreased overall by 35 percent.



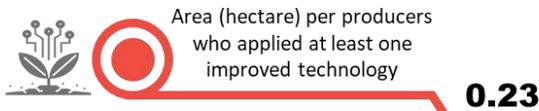
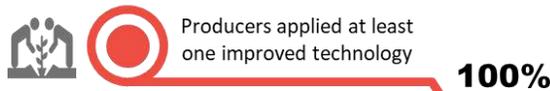
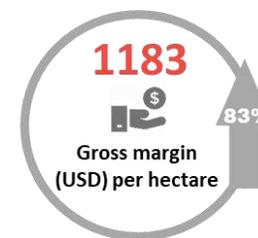
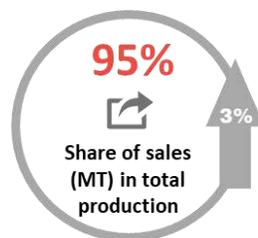
**Figure 10. Average land use and production per hectare and average production and sales in metric tons per household**



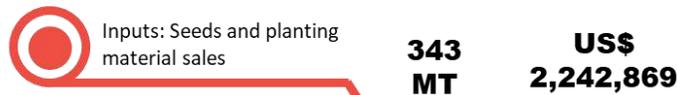
# MAIZE



Yield increased due to use of better-quality seed and improved management practices



The gross margin (USD) per hectare increased significantly, due to yield, market price and grain quality



### 3.1.2 MAIZE

The Activity continued to facilitate and support private sector input companies, including multinational companies, to promote improved technologies (e.g., superior hybrid seed varieties) and establish brands. The price volatility due to COVID-19 led to reduced area coverage for maize across Bangladesh, including the FTF zone. Subsequently, prices started rising again from the end of the production period (August onward) for the forthcoming season. Due to costlier imports, the processors switched to sourcing more of the grains locally.

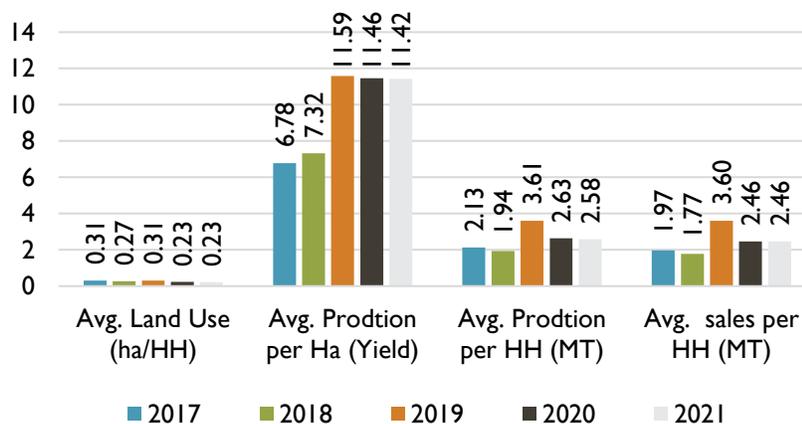
Over the LOA, RDC facilitated 21 interventions in the maize sector—six for seed and planting materials, five for other non-durable inputs, and two for grain procurement. The Activity facilitated linkages between feed mills and production hubs and encouraged hybrid seed companies to market seed varieties in high demand from the feed mills. These interventions were designed and implemented to create more significant farmer impact through supporting firms in:

- Promotion of superior and stress-tolerant hybrid maize varieties (appropriate hybrid seed varieties and improved crop protection products)
- Establishment of linkages between producers and output market actors
- Providing advisory services face-to-face and digitally

Partner companies completed their interventions and started to plan for the next cropping season to expand their businesses sustainably. The partners continuously monitored the demand in the domestic market and international trade as inputs to sourcing plan targets so that there is no leftover seed. Several planned field activities could not be performed from March onward because of COVID-19. Almost all partner companies had to make alternative plans and change their approaches to achieve their targets. RDC facilitated companies' abilities to adapt during COVID-19 and encouraged them to adopt new methodologies for marketing and promotion. For example, promotional events at *baat bazaars* were not being allowed. Van miking (broadcasting with speakers) was used instead. Branded vans equipped with broadcasting speakers traveled near farmers' houses to create product awareness. In addition, digital platforms were established to accommodate different value chain actors (e.g., farmers, input companies, and processors, etc.) and to encourage experience sharing.

#### Key Results:

Based on survey results, on average, farmers who cultivated maize on 0.23 hectares of land yielded 11.42 MT/ha — 35 percent higher yields than the national average.<sup>9</sup> Farmers who invested \$1,230 in production produced crops valued at \$2,412, earning a net profit of approximately \$1,182.53/ha. Around 95 percent of maize was sold at a market price of \$210.36/MT. Farmers' cost-benefit ratio was 1.96, indicating relatively high profitability.



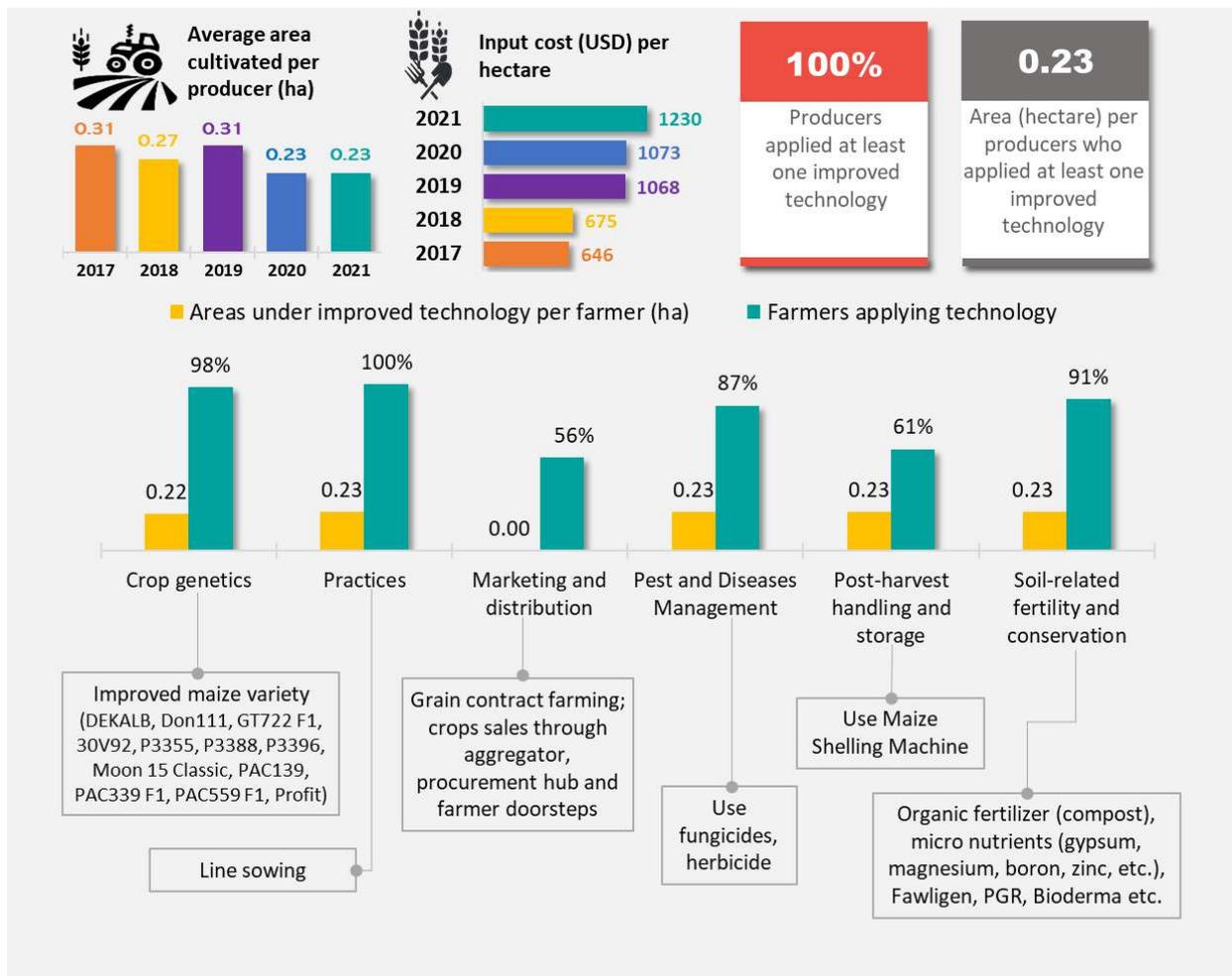
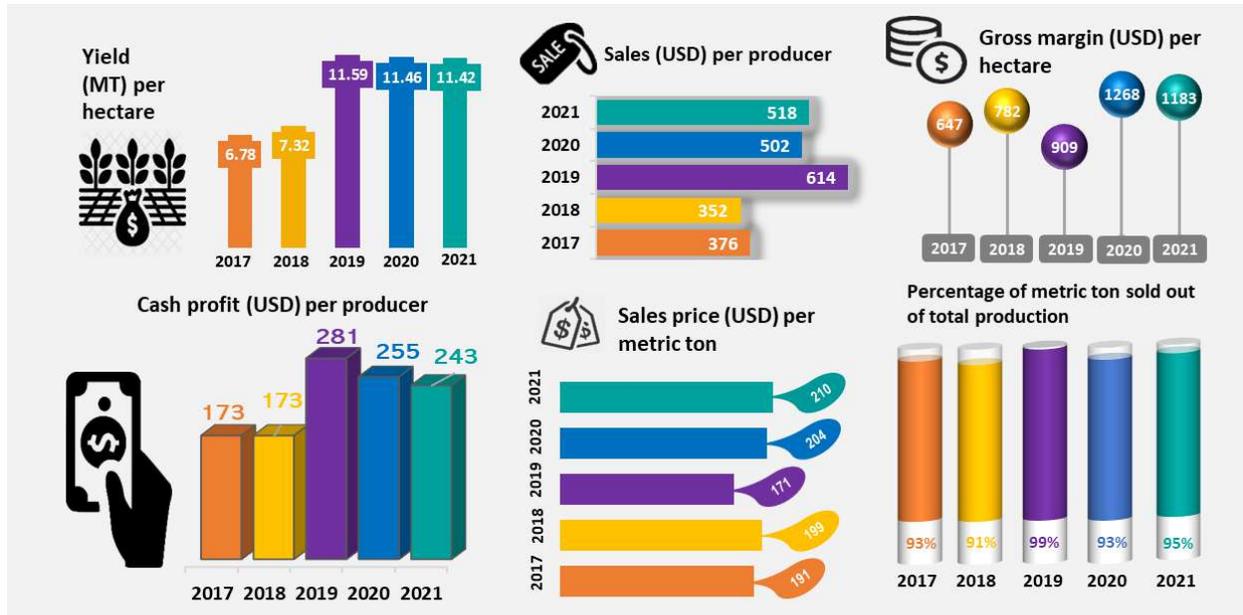
**Figure 11. Average land use in hectares per household and average production in metric tons per household**

<sup>9</sup> Yearbook of Agricultural Statistics 2020, Bangladesh Bureau of Statistics (BBS), Dhaka.

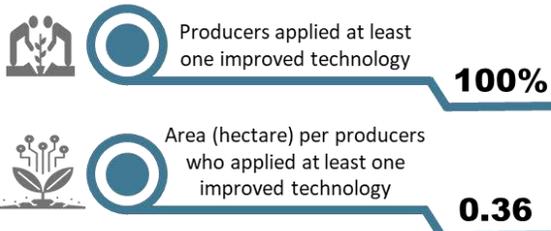
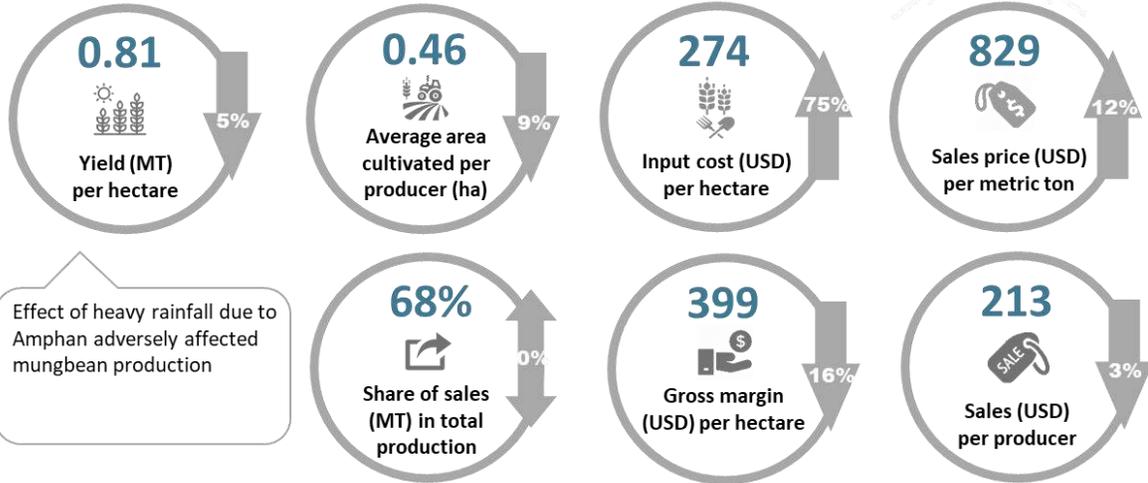
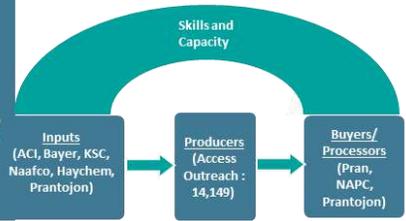
Compared to baseline in 2017, the maize sector performed well. Over the past five years, maize yields per hectare increased by 68.38 percent. However, during the same period, the average land cultivated by maize farmers decreased by 28 percent. This reduction may be due to changes in the market prices of other crops in the FTF zone.

**Learnings:**

- In the maize sector, lead firms mostly confined their activities to the Chuadanga Region and did not develop varieties for other areas. Consequently, the market size remained static. Considering that maize has the highest return on investment among the Activity-targeted crops, it can significantly increase income for farmers across the FTF zone.
- The hybrid seed marketing companies need to source more climate-smart seed varieties from companies for horizontal expansion in the coastal belt of the FTF zone.
- Biocontrol agents (e.g., Fawligen) must be promoted extensively to control devastating pests like the fall army worm. Successful control of FAW will mitigate the risk of attack in successive crops.
- As maize is a nutrient-exhaustive crop, companies need to stress using organic fertilizer to promote sustainable agriculture.
- The feasibility of maize for use in biofuel and corn oil production in Bangladesh should be investigated.

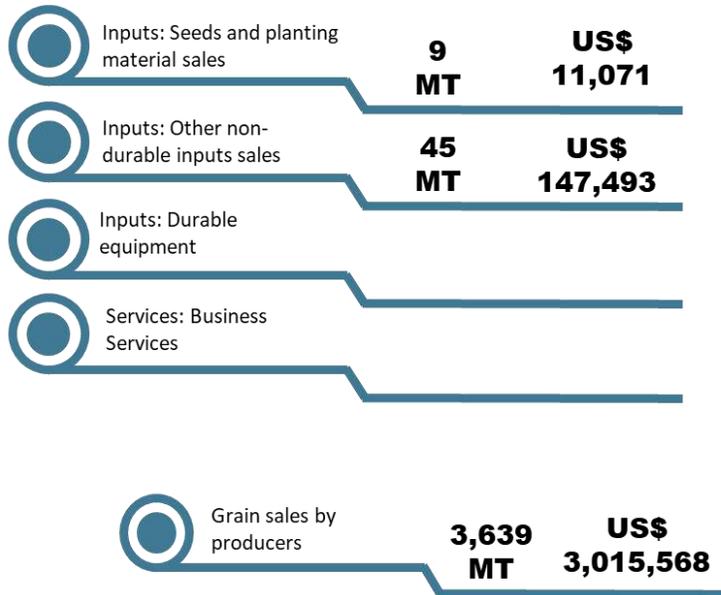


# MUNG BEAN



Decreasing trend in profit as a result of damage of grain quality and yield

## Procurement



### 3.1.3 PULSES

The Activity set up partnerships with three national-level companies and one regional company—ACI Fertilizer, Prantojon, Haychem, Ispahani, and Pran Group. These partnerships primarily focused on promoting improved technologies among farmers to increase the yield and production of pulses in the FTF zone (particularly in Barishal). The Activity-ACI partnership promoted biofertilizers, such as inoculants, and other quality inputs, such as bio stimulants, growth promoters, and micronutrients, to increase farmer yields and profits.

Through Activity facilitation, Prantojon sourced inoculants from ACI Fertilizer and promoted its producers' groups. Both grant agreements addressed the lack of awareness among farmers on the use of inoculum for pulse crops and the inadequate supply of inoculum. Prantojon successfully expanded and established its seed-to-dal model through quality seed contract farming, processing, and marketing, and simultaneously buying mung bean grains through non-contract farmers for processing into dal at its factory. It marketed its dal products in Barishal and Dhaka as well as through e-commerce company Daraaz.

#### **Key Results:**

In 2021, the study found that each producer, on average, cultivated 0.46 ha of land with mung bean. Although the amount of land used for mung bean cultivation increased by 28 percent over the previous year, it decreased by 9 percent over the LOA. Mung bean yield in 2021 was 0.81 MT/ha, a 5 percent reduction over the LOA. The main reason behind this may be the reduced focus on mung bean production by the producers due to the uncertainty of rainfall and cyclonic events before harvesting may which may have affected yield. Yields of males, females, youth, and adult producers were similar.

Sales volume per producer was primarily consistent over the last five years. Average sales per producer were the same over the previous two years, though it was 15 percent less than baseline. The study found that mung bean producers sold on an average 68 percent of their total production, like baseline. During the last season, the average sales price for MT of mung bean was \$823.73.

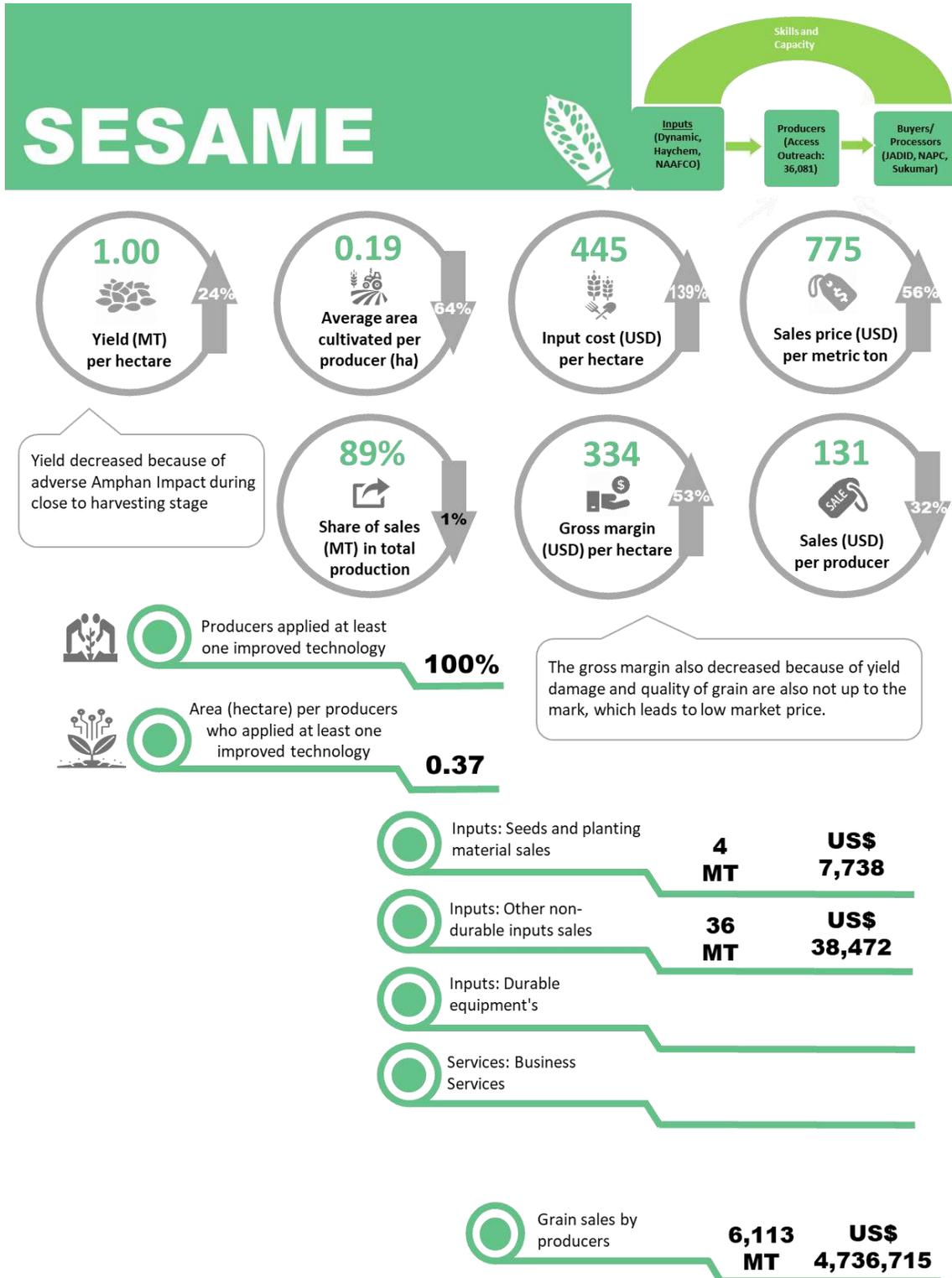
Study findings indicated that compared to male farmers, the performance of female farmers performed much better than their male counterparts. For example, female farmers produced 19 percent more yield, 10 percent more revenue, and 15 percent more net profits. However, females received seven percent less in market price than male producers, perhaps because of women's lack of access to output markets. Youth produced three percent more yield and had higher sales volumes but three percent less net profit than adult producers. This difference in market prices is likely because of their lack of access to markets compared to adults.

In 2021, farmers cultivated lentils on an average of 0.26 hectares of land and received a 1.71 MT/ha yield. About 85 percent of lentil yields were sold by farmers at a value of \$818.90 per MT. Their net profit was \$1,396.73/ha. Lentils are a low-cost crop, and less technology is required. Input costs were \$583.33/ha. Last year, lentil producers received a net profit of \$813.40/ha, resulting in a cost-benefit ratio of 2.39, which suggests this is a highly profitable crop and could be increased further with the adoption of inoculant.

#### **Learnings:**

- Seed companies need to develop appropriate pulse varieties, like single plucking bold grain mung bean and disease-resistant, high-yielding lentil varieties. The incorporation of profitable pulse crops in cropping patterns will ensure nutrient security and improve soil health for practicing sustainable agriculture.
- Diversified pulses should be promoted to encourage better market prices for the producers and improved consumption of pulses to increase nutrient uptake by consumers as part of their diets.

- Gender and youth inclusion will ensure faster adoption of inoculant and seed bio remedies like Trichoderma, as they appear to be more ‘risk’ averse and are early adopters.
- Low-cost improved technologies can turn pulses into a highly profitable low investment-high output crop.



### 3.1.4 OILSEEDS

In the oilseed sector, 12 interventions were implemented. These interventions aimed to increase access to inputs and address output market systemic constraints. These interventions will be implemented through the Robi and Kharif seasons.

#### **Sesame:**

RDC worked with two sesame export companies, Jadid Grain Industries and Sukumar Vander, and a new processing company, Natural Agro, to establish and strengthen procurement models in the sesame production areas of the southern delta (Faridpur, Rajbari, Magura, Jhenaidah, Kushtia, and Khulna districts). These companies strengthened their procurement channels and expanded into the FTF zone by increasing awareness among farmers and other relevant market actors on quality sesame production and post-harvest management, leading to increased sesame exports. They conducted different awareness and promotional campaigns, including haat bazaar campaigns, roadshows, video shows on local cable TV networks, promotion through vans with loud speakers, displays, and field demonstrations to increase farmers' knowledge on quality sesame production technologies.

In the past, there was no private sector seed company in Bangladesh marketing sesame seeds. Through RDC support, two seed companies (Metal Agro and Dynamic Agro Science) began marketing sesame seeds (obtained from the 2020 cropping season) in the FTF Zone. These companies initially sourced sesame seeds from the Bangladesh Agricultural Research Institute and the Bangladesh Institute of Nuclear Agriculture. In subsequent years, they have sold quality seed sourced through a seed multiplication model. The companies conducted seed promotional campaigns with roadshows, haat bazaar campaigns, leaflets, production flow charts, video displays, plot demonstrations, and field days to highlight seed performance. From the last cropping season, Metal Agro and Dynamic Agro Science provided sesame advisory services to farmers to support seed availability and knowledge of related technologies. They also promoted sesame-based cropping patterns, including short-duration Aman rice, onions, lentils, and sesame. Through this service, farmers received advice on agronomic practice, disease, and pest control and improved post-harvest management. As part of their campaign, the companies encouraged sesame traders to disseminate the information to the farmers.

#### **Groundnut:**

With RDC support, Bombay Sweets & Co. Limited (BSCL) continued groundnut procurement from Char Island of Pangasia Bazar in Bhola district from identified lead farmers (each lead farmer associated with 25-30 groundnut producers) and traders. Even when faced with COVID-19 lockdowns and travel restrictions, BSCL continued procurements through a rented space. This procurement center was equipped with a digital moisture analyzer, a digital weighing scale, and battery-powered portable moisture meters. During goods procurement, BSCL hired short-time local laborers to weigh and store products guided by permanent staff. BSCL field staff conducted awareness sessions with groundnut producers on industry quality parameters prior to procurement. Additionally, BSCL procured and set up deshelling equipment (6MT/hour) at its factory in Dhaka to meet its snack food processing demand.

#### **Sunflower:**

RDC facilitated only one intervention to make quality seed available in the FTF zone with ACI Seed in the sunflower sector, although RDC had facilitated three interventions with processing companies from 2018. ACI Seed promoted one hybrid variety, Hysun 36, biofertilizer, and crop protection products to producers. This seed variety has a higher oil content than what is currently available. ACI promoted inputs using roadshows and setting up prescription points in haat bazaars. Dealers and retailers were also briefed on the attributes of seed varieties. ACI Seed established 30 field demonstrations and organized ten field days while maintaining Covid-19 safety guidelines of the Department of Agriculture and Extension.

## **Key Results:**

### *Sesame:*

On average, farmers cultivated sesame on 0.19 hectares of land, a 64 percent reduction over baseline. By investing \$444.26/ha, a farmer produced 1 MT of sesame per hectare of land, worth \$774.81/MT. Farmers sold approximately 89 percent of what they produced, earning revenue of \$778.36/ha. Thus, sesame producers receive a net profit of \$333.72/ha, or a cost-benefit ratio of 1.75. Compared to 2017 (baseline), sesame farmers in 2021 attained higher yields and earned higher net profit. In 2021, sesame farmers received 53 percent more net profit than baseline. Similarly, the input was 139 percent higher and had been increasing since baseline. Thus, the study documented a 36 percent reduction in the cost-benefit ratio over the LOA. But the market price trend was increasing, though it was the highest in 2019. It was USD 497.93 in 2017 and USD 1044.69 and USD 774.81 respectively in 2019 and 2021. The qualitative study identified that the demand for sesame and its higher export prices expands demand. Additionally, the market value of the competing crops of sesame in Faridpur-Rajbari, the major sesame growing zone, is increasing. Thus, farmers are likely from sesame production to other crops.

### *Groundnut:*

During last year, the profitability of groundnut was excellent. Farmers cultivated an average of 0.24 hectares of groundnut and received an average yield of 2.37 MT/ha. Producers sold 68.85 percent of their production for an average value of \$797.75/MT, or an average of \$1,889.37/ha. Groundnut producers invested \$536.20/ha to maintain production; thus, producers received a net profit of \$1,353.16/ha—a cost-benefit ratio of 3.52, one of the highest rates for RDC-targeted crops.

Compared to female groundnut producers, males cultivated more land, had better yields, and higher profit ratios. Similarly, youth producers cultivated more land than adult producers, received better yield, and had a better cost-benefit ratio.

### *Mustard:*

Study findings showed that mustard farmers cultivated an average of 0.14 hectares of land last year. The average yield was 0.98 MT/ha. Farmers sold around 60 percent of their production at a market rate of \$571.20 per MT, receiving a revenue income of \$596.37/ha. They invested \$409.13/ha. As a result, they received a net profit of \$160.23, resulting in a cost-benefit ratio of 1.39—suggestive that mustard production is profitable.

### *Consumption:*

Survey findings found that, on average, lentil farmers consumed 14 percent of production. Approximately eight percent of production is used as payment for crop share or service cost fees. The remaining was kept as seed or stored for future use. Groundnut and mustard farming households consumed 37 and nine percent of their production, respectively. Given the highly nutritious nature of these grains, household consumption likely reduced nutritional deficiencies.

## **3.2 SUPPORTING FUNCTIONS**

### **3.2.1 MECHANIZATION**

RDC dropped its mechanization activities for approximately six months, pending clarification on whether all mechanization activities should fall under the USAID-funded Cereal Systems Initiative for South Asia-Mechanization Enhancement Activity (CSISA-MEA). An activity split was agreed upon, and RDC engaged with mechanization companies again. Under the arrangement with CSISA MEA, RDC focused on equipment promotion (rice combine harvesters and rice transplanters), the uptake of mechanization services, and equipment sales. The impact of this was substantial, as it allowed RDC to reach more farmers with effective mechanization services, building demand and buy-in by the private sector and smallholder farmer customers to increase productivity and incomes.

RDC's intervention with Metal Private Limited was focused on the promotion and sales of combine harvesters and rice transplanters. Metal also concentrated its efforts on expanding its footprint in the mechanization sector by piloting a franchise model. A franchise was an established business at the rural level, where franchises associated with Metal could use their combined strengths to market Metal equipment to local service providers and lead farmers. The franchise provided spare parts and maintenance support. RDC and Metal facilitated bank collaboration meetings to encourage banks to offer asset-based financing, which purchasers could utilize. Through this intervention, Metal was able to establish two franchisee dealerships. The Activity also established partnerships with ACI Motors, Abedin Equipment, and Alim Industries to promote the sales and use of combine harvesters and rice transplanters.

#### **Learnings:**

- Digital platforms encouraged by RDC and adopted by many companies helped to overcome travel and gathering restrictions during lockdown periods. Notably, TV, newspaper, and billboard advertisements; SMS, Facebook, and YouTube postings; roadshows; and miking inspired farmers to inquire about mechanization services after exposure to these promotion channels.
- RDC conducted a field surge program using digital methods (e.g., SMS, voice call, TV, etc.) where messaging around various key learnings, including the benefits of mechanization, was shared. Farmers in FTF ZOI found these messages very effective and, in turn, asked for these services.
- In collaboration with CSISA-MEA, the Activity kept machinery downtime to a minimum, especially during the farming season, because of their training efforts.
- Strengthening the technical workforce of companies for after-sales service and increasing the availability of spare parts improved the ability to serve more farmers. The machines require expert service providers to maintain them.
- Though combine harvesters are relatively new in Bangladesh, with continued promotions, including field demonstrations, and when local service providers, farmers, mechanics, and operators begin to realize profits and the profitability of investing in agricultural machinery, the industry will grow supported by stakeholder's interest.

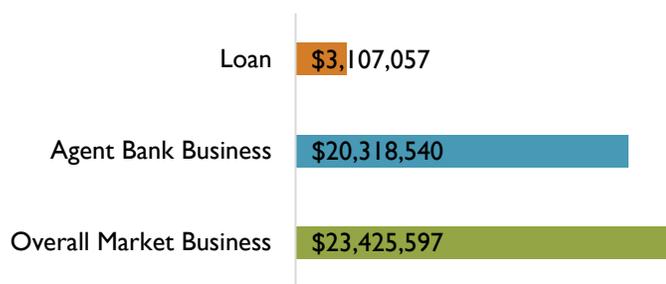
### **3.2.2 FINANCIAL INCLUSION**

The Activity has helped catalyze new financial products and services into the FTF zone through partnerships with BRAC Bank, Bank Asia, and Citi Bank. These partnerships with financial institutions were successful because the activities were integrated within a broader market systems development activity, thereby increasing the direct linkages with and between firms through whom agent banks, micro-merchants, factoring, and warehouse receipts, etc., can be promoted and through which financing can reach smallholder rural customers. The lessons below are based on the Activity's partnerships and uptake could result in expansion of financial services to rural farmers. Structuring partnerships this way allowed the Activity to quickly identify win-win opportunities with the financial institutions and led to the expansion in rural areas. The lessons below are based on the Activity's partnerships and uptake could result in expansion of financial services to rural farmers.

During the last quarter, the Activity prioritized reflecting and assessing key learnings on ways to create systemic finance changes. This led to pivoting partner engagement applications and adaptation in co-creation of activities with partners, which then led to impacts across value chain actors. The Activity published a case study, "[Agent Banks Advance Community Resiliency During COVID-19 in Bangladesh](#)," detailing the challenges and lessons learned in this sector over the LOA and how activities created transformational impact and resilience in the agricultural market systems.

### Key Results:

During the LOA, RDC partnered with three banks for four interventions, leveraging more than \$20,000,000 of economic activity (deposits totaled \$12,952,122; and remittances totaled \$7,366,418) in partnership with private-sector financial institutions and \$3,107,057 in formal loans. More than 55,907 new accounts through channel banking outlets were created (e.g., agent banks and micro merchants). Post interventions, the Activity is still seeing an increase in the acceptance of formal financial services across targeted participants. During this intervention year, the Activity continued to strengthen banking channels to increase access to financial services in the FTF zone by facilitating discussions with other USAID projects (e.g., Nobo Jatra Activity and CSISA-MEA).



**Figure 12. Loan disbursement versus agent bank business**

### Learnings:

Below are some key, industry-wide learnings:

- **Increasing loan disbursements through banking agents could support financial inclusion, particularly of women.** More SMEs, especially those owned by women, will likely have access to loans when more loans are disbursed through agent banking outlets. There is vast potential to serve more women entrepreneurs in rural areas who can access finance from the banks through agents. Bangladesh Bank is taking advantage of this knowledge by encouraging banks to facilitate loans to female customers. There is an opportunity for guaranty funds to support this increased disbursement through reduction of perceived risk by the lenders.
- **Digital services are faster, more efficient, typically cheaper than traditional financial services, and can more easily reach rural communities and SMEs.** However, it is important to note the importance and challenges of designing and providing inclusive digital financial services, especially to women. These challenges include women's lack of digital literacy and unequal access to technology like cell phones. As agents continue to increase their use of digital financial services, it is vital to monitor equality. Hiring more women as banking agents and developing financial products that better serve women are steps in the right direction. As well, utilization of data generated can inform alternative credit scoring mechanisms that may benefit traditionally un(der)served borrowers.
- **Expanding the agent bank network of and for women can play a crucial role in catalyzing formal financial services' adoption rate and reducing their dependencies on informal channels for credit needs.** Expanding this largely untapped market of women could include the following:
  - Providing technical and grant support to fast-track the expansion of agent bank networks to hard-to-reach geographical locations.
  - Providing technical assistance to increase the creditworthiness of female borrowers' profiles.
- **Business case established for the micro-merchant model and is being scaled up for the first time.** Bank Asia is taking it to scale with Syngenta Foundation (initially with 500 MMs both in north and southern region with a vision to bring 11,000 exclusive retailers on board).
- **Farmers and agents confirmed a growth in formal banking services in the rural areas and new farmers are showing interest.** The six-month term and the favorable interest rate have been most attractive to them, and a need for financing for agri-machineries (e.g., harvesters) was also

indicated. Focus on innovations in asset-based financing could help improve access to these machineries.

- **Commercial banks and channel banking enterprises increasingly moved away from traditional methods of information dissemination (e.g., physical and in-person interaction) and adopted digital mechanisms to adjust to changing government and socioeconomic parameters.** Banks continued text-based campaigns with COVID-19 awareness messages and product offerings to attract semi-urban and rural customers through targeted marketing campaigns.
- **The pandemic triggered changes in partners' behaviors.** Large enterprises used digital mechanisms and incorporated them in their day-to-day business operations across all levels of value chains. Banks introduced 'safe retail points' by empowering agents and small- and medium-scale enterprise (SME) units with protocols to prevent the spread of the infection while providing services to customers.
- **Communication gaps and coordination:** There was a lack of contingency planning and preparedness in the financial sector to adjust to the new COVID-19-impacted environment.

### 3.2.3 INFORMATION COMMUNICATION TECHNOLOGY

Throughout this activity, RDC partnered with firms to accelerate the adoption of fast, effective, low-cost digital tools to enhance service provision and improve efficiencies.

#### Learnings:

Below are the key industry-wide notable highlights and learnings:

- In-person capacity-building approaches were substituted by digital ones, which led to the high adoption of social media and other digital mechanisms.
- The pandemic triggered changes in partnership designs. Large enterprises increasingly used digital mechanisms and incorporated them in their day-to-day business operations across all levels of value-chains. In-person capacity building approaches were substituted by digital ones, which led to high adoption of social media and other digital mechanisms
- As many aspects of the rural economy moved away from physical to digital ones, activity partners tried numerous digital approaches and increased their adoption.
- Agro-companies are adopting bundled ICT packages in different ways (with varying degrees of success) to share information with farmers, address queries, and also regularly monitor (e.g., Bayer is equipping their crop clinic advisors with smartphones to provide information to their farming clusters; KONIKA and Uzirpur Organic Multipurpose Co-operative Society Ltd. (UOMCSL) used technology to promote information usage through their community leaders/agents and CBSPs, resulting in improved information flow and good agricultural practices.
- E-commerce platforms like Chaldal were able to respond to the COVID-19 crisis and expand operations due to the safety protocols and recruitment support in place, enabling them to meet the increasing demand for online grocery orders by urban consumers. This catalyzed move from other agri-ventures to explore online platforms as a profitable market for expansion (e.g., Prantojon increased the number of buyers due to linkages with online platforms, such as Daraaz and Chaldal, facilitated by RDC.
- Facebook pages and local TV networks were successfully used by companies (Konika, UOMCSL, Sesame Partners, Ishpani, and Xplore, etc.) to promote messaging and, thereby, sales.

## 3.3 GENDER INCLUSION

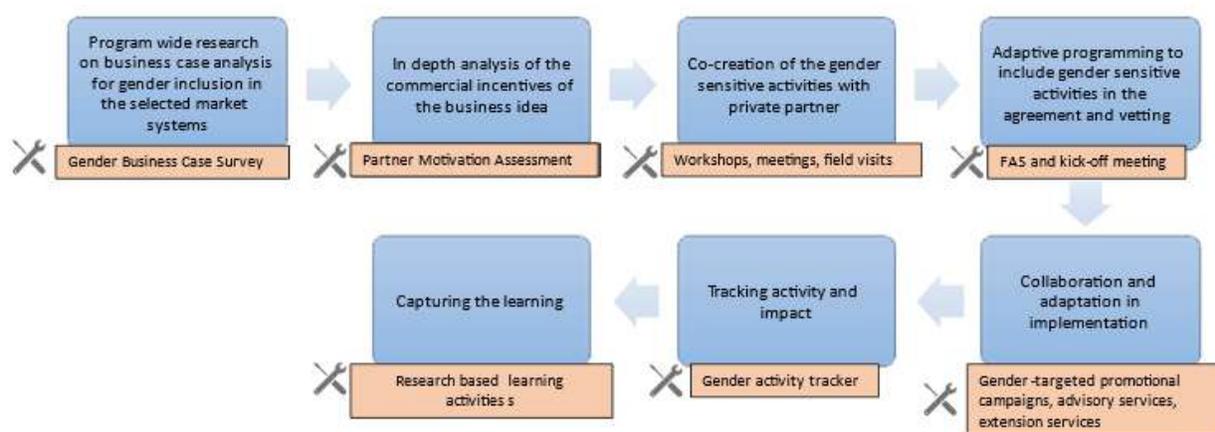
Women play an important role in agriculture worldwide and accounted for around 50 percent of the agricultural labor force in Asia and Africa in 2010, albeit with wide intercountry differences (FAO, 2011). Globally and in Bangladesh, their contribution and participation in agriculture are increasing. It is accepted and established that without increasing women's efficiency and productivity, for which their empowerment is

crucial, significant agricultural development improvements will be challenging. In line with this, RDC prioritized women in all its activities, and this chapter discusses the Activity's progress.

Gender integration and women's economic empowerment are major cross-cutting themes for RDC and in USAID's market system development program. It is also considered as an indispensable priority. RDC integrates gender-sensitive approaches into the design of its partnerships, resulting in transformative changes in the way the rice, maize, sesame, mustard, sunflower, groundnut, lentil, and mung bean market systems function.

In RDC program design, gender integration prioritized these three goals:

1. Improving women's access to markets, where access to markets means an increased number of sales to women, increased purchase or joint purchase of inputs, and increased access to services and knowledge
2. Increasing women's decision-making power, specifically decisions about agricultural production, and access to and power over productive resources
3. Increasing in women's leadership role



**Figure 13. Steps of gender inclusion in MSD programing: Experience from RDC**

Every facilitation was reviewed from a gender lens during the co-creation phase, and the RDC gender team provided technical assistance with customized gender-integrated activities that had a clear commercial advantage to the business model. The Activity followed a reflective and flexible path to ensure gender inclusion in partnership outcomes:

During implementation, RDC provided consistent technical guidance to its private sector partners, encouraging them to extend their services to females (e.g., producers, aggregators, entrepreneurs, service providers, and ambassadors, etc.) As a part of monitoring activities and response, RDC initiated an interactive tool "*Gender Activity Tracker*" to explore entry points in systems, develop and manage intervention implementation. The data collected in this tracker informed the program team to make necessary adaptations in activities when the anticipated outcomes faced challenges.

Additionally, RDC implemented action research on the GAP model. This model mentored women entrepreneurs in agribusinesses with RDC and non-RDC crops, improved their business management and financial planning skills, and linked them to high-level value chain actors and banks. The Activity also launched learning activities to delve deep into the understanding of gender outcomes.

## Key Outcomes:

### *Outcomes from Annual Program Statement (APS):*

APS did not incorporate the complete data collection and analysis guidelines of the women's empowerment in Agriculture Index but considered women's access to inputs and forward markets and participation in decision making of agricultural production and sales, ownership, income, and expenditures.

- Among the surveyed producers, women's participation in farming activities of RDC-targeted crops was 4 percent, reflecting social norms which discourage women from cultivating field crops and gender inequalities concerning access to productive assets, such as land. The APS found that women are generally involved in decision making in post-harvest management and farm management practices during the intercultural stage. On the contrary, men control production decisions and resources, and women have limited access to land, which hinders them from engaging as producers (source: APS 2020-21).
- The rice sector engages the most significant number of women in RDC-focused crops (8.37 percent). In contrast, the maize sector has the least number of women (0.82 percent). No women's participation as producers in the mustard sector was indicated (source: APS 2020-21).
- *Rice:* Males dominated rice cultivation activities, with women primarily involved in post-harvest activities like threshing, drying, processing, and storing. On the other hand, 49 percent of respondents confirmed joint decisions with their spouses. In 21 percent of households, either men or women decide in consultation with other household members (source: APS 2020-21).
- *Mung bean:* In the recent APS survey, 53 percent of households reported joint decision making in allocating and using farm income. There's a higher level of women's participation in physical labor in this sector because crops are more short-duration and less labor-intensive than others.
- *Maize and Sesame:* Fewer women participate in productive roles in these sectors, women's decision making is also less than that of rice or mung bean sectors.
- *Access to finance:* In partnerships with banks during the LOA, more than 55,907 new accounts (21,541 female) were created, a 38.53 percent inclusivity rate.
- Based on the preliminary data from the APS survey, there has been a notable shift in market dynamics, particularly among marginalized subsets of downstream agricultural value chain stakeholders (notably, women and youth).

### *Outcome from Gender Learning Activities:*

To understand its impact on the three domains of women's empowerment mentioned above, RDC designed and conducted three gender learning studies in FY2021—(i) The private sector engagement (PSE) learning study to understand the impact of the project on instigating behavioral change amongst private sector actors to adopt gender-inclusive business practices ; (ii) the GAP learning activity to understand the contributions of the program to promoting female entrepreneurship and increasing incomes for female entrepreneurs in RDC's zone of influence; (iii) and the women's economic empowerment (WEE) learning activity to investigate the impact of the Activity on women's access to markets and income, decision-making and participation in leadership roles. These learning studies generated evidence supporting the following:

- The application of skills acquired during the GAP contributed to business growth and expansion leading to increases in business revenue. The GAP Spurred Creativity and Innovation among female entrepreneurs during the Covid-19 Pandemic that resulted in building resilience.
- The GAP increased business and financial management skills for graduates, and this led to growth in business income promoting greater equity in the division of roles and responsibilities in household and childcare related chores, greater self-confidence, and greater involvement in household decision-making.
- The GAP increased leadership skills for women entrepreneurs.
- The PSE analysis learning activity with private sector companies increased opportunities for women to take on new roles (e.g. service providers) in private sector business models, expanded access to inputs, services, information and markets for female market actors (farmers/producers, retailers,

customers). This instigated shifts in social norms where previously women's role remained invisible to private sector and now they are considering gender inclusivity as a potential market opportunity.

- The gender focused facilitation approach with private sector companies and the gender-responsive service and information dissemination practices increased women's participation in economic activities and value adding roles across the sectors targeted by RDC, increased income for women and also increased their participation in intra-household decision-making.<sup>10</sup>

### 3.4 Climate-Change Adaptation Activities

Although climate change adaptation activities were not a core part of RDC's work, integrating this within our work, using a multisectoral approach, became a natural way for a market systems activity to respond to devastating shocks to the market system and impact on participants. RDC was instrumental in building the resilience of participants to respond to economic shocks and natural disasters. For example, the Activity scaled several climate change technologies through private sector partners including:

- Used of Trichoderma and other fungi inoculation, and the use of effective microorganisms
- Use of saline-tolerant and submergent tolerant seed varieties of rice and other crops.
- Expansion of mechanization to allow farmers to harvest in time prior to climatic events and plan follow-on crops to allow for more maturity.

Future market systems development programs have a tremendous opportunity to support climate change adaptation through better understand what's limiting further investment in green growth practices by the private sector as well as scaling innovative technologies and business models in area prone to floods and droughts, such as regions in Southwest Bangladesh and a broader geographical context.

## 4 ENVIRONMENTAL COMPLIANCE

Based on the pesticide evaluation report and safer use action plan for USAID-financed programs in Bangladesh in September 2015 and the initial environmental examination for RDC, approved as a memo to file dated June 14, 2016, RDC's project team developed an environmental monitoring and mitigation plan (EMMP). USAID approved this document on August 21, 2017. RDC's project team implemented the EMMP, developing separate environmental checklists and action plans for each market actor agreement developed under the award. These documents detail the potential environmental impacts of the proposed activities and the necessary actions to monitor and mitigate potential environmental hazards. To date, no further modifications to the EMMP have been necessary.

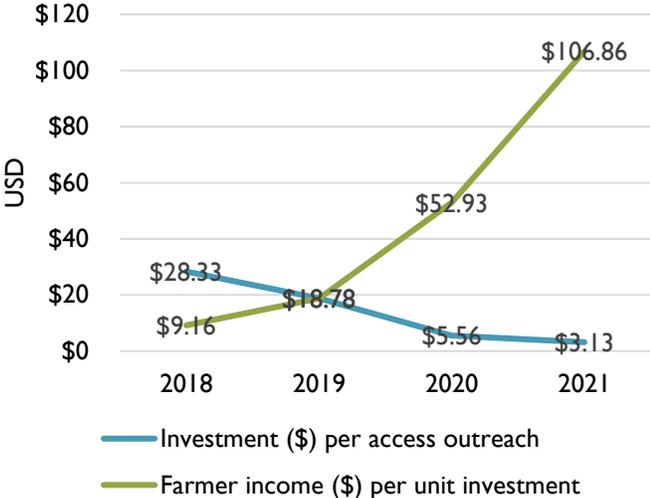
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<sup>10</sup> <http://www.acdivoca.org/wp-content/uploads/2021/12/ACDI-VOCA-RDC-Final-Report.pdf>

# 5 RESULTS OF ROI ASSESSMENT

As indicated in Figure 14, the cost of access outreach was \$28 in 2018 and gradually reduced to \$3 in 2021. During the same period, farmers' incomes dramatically increased from \$9 to \$107. The breakeven point occurred in FY19. This reflects the results of a successful market systems development approach, as private sector companies increased their investments in scaling products and services into the FTF ZOI thereby reducing USG investment and creating more efficient and cost-effective service delivery. More cost-effective delivery reduced total product costs and increased the profitability of farmers.

This indicates that farmer incomes increased from \$259 (in 2018) to \$334 (in 2021). The below table shows year and crop wise increases.



**Figure 14. Access outreach and farmer income per US\$ investment**

**Table 3. Return of Investment for Farming Activities**

| Return on Investment | Baseline Year FY2017 | FY2018 | FY2019 | FY2020 | FY2021 | % of Change |
|----------------------|----------------------|--------|--------|--------|--------|-------------|
| Rice                 | 1.01                 | 1.05   | 0.93   | 1.26   | 1.06   | 5           |
| Maize                | 1.85                 | 1.97   | 1.85   | 2.03   | 1.87   | 1           |
| Mungbean             | 2.74                 | 2.33   | 1.71   | 2.19   | 1.67   | -39         |
| Sesame               | 1.95                 | 1.74   | 3.83   | 1.10   | 1.56   | -20         |
| Sunflower            | 1.08                 | 1.26   | 1.52   | 1.67   |        | 55          |

For the rice sector, ROI was high (5 percent more) in comparison to the baseline (1.06 from 1.01), but in FY2019 it dropped as market prices were low. For the maize sector ROI increased slightly (1.85 to 1.87), only one percent and for mung bean and sesame ROI decreased in comparison to the baseline. For sunflower the ROI was 55 percent higher compared with the baseline.

Private partner business growth ROI increased from \$9.02 to \$16.83 in 2021, an increase of 87 percent.

# 6 VISION FOR AN IMPROVED CORE AND SUPPORT MARKET SYSTEM

Much of RDCs' work is just beginning to gain traction. There are both significant opportunities to scale existing activities and to pursue new activities that have potential to scale based on RDC's activity. The interventions developed by RDC stem from learning and refinement of activities and focus on those that are most able to transform the FTF zone and improve food security at scale.

Focus areas going forward could include building on existing RDC activities:

## **Access to Finance**

Any access to finance initiative should be embedded within a broader market systems program, which will create efficiencies in catalyzing finance to smallholder farmers at nine percent rather than the 30 percent — the average microfinance institution (MFI) rate. Bangladesh banks are mandated by the government to have 2.5 percent of their investment portfolio in agriculture. As a result, they pass these funds on to the MFIs, which lend to farmers (at higher interest rates), as this reduces bank risk. Below are some specific access to finance interventions that could further catalyze capital into rural areas:

- Increased scaling of channel banking outlets (i.e., agents, micro-merchants)
- Roll out of mobile money solutions
- Key opportunity to engage the private sector (i.e., banks, mobile money providers, telecom companies, etc.)
- Utilize asset-based financing products
- Cluster and value chain financing for micro, small-, and medium-sized enterprises (MSMEs) in Bangladesh
- Cluster and value chain financing can be used to solve financial and non-financial barriers of the MSMEs and drive MSME growth and competitiveness in Bangladesh. A cluster and value chain financing approach could open opportunities for MSME financing and tailor financial instruments.

Broad ways in which this can be done include but are not limited to the following:

- Incorporate interconnected enterprises in the backward and the forward market linkages.
- Introduce cluster financing and value chain financing to banks and non-bank financial institutions by attracting banks and financial institutions to channel cluster financing based on the five-year national cluster and value chain development financing strategy.
- Adapt cluster and value chain financing to facilitate financial inclusion of women entrepreneurs.
- Introduce revenue models comprehensive/portfolio insurance products with agri-loans to safeguard the smallholder producers from unforeseen shocks and build resilience.

## **Bio-Inputs: (Trichoderma and Inoculant)**

Every seed planted in Bangladesh should at least be treated with Trichoderma. This protects seed against soil borne pathogens, improves germination and increases yields. All legumes planted in Bangladesh should be treated with inoculant. This nitrogen-fixing technology significantly improves yields and improves plant vigor, making plants less susceptible to disease. There is potential for firms to establish their own laboratories to produce these inputs and reduce their reliance on research institutions for the primary strains. Widescale adoption of these technologies would not only serve the FTF zone but also the broader Bangladesh agricultural environment.

## **High Yielding/Premium Variety Seeds:**

New drought-, disease-, and submergent-tolerant varieties are available and offer enhanced opportunities to farmers. In sunflower, the advent of dwarf varieties would address climate risks (lodging after storms) in production. Current groundnut varieties do not meet the snack food industry demand for larger kernels. RDC has worked with the Peanut Innovation Lab to introduce new varieties, though these processes are slow because of government-mandated breeding periods of at least three years. Similarly, improved seed could be developed in collaboration with the Soybean Innovation Lab.

## **Access to Mechanisation:**

- The roll out of combine harvesters has started but can be accelerated by the availability of asset-based financing. This would also apply to seedling transplanters, which are in a nascent phase in Bangladesh, but widely used in other rice producing countries.
- Potential for the expansion of the franchisee model

- The collaboration between RDC (access to mechanization) and CSISA MEA (spare part availability, driver and mechanic training, and support to livestock service providers) has built on the strengths of both activities.
- Expansion of the “booking agent” model to maximize equipment field time and farmers served

**Gender:**

- More emphasis on GAP-type approaches (business incubators, mentoring) and iSocial-type (women as sales agents) approaches
- Strengthening women/sales advisory services

**Trade - Commodity Exchange**

- Additional support will be needed to further scale this pilot that the RDC Activity supported for the commodity exchange to establish itself as a preferred trade methodology. Follow on phases of certified warehousing and a warehouse receipt system will enhance access to finance. Commodity specifications have already been developed and the promoters of the exchange are in the process of attracting shareholders from the commodity trade, food, and feed processing industries as well as the financial sector.

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