

### SAPLING ANNUAL SURVEY REPORT – 2021



Sustainable Agriculture and Production Linked to Improved Nutrition Status, Resilience and Gender Equity (SAPLING)

### **SAPLING ANNUAL SURVEY REPORT – 2021**

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### **Table of Contents**

Executive Summary7
Background9
Section I: Study Overview11
I.I Purpose of the Study11
I.2 Annual Survey11
Section 2: Methods12
2.1. Study Design
2.2. Study Area
2.3. Sample Selection
2.4. Household Questionnaire
2.5. Enumerator Training14
2.6. Supervision and Quality Control14
2.7. Data Management and Analysis15
2.8. Sample Weights
Section 3: Results
3.1 Survey population and characteristics
3.2. IEHFP       17         3.2.1. FY21 Participation in Farming Activities       17         3.2.2. Participant score on HFP knowledge index (C-14)       18         3.2.3. Number of farmers and others who have applied improved technologies or management       18
practices with USG assistance (PM-16)
3.3 Nutrition
3.3.1. Proportion of women of reproductive age who are consuming minimum dietary diversity (FFP-4)
3.3.2. Prevalence of early initiation breastfeeding (C-16)22
3.3.3. Prevalence of exclusive breastfeeding of children under six months of age (BL13)
3.3.4. Percentage of children 6-23 months consuming animal source foods in the previous day 
3.4 WASH
3.4.1. Percentage of caregivers washing hands at five critical times (C-19)
3.4.2. Percentage of mothers and caregivers who can report when they should wash their hands

(C-	-60)	26
3.5 Disaster R	Risk Management	27
3.5.1. Percer stre	entage of men/women reporting improved capacity to respond to s resses (C-26)	hocks and 27
3.5.2. Percer red	entage of men/women from vulnerable households implementing a ducing practices to improve resilience to human induced or natura	t least two risk- I hazards (C-27) 27
3.5.3. Percer act	entage of men/women from vulnerable households who identify 3 p tivities that can be taken up at the household level (C-28)	reparedness 28
Section 4: Co	nclusion	30

### List of Acronyms and Abbreviations

BHA	Bureau of Humanitarian Assistance
CRS	Catholic Relief Services
CHT	Chittagong Hill Tracts
DRM	Disaster Risk Management
FY	Fiscal Year
GESI	Gender Equality and Social Inclusion
HFP	Homestead Food Production
HH	Household
НКІ	Helen Keller International
IEHFP	Integrated Enhanced Homestead Food Production
IGA	Income Generating Activities
IPTT	Indicator Performance Tracking Table
IYCF	Infant and Young Child Feeding
M&E	Monitoring and Evaluation
MAD	Minimum Acceptable Diet
MCHN	Maternal and Child Health and Nutrition
MIS	Monitoring Information System
MOCHTA	Ministry of Chittagong Hill Tracts Affairs
NGO	Non-Governmental Organization
ODK	Open Data Kit
PIRS	Performance Indicator Reference Sheets
PPE	Personal Protective Equipment
RFSA	Resilience Food Security Activity
RPS	Routine Participant Survey
SAPLING	Sustainable Agriculture and Production Linked to Improved Nutrition Status, Resilience, and Gender Equity
SILC	Savings and Internal Lending Communities
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene

### List of Tables

Table 1. Indicators for Annual Monitoring	11
Table 2. Number of unions/pourashavas (Ps) included as survey study areas in FY20 and FY21	12
Table 3. Number of households (HH) surveyed in FY17-FY21	16
Table 4. Percentage of participants with correct HFP knowledge, FY17-FY21	19
Table 5. Percentage of farmers practicing each type of improved technology, FY17-FY21	20
Table 6. Percentage of caregivers washing hands at each critical time, FY17-FY21	25
Table 7. Percentage of caregivers with knowledge of washing hands at each critical time, FY19-FY21	26
Table 8. Percentage of men/women implementing individual risk reduction practices, FY17-FY21	28
Table 9. Percentage of men/women able to identify each preparedness activity, FY17-FY21	29

### List of Figures

Figure 1. Households with "Moderate" Food Insecurity, FY19-FY21	. 17
Figure 2. Farming activities among IEHFP enrolled households, FY17-FY21	. 17
Figure 3. Main reasons for non-involvement in farming, FY17-FY21	. 18
Figure 4. Mean score on HFP knowledge index, FY17-FY21	. 18
Figure 5. Percentage of farmers practicing improved technologies, FY17-FY21	. 19
Figure 6. Percentage of farmers using water for irrigation, livestock and aquaculture, FY17-FY21	. 20
Figure 7. Percentage producers who report market access, FY17-FY21	21
Figure 8. Percentage of women meeting minimum dietary diversity, FY17-FY21	21
Figure 9. Women's mean dietary diversity score, FY17-FY21	22
Figure 10. Prevalence of early initiation of breastfeeding, FY17-FY21	22
Figure 11. Prevalence of exclusive breastfeeding (0-5 Months), FY17-FY21	23
Figure 12. Percentage of children 6-23 months consuming animal source foods, FY17-FY21	23
Figure 13. Minimum acceptable diet for children 0-23 months, FY17-FY21	. 24
Figure 14. Percentage of caregivers washing hands at five critical times, FY17-FY21	25
Figure 15. Caregivers with any handwashing at all five critical times, FY21	. 25
Figure 16. Percentage of caregivers with knowledge on washing hands at five critical times, FY19-FY21	. 26
Figure 17. Percentage of men/women reporting improved capacity to respond to shocks and stresses, FY17-FY21	. 27
Figure 18. Percentage of men/women implementing at least 2 risk reducing practices, FY17-FY21	. 27
Figure 19. Percentage of men/women able to identify 3 preparedness activities, FY17-FY21	. 28

#### **Executive Summary**

On September 30, 2015, Helen Keller International (HKI) was awarded a five-year cooperative agreement by the United States Agency for International Development (USAID) to lead the Sustainable Agriculture and Production Linked to Improved Nutrition Status, Resilience and Gender Equity (SAPLING) Resilience Food Security Activity (RFSA), which was later extended through December 2021. SAPLING's goal is improved gender equitable food security, nutrition, and resilience of vulnerable people in the Chittagong Hill Tracts (CHT) region of Bangladesh. This is achieved by implementing activities designed to increase household (HH) availability, utilization, and access to nutritious foods and income, enhance maternal and child health and nutrition (MCHN), and improve resilience of families who are under constant threat of natural and humaninduced shocks and stressors. SAPLING supports the Ministry of Chittagong Hill Tracts Affairs (MOCHTA) to achieve its Sustainable Development Goals by implementing activities in the upazilas (subdistricts) of Ruma, Bandarban Sadar, Lama, Thanchi, and Rowangchari. SAPLING reached 46,802 unique participants this fiscal year (FY), 86% (40,156) of whom are female, and 14% (6,646) male, from 11 minority ethnic groups and Bengalis. FY21 marked the end of field activities, with SAPLING continuing to implement Savings and Internal Lending Communities (SILC) and Income Generating Activities (IGA) in all unions, completing Integrated Enhanced Homestead Food Production (IEHFP) and MCHN modules to graduate participants in 13 priority unions, and fully implementing additional strengthening activities under the IEHFP and MCHN interventions in four focus unions.

The COVID-19 epidemic has continued to create unprecedented global emergencies impacting every region of the world. Bandarban District, where SAPLING operates, has continued to be impacted both by the virus itself and government mandated lockdowns to prevent and mitigate the virus' spread. In FY21, lockdowns were repeatedly extended, stretching from April 5 to August 10, impacting all facets of life and ability to measure annual program outcomes as planned.

The FY21 assessment consists of two surveys, a routine participant survey (RPS) conducted regularly throughout the FY, and a one-time annual survey conducted at the end of the year. Surveys were conducted in the unions where the respective activities were implemented with face-to-face interviews.

SAPLING participants maintained both their homestead food production (HFP) knowledge and practices, with nearly all participating in farming activities. After the efforts to improve access to water sources and promote appropriate watering practices, a greater percentage of participants reported using water for agricultural purposes in FY21, up 8% points from FY20. Another encouraging result was the increasing percentage of farmers engaging in livelihoods activities due to access and use of markets in FY21.

SAPLING HHs suffered most this year in terms of their food security and diets. The prevalence of women meeting minimum dietary diversity and children achieving minimally adequate diets decreased, with women consuming fewer food groups in FY21 than in FY20. Breastfeeding practices among younger children increased slightly, although this was not statistically significant. Handwashing rates and knowledge of handwashing decreased significantly from FY20, although results did show that handwashing of any kind, with or without soap was significantly higher. In FY21, participants across the board reported a reduced capacity to respond to shocks and stressors accompanied by a reduced number that undertook at least two prevention mechanisms. Knowledge of actions to take also decreased, likely reflecting a loss of some knowledge after phasing out the disaster risk management (DRM) intervention in FY20.

Overall, despite the continued impact of COVID-19 throughout FY21 and the extended lockdown period, coupled with seasonal disasters such as flooding and landslides, annual survey data show that SAPLING participants have incorporated agricultural technology as part of their growing activities, have improved access to markets for their goods and are persevering in the face of extended food insecurity and food availability due to lack of access to transportation and income. Overall, the project has achieved significant success over the course of the previous six years and HHs are engaging in better behaviors that have been, to a large extent, maintained.

#### Background

On September 30, 2015, Helen Keller International (HKI) was awarded a five-year cooperative agreement by the United States Agency for International Development (USAID) to lead the Sustainable Agriculture and Production Linked to Improved Nutrition Status, Resilience, and Gender Equity (SAPLING) project, a Resilience Food Security Activity (RFSA), which was later extended through December 2021. The overall goal of SAPLING is to improve gender equitable food security, nutrition, and resilience of vulnerable people in the Chittagong Hill Tracts (CHT) in Bangladesh. This is achieved by applying a multi-sectoral approach designed to increase availability, utilization and access to nutritious foods and income, enhance maternal and child health and nutrition (MCHN), and improve resilience among vulnerable families who are under constant threat of natural and human-induced shocks and disasters.

SAPLING originally implemented activities in all 1,579 paras (villages) within Ruma, Bandarban Sadar, Lama, Thanchi and Rowangchari upazilas in Bandarban District, initiating a gradual phase down and out in the later part of Fiscal Year 2020 (FY20). Through both a cost extension and no cost extension, SAPLING was able to implement select activities in select areas through much of FY21, completing all field work, minus one minor recovery effort in a fire-effected community, by the end of the FY.

The population in Bandarban is comprised of 12 ethnic groups, including Bengali, each with its own language, cultural traditions and deep-rooted allies and contenders. Although some conflicts are more recent, many are best understood within a historical geo-political context. SAPLING's approach is designed to work within this structure, in addition to the planning needed for the already complex scenario of working in such a remote and diverse environment.

SAPLING supports the Ministry of Chittagong Hill Tracts Affairs (MOCHTA) to achieve its commitment to the Sustainable Development Goals and has used a consortium approach for program implementation. As the prime, HKI is responsible for representation in addition to overall strategic vision, management, compliance, and quality control. HKI is also the technical lead on MCHN, income generation, gender, and environment. Catholic Relief Services (CRS) provides strategic direction and oversight of disaster risk management (DRM), water, sanitation, and hygiene (WASH), local capacity building, and Savings and Internal Lending Communities (SILC). Caritas Bangladesh is responsible for the day-to-day operational and technical management of field-level activities in the upazilas of Lama, Ruma and Bandarban Sadar, while also providing technical oversight in all five upazilas. In accordance with the Government of Bangladesh's circular, "Subject: Working procedure for foreign and foreign-assisted Bangladeshi non-governmental organizations (NGO) working in Bangladesh," two local NGOs, Tahzingdong and GRAUS, directly implemented field-level activities in FY21.

This document represents the annual results of the final year of implementation with activities phasing down and out from October 2020 – September 2021. Although a multiple-month lockdown from April 5<sup>th</sup> – August 10<sup>th</sup> affected project implementation along with the economic conditions of participant families as the country experienced its second year under the strain of the COVID-19 epidemic, activities were completed as planned thanks to the approval of the final no-cost extension. In FY21 SAPLING continued implementing SILC and IGA activities in all unions, completed Integrated Enhanced Homestead Food Production (IEHFP) and MCHN modules to graduate participants in 13 priority unions, and fully implemented additional

strengthening activities under the IEHFP and MCHN interventions in four focus unions. Surveys were able to be conducted in-person this year due to a no-cost extension, which allowed for data collection post-lockdown, reflecting a difference from last year's survey, which was conducted over the telephone with those participants who had cellular access.

#### Section I: Study Overview

#### I.2 Purpose of the Study

The purpose of the Annual Survey is to collect and process data for indicators set by the SAPLING project in the Indicator Performance Tracking Table (IPTT). This study reports on the FY21 status of those indicators and compares changes over time to track program progress and to identify components that need future attention.

#### I.2 Annual Survey

The quantitative survey gathered information from a sample of SAPLING participants selected probabilistically. Of the 58 annual monitoring indicators included in the SAPLING FY21 IPTT, data for 21 are collected through this survey. The other indicators are collected through the monitoring information system (MIS), focus group discussions, and post water and sanitation installation surveys. These 21 indicators are detailed in the Monitoring and Evaluation (M&E) plan and the annual monitoring Performance Indicator Reference Sheets (PIRS) as being collected through the Routine Participant Survey (RPS) or Annual Survey. Data on dietary diversity and infant and young child feeding (IYCF) was also collected to track progress of SAPLING's impact goals. The indicators presented in this report are summarized in Table 1.

	IEHFP
C-14	Participant score on Homestead Food Production (HFP) knowledge index
PM16	Number of farmers and others who have applied improved technologies or management practices with USG assistance
C-6	Percent of farmers who used water for irrigation, livestock, and aquaculture as a result of project support
C-8	Percent of producers reporting market access and use as a result of USG assistance
	NUTRITION
BLII	Proportion of women of reproductive age who are consuming a minimum dietary diversity
C-16	Prevalence of early initiation of breastfeeding (first I hour after birth)
BL13	Prevalence of exclusive breastfeeding of children under six months of age
	Percentage of children 6-23 months consuming animal source foods in the previous day
	WASH
C-19	Percent of caregivers washing hands at five critical times
C-60	Percent of mothers and caregivers who can report when they should wash their hands
	DRM
C-26	Percentage of men/women reporting improved capacity to respond to shocks and stresses
C-27	Percentage of men/women from vulnerable households implementing at least 2 risk-reducing practices to improve resilience to human induced or natural hazards
C-28	Percentage of men/women from vulnerable households who identify 3 preparedness activities that can be taken up at the household level

#### Table 1. Indicators for Annual Monitoring

#### Section 2: Methods

#### 2.1. Study Design

A structured in-person quantitative survey was undertaken with a probabilistic sample of MCHN and IEHFP SAPLING participants in the four active unions who were involved in activities during the FY. The questionnaire captured data on mobile tablets to track the indicators detailed in the IPTT as well as to track progress on SAPLING nutrition and feeding goals.

The FY21 assessment is comprised of two surveys, one implemented on a routine basis throughout the FY (monthly RPS), and a second one-time survey implemented at the end of the year (annual survey) with the same participants so that data could be merged and analyzed as needed. Those indicators that are more temporal or have shorter recall periods are included in the RPS while those that rely on an accumulation of the year's capacity development comprise the annual survey.

#### 2.2. Study Area

The SAPLING project is implemented in five out of seven upazilas in Bandarban District: Bandarban Sadar, Lama, Rowangchari, Ruma and Thanchi. While SAPLING engaged in IGA and SILC interventions in all 24 unions and two pourashavas, make up sessions for MCHN and IEHFP missed in FY20 were held in 13 unions and additional activities under MCHN and IEHFP were carried out in four unions as per the phase down plan.

	Total number	FY 2020	FY2021		
Upazila name	unions/Ps formerly in SAPLING	Survey Survey Unions/Ps Unions/Ps			
Bandarban Sadar	6	5	I		
Lama	8	8	3		
Rowangchari	4	4	0		
Ruma	4	3	0		
Thanchi	4	2	0		
Total	26	22	4		

|--|

#### 2.3. Sample Selection

The samples were drawn from the total population of registered participants reached this FY in the four active unions in face-to-face interviews completed at the end of all project activities and after the COVID-19 lockdown. The FY21 survey was implemented using two surveys, with one implemented on a routine (monthly) basis, with sample selection undertaken on a quarterly basis over the FY, and one survey with the same participants near the end of the FY.

A two-stage stratified cluster sampling approach was implemented. The sampling frames were stratified by the four unions/pourashavas, and 12 clusters per union (cluster=village) were selected. In each cluster, six IEHFP and eight MCHN participants were randomly selected. In total, 288 IEHFP participants and 480 MCHN participants were included.

The minimum sample size for IEHFP HHs is based on indicator PM-16, Number of farmers and others who have applied improved technologies or management practices with USG assistance. Of all agriculture-related SAPLING indicators, this requires the largest sample size. The calculation was made using the Sample Size Calculator for Beneficiary-Based Surveys in Support of Select Feed the Future Agricultural Annual Monitoring Indicators and is based on the following formula:

$$n = [1 + \delta(c-1)] \times \left[\frac{N^2 * z^2 * s^2}{MOE^2}\right]$$

Where:

N = Total number of participating farmers

 $\delta$  = Intra-cluster correlation

c = Number of participants sampled in each cluster

z = Critical value from Normal Probability Distribution

s = Standard deviation of the distribution of beneficiary data

MOE = Margin of error

FY calculations assumed 46,051 farmers, with a target that all 46,051 will apply improved technologies. With an intra-cluster correlation coefficient of 0.01 (calculated from the FY17 SAPLING Annual Survey), a standard deviation of 0.50 and margin of error of 10%, the estimated sample size is 97. After inflating by 5% to account for non-response the final minimal sample size is 103. To ensure sufficient representation across the project area and to account for the sample required for additional non-agriculture-related indicators, it was determined six IEHFP participants would be selected per cluster. With the two-stage stratified cluster sampling approach and four active unions included in the FY21 Survey, this equals 288 IEHFP participants to be interviewed (six participants/cluster \* 12 clusters/union \* four unions in FY21).

The minimum MCHN sample size is based on C-19, Percentage of caregivers washing hands at five critical times. For this indicator, the following formula was used:

$$n = [1 + \delta(c-1)] \times [\frac{(Z_{\alpha} + Z_{\beta})^2 \times (P_1(1-P_1) + P_2(1-P_2))}{(P_2 - P_1)^2}]$$

Where:

- n = Required minimum sample size
- $\delta$  = Intra-cluster correlation
- c = Number of participants sampled in each cluster
- $P_1$  = Estimated level of an indicator currently
- $P_2$  = Expected level of the indicator at some future date
- $Z_{\alpha}$  = Z-score corresponding to the degree of confidence with which it is desired to be able to conclude that an observed change of size (P2 P1) would not have occurred by chance ( $\alpha$  the level of statistical significance)
- $Z_{\beta}$  = Z-score corresponding to the degree of confidence with which it is desired to be certain of detecting a change of size (P2 - P1) if one actually occurred ( $\beta$  - statistical power)

The calculation was designed to detect a 9% point increase in handwashing from the FY17 value of 7%, and assumes a 95% confidence level, 0.5 standard deviation, 5% margin of error, an intra-

cluster correlation coefficient of 0.01, and a design effect of 1.23, and 5% non-response. This estimated a sample size of 496. Again, to ensure sufficient representation across the project area, it was determined eight MCHN participants would be selected per cluster. With the two-stage stratified cluster sampling approach and four active unions included in the FY21 Survey, this equals 480 MCHN participants to be interviewed (eight participants/cluster \* 15 clusters/union \* four unions in FY21). This is slightly below the estimated sample size as many remote paras/clusters had fewer than eight MCHN participants.

#### 2.4. Household Questionnaire

The two survey questionnaires asked different types of questions of participants. The monthly RPS asked temporal or seasonal questions along with those with shorter recall, while the annual survey asked questions that were related to accumulation of knowledge after the FY capacity development sessions. Questions were asked of the main SAPLING participant in each HH. If this person was not available or did not have the information to respond, other adult HH members could assist in responding.

Each survey was divided into different modules with the RPS containing six modules asked of participants while the annual survey had eleven. Module I for both surveys involved **Informed Consent** – explaining the reasons for the survey, that participant were selected by chance, participation was voluntary and the approximate amount of time. Both surveys also shared Module 2 **Sample Identification**, which asked for basic HH and individual information, such as the upazila, union, village of residence, HH identification number, and the respondent's name, age and sex. Demographic information of the HH and ownership of televisions was also collected.

#### 2.5. Enumerator Training

Thirty-eight trained local data collectors, four supervisors, and a survey manager who conducted previous rounds of face-to-face annual surveys received training over a five-day period at the beginning of the year before starting the RPS and again in July 2021 before the beginning of the annual survey. They were instructed on the content of the questionnaire, use of mobile tablets and Open Data Kit (ODK) tablet-based data collection system. Both classroom and in-person practice sessions were incorporated into the training, along with feedback sessions to discuss difficulties and to address any issues with the questionnaire.

#### 2.6. Supervision and Quality Control

Survey supervisors of the 38 enumerators assured data quality by reviewing each survey as it was completed. Survey time was recorded at the beginning and end of the survey in ODK and surveys were reviewed to ensure they were the appropriate length. Ten percent of all participants were revisited following the survey to ensure that they were interviewed.

The survey manager reviewed questionnaires as they were completed to assure data quality with collectors every day. Any inconsistencies were resolved during this review with data collectors. The survey manager addressed any issues found with the individual data collector, while also clarifying issues that collectors had in common.

#### 2.7. Data Management and Analysis

ONA, a platform for mobile data collection, was used for programming the questionnaire and checklist into electronic form. Data were collected on mobile devices, validated by field supervisors, and uploaded to ONA's online server (<u>www.ona.io</u>) throughout the data collection period. Data were downloaded, cleaned, and analyzed using Stata software (Version 14) through replicable \*.do files updated from the FY20 annual survey. The FY21 original data were preserved in an unaltered state, with cleaned and prepared data stored separately.

Data for FY21 are presented as weighted percentages for categorical indicators and weighted means for continuous indicators. Weights for the two-stage sampling design were applied to account for the differences in size of enrolled populations between unions and villages, respectively. The sampled HHs were weighted by the inverse of the selection probability of HHs. Indicators were calculated according to PIRS. Data are reported in aggregate for the overall SAPLING project ("SAPLING Overall") and stratified by upazila where specified. Alongside FY21 data, data from FY17, FY18, FY19, and FY20 are presented for comparison. Differences between FY20 and FY21 were only run at the 'Overall' level—the sample size was insufficient for testing at the union level—and were determined with two-sided Pearson chisquare test for categorical variables and linear regression for continuous variables. Statistical significance was defined as p<0.05.

#### 2.8. Sample Weights

Data for FY21 are presented as weighted percentages for categorical indicators and means for continuous indicators. Data are adjusted for clustering at the union level and sampling weights are applied to compensate for the differential representation of the union in the survey sample compared to the SAPLING population. Probability weights were created by union as this is the strata used in the sampling design. The sampled HHs were weighted by the inverse of the selection probability of HHs. The procedure used for calculating the selection probability of HHs (the sampling weight) is given below.

$$P_{i,u,t} = \frac{n_{u,a,t}}{N_{u,a,t}}$$

Where:

P is the probability of selection for HH *i* in union *u* at time *t*, *n* is the sample selected in union *u* for activity *a* at time *t*, and N is the population of participant in union *u* for activity *a* at time *t*. The sampling weight will be the inverse of this value:

$$W_{i,u,t} = \frac{1}{P_{i,u,t}}$$

#### **Section 3: Results**

#### 3.1 Survey population and characteristics

Data were collected from 286 selected participants for IEHFP and 397 participants for MCHN (Table 3) in FY21. Any IEHFP participant with a lactating woman or young child living in their HH was also included in the MCHN assessment and data were weighted accordingly. Thus, 45 participants that were selected for the IEHFP survey had a pregnant/lactating woman and/or a child under 24 months in the HH and were also asked the MCHN-relevant modules. While both the RPS and Annual surveys interviewed the same participants, three participants included in the RPS were not available for the Annual survey. The number presented in Table 3 are those that were included in both surveys in FY21.

	FY17 Total	FY18 Total	FY19 Total	FY20 Total	FY21 Total
Total Number Surveyed	2,492	2,478	2,497	2,096	689
Number IEHFP	1,872	1,859	1,871	1,580	286
Number with children <24 months & pregnant/lactating woman	259	191	210	146	44
Number with pregnant/lactating woman only	32	41	32	43	5
Number MCHN	620	619	626	516	397
Number with children <24 months	533	527	527	468	361

#### Table 3. Number of participants surveyed in FY17-FY21

Among all FY21 respondents, 99.8% were female and the mean age was 35.7 years. One-third (33%) of participants were 15-29 years of age. Mean HH size was 5.0 people, the same as in FY20. Nearly half of all HHs (44%) earned income through farming and agriculture—17% agricultural day laborers, 16% non-paddy farmers, 7% paddy farmers, and 5% Jhum farmers—which is a decrease compared to 58% in FY20 (p=0.07). The decrease was primarily attributable to Jhum farmers, with 22% generating income from this farming in FY20 (p<0.001), possibly due to COVID-19 lockdowns. Another 35% were unskilled day laborers, up from 16% in FY20 (p<0.001), and 21% reported other occupation as the main source of HH income. There were no other significant differences in income generating activities between FY.

HH food insecurity is a key outcome of the project and increased significantly over the FY (Figure I), likely demonstrating the long-term aspects of COVID-19 and subsequent lockdowns. The Household Hunger Scale was collected beginning in FY19 per Bureau of Humanitarian Assistance (BHA) guidelines. HHs saw an 18% point increase in the number of HHs reporting moderate hunger (up from 6% in FY20). Reduced availability and access to food overall is likely associated with the quality of the diet. The increase in food insecurity was true for all areas.



Figure 1. Households with "Moderate" Food Insecurity, FY19-FY21

\* p<0.05 difference between FY20 & FY21 at Overall level

#### 3.2. IEHFP

#### 3.2.1. FY21 Participation in Farming Activities

HHs that were enrolled in IEHFP activities were asked what types of farming activities they were involved in at the time of the survey (Figure 2). In FY21, as in the previous year, nearly all HHs interviewed (96%) were involved in vegetable gardening (p=0.75). The proportion of HHs involved with livestock rearing (36%) was also similar to the previous year's value (p=0.55). Poultry rearing, however, increased significantly between FY20 and FY21, up by 10% points (p=0.001). While aquaculture activities ended in FY19, a similar percentage reported being engaged in activities as in the past.



\* p<0.05 difference between FY20 & FY21; Aquaculture not assessed in FY20 due to telephone survey length

Non-farming IEHFP enrolled HHs were asked why they were not currently engaged in farming activities (Figure 3). Lack of cultivable land (67%) was a prominent barrier faced by SAPLING participants over the past five years, increasing by two percentage points from FY20 (p=0.96). A lack of interest and input materials was reported by a much larger percentage, although non-statistically significant percentage of those who did not engage in farming, up from 24% to 67% (p=0.25) and 13% to 67% (p=0.10) respectively. Lack of time was similar to the previous FY (p=0.95). Non-IEHFP HHs are a tiny number of the overall HHs—so while data in Figure 3 appears to have large swings, the values reflect only a few people reporting, which is also why none of the differences are significant.





No statistically significant differences between FY20 & FY21

#### 3.2.2. Participant score on HFP knowledge index (C-14)

This SAPLING custom indicator measures the average score of participant knowledge on HFP, including the benefits of raised beds, the importance of and materials used for mulching, and questions related to raising and ventilating poultry sheds. Participants' answers to 10 questions are summed and scored on a range of 0-1, with a score of 0 indicating no knowledge and a score of I indicating full knowledge.

HFP knowledge decreased by six percent points overall between FY20 and FY21 (p<0.001) for SAPLING IEHFP beneficiaries (Figure 4) with similar small decreases in three of the four unions. While the overall drop in knowledge was significant compared with FY20, it is still 35% points higher than at project start in FY17 and meant that for the most part knowledge has been maintained, even in the face of limited in-person HFP capacity development in FY21.





\* p<0.05 difference between FY20 & FY21 at Overall level

Table 4 details the 10 individual questions in the HFP knowledge indicator. Participants' knowledge was for the most part maintained or even increased slightly from the previous FY, with the exception of shade tolerant varieties, which saw a significant 14% decrease between FY20 and FY21 (p=0.005). However, this is still far greater than the 14% who could name shade tolerant varieties in FY17.

	FY-17	FY-18	FY-19	FY-20	FY-21	Change FY-20/21
Benefits of making a raised bed	75	91	98	99	100	+
Shade tolerant variety*	14	34	65	75	61	- 14
Boundary/fencing crop	10	66	86	94	96	+ 2
Benefits of live fencing	49	69	89	96	94	+ 2
Materials used to mulch garden	89	96	99	100	100	0
Benefits of mulching	91	96	99	100	100	0
Season to mulch^	15	26	44	-	50	-
Benefits building poultry shed off the ground	83	93	95	99	99	0
Well-ventilated shed	56	81	89	96	98	+ 2
Build separate space for birds/chicks	53	82	89	96	92	- 4

Table 4. Percentage of participants with correct HFP knowledge, FY17-FY21

\* p<0.05 difference between FY20 & FY21; ^ Season to mulch not assessed in FY20

## 3.2.3. Number of farmers and others who have applied improved technologies or management practices with USG assistance (PM-16)

A key outcome indicator in USAID programs, PM-16 measures the total number of directly participating farmers and other producers that applied improved technologies during the reporting year. All IEHFP HHs surveyed practicing homestead vegetable production over the past 12 months reported on the improved practices they used during their production period. Ninetysix percent of all SAPLING producers (Figure 5) reported that they applied at least one improved technologies was also high across all four focus unions with the exception of Suwalak. Maintaining these values demonstrates the sustainability of the effort as participants received make up sessions and technical support from the project, and less agriculture specific training and more integrated content with a focus on problem solving and trouble shooting. The target for FY21 was 9,827 farmers practicing at least one of the improved technologies, which was overachieved at 132% with 12,964 farmers.



Figure 5. Percentage of farmers practicing improved technologies, FY17-FY21

No statistically significant difference between FY20 & FY21 at Overall level

Technologies adopted by SAPLING participants showed maintenance and improvement from the previous year in all but two categories (Table 5). In FY21 nearly all farmers continued reporting adopting crop genetics, cultural practices, and soil fertility technologies. The practice of pest

management, and developed irrigation grew the most since FY20 by 9% and 8% respectively (p=0.007 and p=0.14). Only marketing and distribution and storage and processing saw decreases, possibly as a result of COVID-19 and the subsequent extended lockdown where many markets were closed and transportation inaccessible due to costs or suspended services.

	FY-17	FY-18	FY-19	FY-20	FY-21	Change FY-20/21		
Crop Genetics	76	87	77	96	96	0		
Cultural Practices	75	86	78	96	96	0		
Pest-disease Management*	26	54	33	80	89	+ 9		
Soil Fertility	50	70	59	91	94	+ 3		
Developed Irrigation	2	24	26	55	63	+ 8		
Climate Adaptation	0	2	2	17	18	+		
Marketing & Distribution*	3	13	18	47	19	- 28		
Storage & Processing	35	36	22	71	59	- 12		

Table 5.	Percentag	e of	farmers	practicing	each ty	vpe of in	nproved technology,	FY17-FY21
					, ,		1 8/2	

\* p<0.05 difference between FY20 & FY21

#### 3.2.4. Percentage of farmers who used water for irrigation, livestock and aquaculture as a result of project support (C-6)

Sixty-three percent of participants reported using water for agricultural purposes in FY21, an increase of eight percent from FY20, although this increase was not statistically significant (Figure 6). This increase appears to have been driven by the 28% point change in Suwalak as the other unions saw decreases in use.



Figure 6. Percentage of farmers using water for irrigation, livestock and aquaculture, FY17-FY21

No statistically significant difference between FY20 & FY21 at Overall level

#### 3.2.5. Percentage of producers reporting market access and use as a result of USG assistance (C-8)

Overall, 79% of surveyed SAPLING producers reported having access and use of markets in FY21, an increase of 3% points over FY20 (although not statistically significant; p=0.49) (Figure 7). This is notable given the pandemic and restricted mobility many participants faced from mid-April to mid-August due to government lockdowns. The increase was due to producers in Fasyahkhali and Gajalia, while Suwalak and Rupishipara showed declines in market access.





No statistically significant difference between FY20 & FY21 at Overall level

#### 3.3 Nutrition

# 3.3.1. Proportion of women of reproductive age who are consuming minimum dietary diversity (BLII)

Women's dietary diversity was assessed among all MCHN selected HHs and those IEHFP HHs with pregnant or lactating women. A free recall of all foods and liquids consumed in the previous 24 hours was asked of the women, and the foods they consumed were categorized into 10 different groups. Consumption of five food groups is the threshold for minimum dietary diversity. In FY21 dietary diversity fell by 30% points compared to the previous year from 95% to 65% (p<0.001) (Figure 8). This likely reflects the extended COVID-19 prevention and mitigation lockdown which occurred from April to August 2021, with limited/closed markets, limited transport and overall movement restrictions.



Figure 8. Percentage of women meeting minimum dietary diversity, FY17-FY21

\* p<0.05 difference between FY20 & FY21 at Overall level

Mean dietary diversity score fell by 1.2 food groups, with women consuming on average 5.1 food groups in FY21, down from 6.3 in FY20 (p<0.001) (Figure 9). Diversity fell in all four unions surveyed compared to FY20 with the highest drop in Rupshipara. This is likely due to the COVID-19 lockdowns which shuttered markets and stopped transportation for four months.





\* p<0.05 difference between FY20 & FY21 at Overall level

#### 3.3.2. Prevalence of early initiation breastfeeding (C-16)

Early initiation of breastfeeding is defined as feeding breastmilk within one hour of birth. Early initiation helps ensure that infants consume colostrum, which is rich in antibodies and contains a higher proportion of protein, minerals and fat-soluble vitamins than later milk. Overall, in FY21 69% of new mothers reported engaging in early initiation of breastfeeding (Figure 10), down from 83% in FY20 (p<0.001). The life of award (LOA) target was 66%, which was exceeded. Improvements in this early breastfeeding practice were notable in Suwalak while the three other unions saw decreases.





\* p<0.05 difference between FY20 & FY21 at Overall level

# 3.3.3. Prevalence of exclusive breastfeeding of children under six months of age (BLI3)

Another IYCF indicator, exclusive breastfeeding for the first six months of life, saw sustained high rates over the FY (Figure 11). The percentage of children 0-5 months receiving only breastmilk and no other liquids or foods rose slightly to 89%, although this value was not statistically significantly different from the 86% seen in FY20 (p=0.69). Overall, SAPLING participants have maintained high rates of exclusive breastfeeding with increasing trends every year since FY17.



Rates fell in Suwalak and Fasyakhali and rose in Gajalia and Rupshipara.

No statistically significant difference between FY20 & FY21 at Overall level

#### 3.3.4. Percentage of children 6-23 months consuming animal source foods in the previous day

A free recall of all the foods and liquids consumed in the 24 hours prior to the survey was also captured for children 6-23 months of age living in the HH selected for the survey. Children who received any meat (beef, chicken, goat, etc.), organ meat, eggs, fish, shellfish, or milk-product foods were classified as consuming animal source foods. In FY21, 82% of young children consumed these foods (Figure 12), down from up from 96% in FY20 (p<0.001). Of the four unions surveyed in FY21, only Suwalak saw an increase in consumption of animal source foods.





\* p<0.05 difference between FY20 & FY21 at Overall level

Echoing the decline in consumption of animal source foods is the decrease in children 0-23 months consuming a minimum acceptable diet (MAD). Children's MAD dropped from 77% in FY20 to 54% in FY21 (p<0.001), similarly to values seen in FY18 and FY19 (Figure 13).



Figure 13. Minimum acceptable diet for children 0-23 months, FY17-FY21

\* p<0.05 difference between FY20 & FY21 at Overall level

MAD consists of two variables, dietary diversity, and meal frequency. Dietary diversity consists of consuming five of eight categories of food groups plus breastmilk, while meal frequency is dependent on the age of the child and breastfeeding status, consisting of two to four semi-solid and solid feedings.<sup>1</sup> Meal frequency remained similar to previous years with 89% meeting the age-based requirements compared to 92% in FY20 (p=0.26), but up from 77% in FY19 (data not shown). Dietary diversity, however, showed a similar downward trend as maternal dietary diversity, with 59% of caregivers reporting children consumed five of eight different food groups over the previous 24 hours. This is down from 82% in FY20 (p<0.001) and 65% and 62% respectively in FY19 and FY18 (data not shown).

#### 3.4 **WASH**

#### 3.4.1. Percentage of caregivers washing hands at five critical times (C-19)

Caregivers with children below two years of age were asked about their handwashing behaviors at critical points in the previous 24 hours. Per the SAPLING definition, appropriate handwashing behavior was met when caregivers reported they washed their hands with soap and water at all five critical times: washing hands after defecation and four additional times including before eating, before feeding child, before handling food, after cleaning an infant's feces, after cleaning a child/ adult bottom or toilet, and after cleaning a child's hands. In FY21, handwashing decreased from an all-time high of 33% in FY20 to 7% in FY21 (p<0.001) (Figure 14). Rates of handwashing at all five times increased in Suwalak but decreased in all other unions.

<sup>&</sup>lt;sup>1</sup> https://dhsprogram.com/data/Guide-to-DHS-Statistics/Minimum Dietary Diversity Minimum Meal Frequency and Minimum Acceptable Diet.htm



Figure 14. Percentage of caregivers washing hands at five critical times, FY17-FY21

\* p<0.05 difference between FY20 & FY21 at Overall level

Table 6 shows the percentage of caregivers who washed their hands at each of the critical times. Handwashing habits dropped in every category except cleaning the latrine which saw a statistically significant increase of 13% points (p=0.020). All other categories saw significant decreases in self-reported behaviors.

Table 0. Tercentage of caregivers wasning hands at each childar time, TTT-TZT							
	FY-17	FY-18	FY-19	FY-20	FY-21	Change FY-20/21	
After defecation*	38	54	71	75	57	- 18	
After cleaning latrine*	22	31	50	47	60	+ 13	
After cleaning child hands*	10	13	24	23	8	- 15	
After cleaning child feces*	36	59	76	93	65	- 28	
Before feeding child*	12	17	37	41	14	- 27	
Before handling food*	8	11	28	31	12	- 19	
Before eating*	15	11	25	38	15	- 23	

Table 6. Percentage of caregivers washing hands at each critical time, FY17-FY21

\* p<0.05 difference between FY20 & FY21

As can be seen in Figure 15, when any handwashing is taken into consideration, with soap or without, handwashing increases to 37% overall and up to 70% in Suwalak while reaching over 30% in the other three unions. This would indicate that access to or use of soap is a considerable barrier to appropriate handwashing.



Figure 15. Caregivers with any handwashing at all five critical times, FY21

# 3.4.2. Percentage of mothers and caregivers who can report when they should wash their hands (C-60)

Beginning in FY19, mothers and caregivers with children under two years were also surveyed about their knowledge of handwashing at the critical times assessed for indicator C-19. In FY21, 66% of women surveyed possessed familiarity with the need to wash their hands with soap and water after defecation and at least four additional times (Figure 16). This was a significant 26% point drop from the previous year (p<0.001), although improvements in knowledge were seen in both Suwalak and Gajalia unions.





In FY21, mothers and caregivers had significantly less familiarity with handwashing times with the exception of after cleaning latrines, which saw a statistically significant 14% increase (p=0.001) (Table 7). Despite knowledge drops, awareness of most times remained high, with the vast majority of participants aware that it is important to wash hands after cleaning child feces (94%), after defecation, after cleaning latrine and before feeding a child (82% for all three). Knowledge of handwashing after cleaning hands (44%) and before handling food (60%) remained lower than other indicators, as seen in previous years.

Table 7. Percentage of caregivers with knowledge of washing hands at each critical time, FY19-FY21

	FY-19	FY-20	FY-21	Change FY-20/21
After defecation*	91	94	82	- 12
After cleaning latrine*	52	68	82	+ 14
After cleaning child hands*	55	67	44	- 23
After cleaning child feces*	96	99	94	- 5
Before feeding child*	92	94	82	- 12
Before handling food*	82	80	60	- 20
Before eating*	95	95	77	- 18

\* p<0.05 difference between FY20 & FY21

<sup>\*</sup> p<0.05 difference between FY20 & FY21 at Overall level

#### 3.5 Disaster Risk Management

# 3.5.1. Percentage of men/women reporting improved capacity to respond to shocks and stresses (C-26)

Custom indicator C-26 measures participants' perceptions of their own ability to manage shocks and stresses. In FY21 participants reported a reduced capacity to respond, with only 8% confident in their capacity to respond to serious events compared to 14% in FY20. This difference was not statistically significant however (p=0.11). Suwalak and Fasyakhali increased their confidence in their abilities while Gajalia's perceived abilities dropped by 5% points and Rupishipara maintained the balance of no participants feeling as if they have an improved capacity.

Figure 17. Percentage of men/women reporting improved capacity to respond to shocks and stresses, FY17-FY21



No difference between FY20 & FY21 at Overall level

# 3.5.2. Percentage of men/women from vulnerable households implementing at least two risk-reducing practices to improve resilience to human induced or natural hazards (C-27)

While HHs' perceptions on their ability to respond to shocks and stresses dropped precipitously in FY20, the percentage of men and women employing risk reduction practices was higher at 74%, although still statistically significantly lower than in FY20 (p=0.001) (Figure 18). Each union saw a decrease in the percent of those implementing risk reduction practices, most notably in Fasyakhali which dropped by more than 40%.





\* p<0.05 difference between FY20 & FY21 at Overall level

Table 8 shows each risk reduction practice and the proportion adopting the practice. In FY21, six of the seven practices were being implemented with significantly (p<0.05) less frequency compared to FY20. The largest drop was in the percentage of families with more than one income option, followed by preparing temporary latrines, livestock evacuation, saving money and strengthening houses, vaccination and finally preserving seeds. SAPLING had no DRM activities during FY21.

	FY-17	FY-18	FY-19	FY-20	FY-21	Change FY-20/21
More than one income option*	4	9	29	51	29	- 22
Saving money/assets; stocking food*	50	40	65	76	60	- 16
Preserving seeds; gardening; planting trees to protect soil	14	15	31	36	31	- 5
Vaccination, preserve food, raised shelter for livestock/poultry*	14	П	20	35	23	- 12
Strengthened or retrofitting houses*	54	58	58	74	60	- 14
Evacuation plan for livestock assets*	4	8	13	34	17	- 17
Preparation temporary latrines for disaster*	I	3	4	20	2	- 18

Table 8. Percentage of men/women implementing individual risk reduction practices, FY17-FY21

\* p<0.05 difference between FY20 & FY21

# 3.5.3. Percentage of men/women from vulnerable households who identify 3 preparedness activities that can be taken up at the household level (C-28)

Fewer participants overall were also able to identify preparedness activities compared to FY20 (Figure 19), decreasing by a statistically significant 18% points (p<0.001), but still higher than in FY19, indicating that knowledge has been retained. Knowledge increased in Suwalak, and held constant in Gajalia and Rupshipara, with a real decrease in Fasayakhali. SAPLING had no DRM activities during FY21, so knowledge has been retained from previous year's capacity development.



Figure 19. Percentage of men/women able to identify 3 preparedness activities, FY17-FY21

\* p<0.05 difference between FY20 & FY21 at Overall level

Participants' knowledge of the individual risk reduction practices (Table 9) showed similar trends as actions with statistically significant decreases in all activities included in the index compared

with FY20 (p<0.05). Knowledge was retained the most for knowing that strengthening/retrofitting houses was a preparedness activity and worst for preparation of temporary latrines.

	FY-17	FY-18	FY-19	FY-20	FY-21	Change FY-20/21
More than one income option*	15	26	51	75	49	- 26
Saving money/assets; stocking food*	64	67	81	95	82	- 13
Preserving seeds; gardening; planting trees to protect soil*	21	26	52	71	57	- 14
Vaccination, preserve food, raised shelter for livestock/poultry*	30	24	46	70	59	- 11
Strengthened or retrofitting houses*	70	66	69	91	83	- 8
Evacuation plan for livestock assets*	13	17	29	63	44	- 19
Preparation temporary latrines for disaster*	3	9	11	38	4	- 34

Table 9. Percentage of men/women able to identify each preparedness activity, FY17-FY21

\* p<0.05 difference between FY20 & FY21

#### **Section 4: Conclusion**

FY21 continued the unprecedented events due to the COVID-19 epidemic, with a multi-month, government-enforced lockdown, continued prevention and mitigation measures, and fear and anxiety accompanying the spread of the disease. Nevertheless, SAPLING participants continued to prevail, maintaining or improving the majority of their knowledge or practice-related outcomes, despite the events of the past eighteen months, while dietary outcomes were negatively impacted by the economic crisis brought on by repeated shocks and stressors (including COVID-19 lockdowns).

SAPLING participants maintained both their HFP knowledge and practices, with nearly all participating in farming activities. This is despite the fact that several of the capacity development sessions were gender equality and social inclusion (GESI) make-up sessions from FY20 missed due to COVID-19 and the new sessions involved more integrated problem solving and troubleshooting than training.

After efforts to improve access to water sources in the previous FYs, a greater percentage of participants reported using water for agricultural purposes in FY21, up 8% points from FY20. Another encouraging result was the increasing percentage of farmers engaging in livelihoods activities due to access and use of markets in FY21. This is even more notable given the epidemic and restricted mobility many participants faced from April to August due to another government lockdown.

SAPLING HHs suffered most this year regarding their food security and diets. The prevalence of women meeting minimum dietary diversity and children achieving minimally adequate diets decreased, with women consuming fewer food groups in FY21 than in FY20. This is likely due to the extended COVID-19 lockdowns which restricted movement, access to markets, and income generation. Breastfeeding practices among younger children increased slightly, although this was not statistically significant. Handwashing rates and knowledge of handwashing decreased significantly from FY20, potentially reflecting a reduced emphasis on handwashing practices after the previous year's efforts, and a "COVID-fatigue effect" with participants beginning to consider COVID-19 a more normal part of life. Results did show that handwashing of any kind, with or without soap was higher, likely reflecting a lack of soap in the HH, due to closed markets or reduced income.

In FY21, participants across the board reported a reduced capacity to respond to shocks and stressors accompanied by a reduced number that undertook at least two prevention mechanisms. The continued impact of the COVID-19 epidemic may have reinforced feelings of reduced capacity for respondents due to both the scale of the disease and then introduction of a new range of prevention methods, some of which may have been beyond participants' ability to undertake (i.e., affording and obtaining personal protective equipment [PPE]). Knowledge of actions to take also decreased, likely reflecting a loss of some knowledge after disaster prevention capacity development ended in FY20.

Despite the overwhelming and precipitous events resulting from COVID-19 and additional yearly events such as flooding and landslides, the FY21 annual survey shows that SAPLING participants are continuing their adoption of agriculture technologies, and have increased access to markets, while persevering in the face of reduced access to availability of food. As SAPLING completed its

final year of field implementation, significant successes have been achieved and the lives of participants have been improved over the course of the six years of the program to ensure a lasting legacy for all participants.