



**Bangladesh Water Development Board (BWDB)**



Kingdom of the Netherlands

**Embassy of the Kingdom of the Netherlands (EKN) Dhaka, Bangladesh**



**Department of Agricultural Extension (DAE)**



## Technical Note 17

### Cycle 1 FFS Khulna

Follow up survey 3 years after start of FFS

Compared with benchmark and end data

June, 2017



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Follow up survey, 3 years after start of FFS  
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June 2017

Blue Gold Program

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# 1. Introduction

## 1.1 Three types of surveys

At the beginning of a Farmer Field School (FFS), the FFS facilitator interviews the participating farmers with a short questionnaire about their farm management and production. We call this the “benchmark survey”. The objectives of this benchmark survey are:

- To establish benchmarks that can be used by the participants for measuring their progress or changes in behaviour.
- To generate interest and introduce the topics which will be discussed and practiced in the FFS

At the end of the FFS the questions are repeated so that participants can measure their own progress. We call this the end line survey. The differences between the end data and the benchmark data (for example an increase of production can then be presented by the farmers during farmer field days.

End data are biased for several reasons. For example, farmers may exaggerate their production to show how well they performed in the training. Another cause for bias is that some inputs are provided in the FFS. If some chicks or ducklings were distributed during the training this will increase the number of birds per household in the end survey, but this does not mean that the increased production will sustain after the FFS.

The same survey can be repeated one or more years after the FFS; we call this a follow up survey. This survey can show if production or changes in behaviour have sustained over a longer period.

## 1.2 FFS Cycle 1

Blue Gold started organizing FFSs in November 2013. The first FFS cycle, from Nov 2013 to March 2014, included 44 FFS of which 24 took place in Patuakhali and 20 took place in Khulna. These FFSs included the modules poultry, homestead vegetables, and nutrition.

In December 2016, more than 2.5 years after the end of these FFSs (and 3 years after the start of the FFSs), the 20 FFSs in Khulna were revisited for a follow up survey. See Figure 1.

|         | 2013 |   | 2014 |   |   |   |   |   |   |   |   |   |   |   | 2015 |   |   |   |   |   |   |   |   |   |   |   | 2016 |   |   |   |   |   |   |   |   |   |   |   |   |
|---------|------|---|------|---|---|---|---|---|---|---|---|---|---|---|------|---|---|---|---|---|---|---|---|---|---|---|------|---|---|---|---|---|---|---|---|---|---|---|---|
|         | N    | D | J    | F | M | A | M | J | J | A | S | O | N | D | J    | F | M | A | M | J | J | A | S | O | N | D | J    | F | M | A | M | J | J | A | S | O | N | D |   |
| FFS     |      |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |   |
| Surveys | B    |   |      |   | E |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   | F |

B = Benchmark survey  
 E = Endline survey  
 F = Follow up survey

**Figure 1 Timeline showing FFS Cycle 1 with benchmark, end and follow up survey**

Of these 20 FFSs, 8 took place in Polder 22, and 12 were in Polder 30. Benchmark and end data of 3 FFSs were lost, so this report compares benchmark data, end data and follow up data of 17 FFSs (see Annex 2).

### 1.3 Interpreting the data

While reading this report please keep in mind that the surveys were not conducted by independent interviewers but by the FFS facilitators who also conducted the FFS training. Some bias towards showing good progress may therefore be expected. Especially in the end survey it can be expected that the participants while answering questions may be tempted to show themselves as a good performer.

### 1.4 Presentation of the results

The collected data are attached in Annex 1, where results of the 3 surveys (benchmark, end and follow up) are presented side by side. Each survey involved about 420 farmers. In the following 3 chapters the data are shown in tables, either as percentages (e.g. “percentage of farmers selling eggs”) or as average values (e.g. “average number of eggs consumed per farmer family in one month”). Some comments are included to help with the interpretation of the results. For the most salient data sets a graph is included.

The following table gives details of the 3 surveys conducted with Cycle 1 FFS in Khulna.

| Surveys details           | Benchmark    | End        | Follow up           |
|---------------------------|--------------|------------|---------------------|
| Period of data collection | Nov-Dec 2013 | March 2014 | Dec 2016 – Jan 2017 |
| Number of FFSs in survey  | 17           | 17         | 17                  |
| Total farmers involved    | 425          | 425        | 425                 |
| Records available         | 421          | 421        | 424                 |
| Records missing           | 4            | 4          | 1                   |



## 2. General information FFS participants

This chapter describes the profile of the FFS participants.

### 2.1 Polders

In Khulna, the cycle 1 FFSs took place in polders 22 and 30. See also Annex 2.

| Polder        | Benchmark | End | Follow up |
|---------------|-----------|-----|-----------|
| Polder 22     | 125       | 124 | 124       |
| Polder 30     | 296       | 297 | 300       |
| Total farmers | 421       | 421 | 424       |

### 2.2 Gender

About 87% of the participating farmers were women.

| Gender           | Benchmark | End | Follow up |
|------------------|-----------|-----|-----------|
| Men              | 54        | 59  | 52        |
| Women            | 367       | 362 | 372       |
| Total farmers    | 421       | 421 | 424       |
| Percentage women | 87        | 86  | 88        |

### 2.3 Age

In the FFSs, the average age of farmers was about 36 years.

| Age           | Benchmark | End  | Follow up |
|---------------|-----------|------|-----------|
| Average age   | 35.9      | 35.8 | 37.3      |
| Youngest      | 19        | 19   | 20        |
| Oldest        | 53        | 53   | 60        |
| Total farmers | 421       | 421  | 424       |

### 2.4 Literacy of participants

About 24% of the participants was illiterate or could only sign their names. The FFS approach is designed to use life examples and drawing so that also illiterate persons can participate.

| Percentage illiterate or can sign       | Benchmark | End | Follow up |
|---|-----------|-----|-----------|
| Illiterate or can sign only (% farmers) | 24        | 23  | 24        |

### 2.5 Main occupation

For about 90% of the FFS participants their main occupation is in agriculture, but this percentage seems to have gone down after 3 years, when more farmers reported “other” (unspecified) occupations.

| Main occupation (% farmers) | Benchmark | End | Follow up |
|-----------------------------|-----------|-----|-----------|
| Agriculture                 | 92        | 89  | 85        |
| Day labor                   | 1         | 0   | 1         |
| Service                     | 0         | -   | 1         |
| Fisherman                   | -         | 0   | 1         |
| Small business              | 0         | 1   | 1         |
| Others                      | 6         | 9   | 11        |

## 2.6 Land area and farm classification

On average farmers had about 150 decimals land during the benchmark survey. The average land size is calculated over all households (including those with no land. At the time of benchmark survey 20% of the households were landless (i.e. have less than 50 decimals agricultural land).

Note that 100 decimal = 1 acre = 0.4 ha, so 150 decimal corresponds to about 0.6 hectare. A household is considered landless if it has less than 0.2 hectare agricultural land.

In end survey and follow up survey we see that average land area has decreased and percentage landless households increased.

| Land area and farm classification        | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
| Area agriculture (decimal)               | 150       | 128 | 112       |
| Homestead area (decimal)                 | 24        | 23  | 19        |
| Zero agricultural land (% farmers)       | 1         | 1   | 8         |
| Landless (<50 decimal) (% farmers)       | 20        | 24  | 25        |
| Not landless (>= 50 decimal) (% farmers) | 80        | 76  | 75        |

## 2.7 Family income sources

Participants indicated the main sources of income for their family (household). In most cases (about 98%) the main family income is of agriculture, which is surprising as we have seen that over 20% of the families are landless.

| Family main income sources (% farmers) * | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
| Agriculture                              | 99        | 98  | 97        |
| Small business                           | 3         | 2   | 2         |
| Day labor                                | 3         | 12  | 4         |
| Other                                    | 3         | 11  | 1         |

\* More than one income source could be indicated

## 2.8 Family size

The average family size was 4.7 persons.

| Family size (number persons) | Benchmark | End | Follow up |
|------------------------------|-----------|-----|-----------|
| Average male number          | 2.3       | 2.3 | 2.3       |
| Average female number        | 2.4       | 2.3 | 2.5       |
| Average family size          | 4.7       | 4.6 | 4.7       |
| Min male number              | -         | 1   | -         |
| Max male number              | 8         | 7   | 7         |
| Min female number            | 1         | 1   | 1         |
| Max female number            | 10        | 10  | 20        |
| Min family size              | 1         | 2   | 1         |
| Max family size              | 17        | 17  | 21        |

## 3. Poultry

FFS cycle 1 included the poultry module. Objective of this module is to increase the production of birds and eggs and reduce losses due to diseases. Technical topics in the poultry module include housing, feeding, use of hazal, separating chicks from the mother hen, candling, and vaccination.

### 3.1 Number of birds

Data were collected for number of chickens, chicks, ducks and ducklings. In all cases we see that the percentage of farmers with birds increased during the end survey and reduced again in the follow up survey (except for ducks, where the percentage was highest in the follow up survey). Also in all cases we see that the percentage of farmers with birds in the follow up survey remained higher than it was before the FFS.

The number of chickens per farmer was higher in the end survey ( a result of chicks being distributed in the FFS) and dropped again in the follow up survey. But 2.5 years after the FFS, the number of chicken per farmer is still higher than before the FFS. The same applies for chicks, ducks, and ducklings.

| Chicken                                 | Benchmark | End  | Follow up |
|---|-----------|------|-----------|
| % farmers with chicken                  | 83        | 99   | 85        |
| Average chicken (for all farmers)       | 5.7       | 14.0 | 6.0       |
| Average chicken (for who have chicken)) | 6.9       | 14.2 | 7.1       |

| Chicks                               | Benchmark | End  | Follow up |
|--------------------------------------|-----------|------|-----------|
| % farmers with chicks                | 20        | 71   | 53        |
| Average chicks (for all farmers)     | 2.0       | 11.0 | 6.5       |
| Average chicks (for who have chicks) | 10.1      | 15.4 | 12.3      |

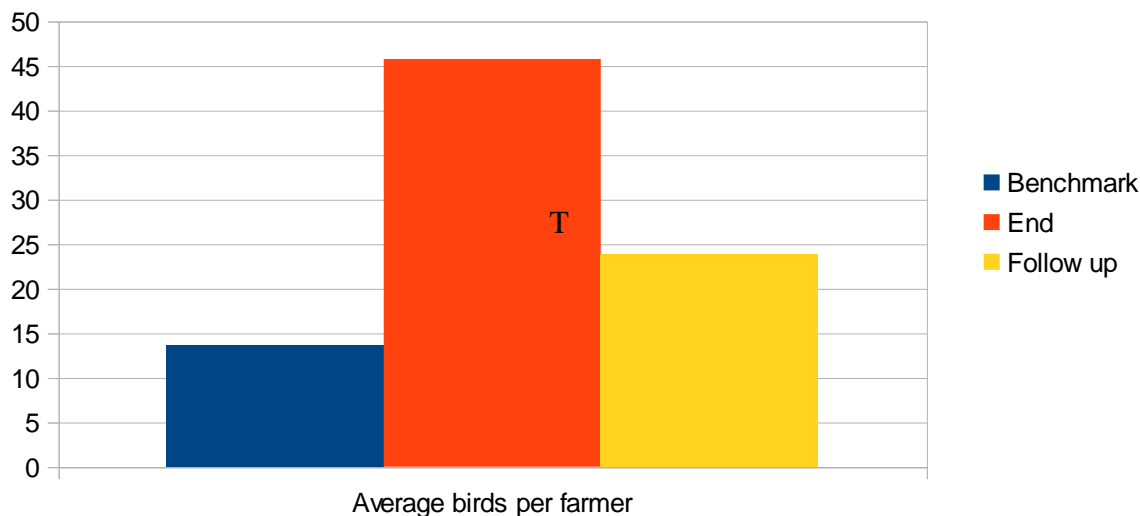
| Ducks                              | Benchmark | End  | Follow up |
|------------------------------------|-----------|------|-----------|
| % farmers with ducks               | 80        | 81   | 88        |
| Average ducks (for all farmers)    | 5.5       | 10.0 | 8.1       |
| Average ducks (for who have ducks) | 6.8       | 12.3 | 9.1       |

| Ducklings                                  | Benchmark | End  | Follow up |
|--|-----------|------|-----------|
| % farmers with ducklings                   | 5         | 84   | 30        |
| Average ducklings (for all farmers)        | 0.4       | 10.8 | 3.3       |
| Average ducklings (for who have ducklings) | 8.2       | 12.8 | 11.0      |

Combining the data of chickens, chicks, ducks and ducklings, we can see what happened to the total volume of birds in the FFS area. Because of the distribution of chicks and ducklings (and possibly also because of over reporting) the total number of birds reported during the end survey was very high. But 2.5 years later we see that the average number of birds per farm is still 75% higher than in the benchmark survey.

| Total birds                            | Benchmark | End    | Follow up |
|--|-----------|--------|-----------|
| Number of birds (all farmers together) | 5,741     | 19,251 | 10,113    |
| Total farmers                          | 421       | 421    | 424       |
| Average birds per farmer               | 13.6      | 45.7   | 23.9      |

### Number of birds per farmer



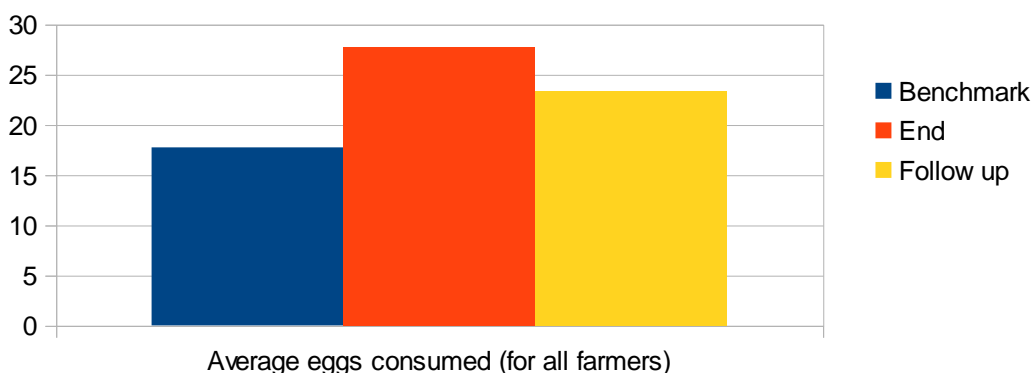
### 3.2 Eggs consumption

The percentage of farmers consuming eggs, and the average number of eggs consumed per month are 2.5 years after the FFS still considerable higher than at the beginning of the FFS. The number of eggs eaten is about 30% higher.

| Consume own eggs (per month)            | Benchmark | End  | Follow up |
|---|-----------|------|-----------|
| % farmers eat own eggs                  | 93        | 99   | 96        |
| Average eggs consumed (for all farmers) | 17.7      | 27.7 | 23.3      |
| Average (for those who eat own eggs)    | 19.0      | 28.0 | 24.3      |

### Egg consumption

(per month)



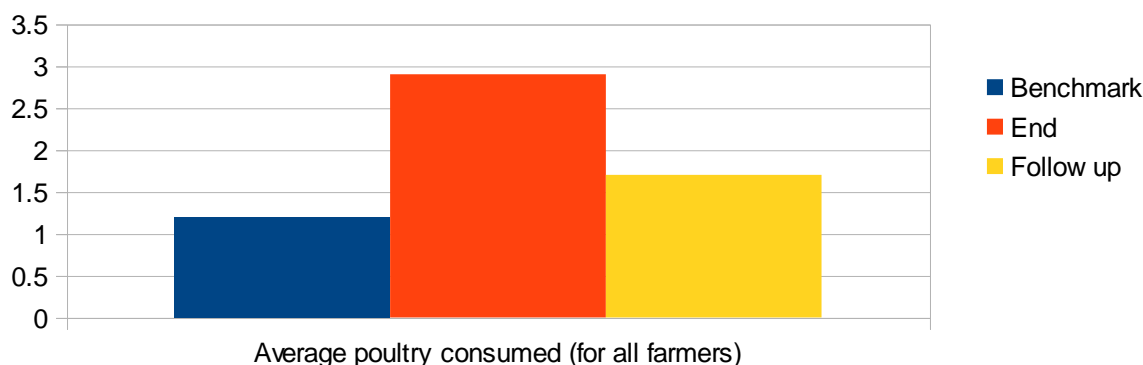
### 3.3 Poultry consumption

The number of poultry eaten per month is, 2.5 years after the FFS, still higher than what was reported in the benchmark survey. Poultry consumption is 40% higher than at the beginning of the FFS.

| Consume own poultry (per month)            | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
| % farmers eat own poultry                  | 76        | 96  | 88        |
| Average poultry consumed (for all farmers) | 1.2       | 2.9 | 1.7       |
| Average (for who eat own poultry)          | 1.6       | 3.0 | 1.9       |

### Poultry consumption

(per month)



### 3.4 Selling eggs

The percentage of farmers selling eggs increased from 45% to 98% during the FFS. After 2.5 years this percentage remained high at 87% of the farmers selling surplus eggs. The number of eggs sold also remained high. Three years after the benchmark survey farmers sell on average three times as many eggs.

| Selling eggs (per year)               | Benchmark | End   | Follow up |
|---------------------------------------|-----------|-------|-----------|
| % farmers sell own eggs               | 45        | 98    | 87        |
| Average eggs sold (for all farmers)   | 63.4      | 217.6 | 205.8     |
| Average (for those who sell own eggs) | 139.8     | 222.4 | 236.5     |

### Selling eggs

(per year)

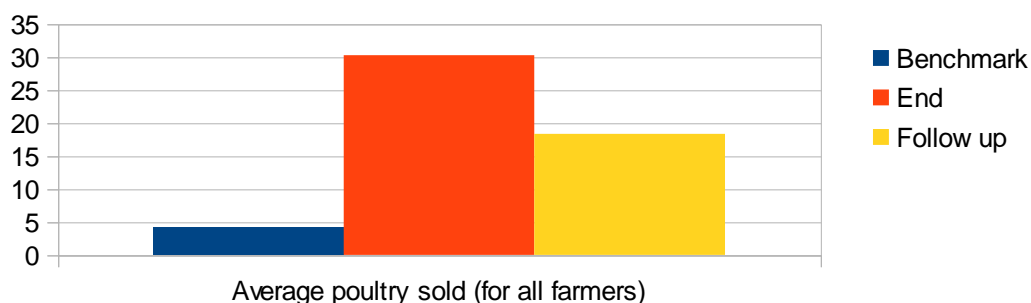


### 3.5 Selling poultry

The same trend is visible in number of poultry sold. After 3 years, the percentage of farmers selling poultry is 83%, while it was 39% at the benchmark. The average number of poultry sold also remained high. Three years after the start of the FFS, farmers sell more than 4 times as many poultry.

| Selling poultry                        | Benchmark | End  | Follow up |
|--|-----------|------|-----------|
| % farmers sell own poultry             | 39        | 93   | 83        |
| Average poultry sold (for all farmers) | 4.1       | 30.2 | 18.3      |
| Average (for who sell own poultry)     | 10.6      | 32.6 | 22.1      |

## Selling poultry (per year)



### 3.6 Poultry vaccination

The percentage of farmers vaccinating their poultry was very high during the FFS, as vaccination campaign was organized by the FFS facilitators. After 3 years the percentage has dropped back, with about a third of the farmers reporting that they do not vaccinate their birds. And less than a third vaccinating always.

While this result is still much better than the benchmark situation, it is something that needs attention. It may be needed develop more community poultry workers to provide vaccination services.

This is also an opportunity for collective action. Contact farmers can invite poultry workers for regular vaccination campaigns.

| Vaccinate poultry (% farmers) | Benchmark | End | Follow up |
|-------------------------------|-----------|-----|-----------|
| Never                         | 83        | 5   | 33        |
| Sometimes                     | -         | 2   | 39        |
| Always                        | 17        | 93  | 29        |

### 3.7 Hazal

The use of hazals has sustained at a high level. While at the beginning of the FFSs very few farmers used a hazal (less than 1%), the situation after 3 years is that 84% of the trained farmers use a hazal for their brooding hens.

| Hazal                 | Benchmark | End | Follow up |
|-----------------------|-----------|-----|-----------|
| Use hazal (% farmers) | 0         | 95  | 84        |

### 3.8 Chick separation

In the FFS farmers learn to separate chicks from hen after one week. This causes the hen to start the next egg laying cycle sooner, increasing the yearly production of eggs and chicks.

The practice of chick separation after 1 week sustained at a high level, with more than 70% of farmers still doing this 2.5 years after the FFS.

| Chick separation (% farmers) | Benchmark | End | Follow up |
|------------------------------|-----------|-----|-----------|
| After 1 week                 | -         | 90  | 71        |
| Later or never               | 100       | 10  | 29        |

### 3.9 Chicken shed

At 2.5 years after the FFS, about two third of all farmers used improved chicken sheds.

| Shed type (% farmers) | Benchmark | End | Follow up |
|-----------------------|-----------|-----|-----------|
| Traditional           | 100       | 11  | 32        |
| Improved              | 0         | 89  | 68        |

### 3.10 Common problems in poultry production

In the follow up survey a question was added to ask about the main problems experienced in poultry production. Problems reported by most farmers were the high price of commercial feed, poultry diseases, and availability of vaccination service.

| Common problem poultry production (% farmers) * | Benchmark | End | Follow up |
|---|-----------|-----|-----------|
| Quality of chicks / ducklings                   |           |     | 37        |
| High price of chicks / ducklings                |           |     | 44        |
| High price commercial feed                      |           |     | 74        |
| Timely vaccination service                      |           |     | 56        |
| Poultry diseases                                |           |     | 70        |
| Low market price of egg                         |           |     | 30        |
| Low market price of poultry                     |           |     | 33        |
| Lack of knowledge                               |           |     | 21        |

\* This question was only asked in the follow-up survey

### 3.11 Linkages with DLS

In the follow up survey some questions were included about linkages of farmers with the department of Livestock Services (DLS). About 28% of the farmers had the mobile number of DLS officers or poultry workers, while more than 50% of the farmers reported receiving services from DLS.

| Linkage with DLS *           | Benchmark | End | Follow up |
|------------------------------|-----------|-----|-----------|
| % farmers have mobile of DLS |           |     | 28        |

| Did you get DLS service? (% farmers) * | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
| Never                                  |           |     | 42        |
| Always                                 |           |     | 54        |
| Sometimes                              |           |     | 4         |

\* These questions were only asked in the follow-up survey

## 4. Homestead vegetables and fruits

FFS Cycle 8 included the homestead garden module, which tries to promote and increase the production of vegetables and fruits for home consumption and as an income generating activity. Technical topics in the module include space planning, preparation of vegetable beds, use of quality seeds and fertilizers, integrated pest management (IPM), and preparation of farm yard manure (FYM).

### 4.1 Types of vegetables grown

The most popular vegetables in homestead gardens were gourds, leafy vegetables, brinjal, and aroids.

Comparing the benchmark with the follow up survey we see that the FFS seems to have had most effect on popularizing aroids, radish, tomato and cabbage/cauliflower.

Note that not only the FFS has contributed to these differences. In 2015, about one year after the FFS, the same groups of FFS farmers were included in a collaboration of Blue Gold with the BAU Germplasm Centre: "Participatory Action Research on Fruits and Vegetables" This introduced several new fruit and vegetable varieties in the area, including several species of aroids.

| Vegetables (% farmers) | Benchmark | End | Follow up |
|------------------------|-----------|-----|-----------|
| Gourds                 | 88        | 99  | 97        |
| Brinjal (eggplant)     | 80        | 94  | 94        |
| Leafy vegetables       | 76        | 92  | 96        |
| Lady fingers           | 60        | 63  | 75        |
| Cabbage / Cauliflower  | 33        | 36  | 70        |
| Radish                 | 21        | 26  | 70        |
| Tomato                 | 31        | 36  | 78        |
| Aroids                 | 23        | 62  | 92        |
| Other vegetables       | 20        | 27  | 57        |

### 4.2 Number of vegetables grown

If we count the average number of different vegetables grown in a homestead we see that this increase slightly during the FFS and even more after the FFS.

Note that in cycle1, some vegetable seeds were given to the participants at the end of the FFS, and these farmers also participated in the vegetables and fruits program of the BAU germplasm centre.

The increased number of vegetables seems to have sustained even 2.5 years after the end of the FFS, with most of the homesteads growing 5 or more different types of vegetables.

| Different types of vegetables grown | Benchmark | End | Follow up |
|-------------------------------------|-----------|-----|-----------|
| Number of vegetable types grown     | 4.3       | 5.3 | 7.3       |
| % farmers growing 5 or more types   | 39        | 68  | 88        |

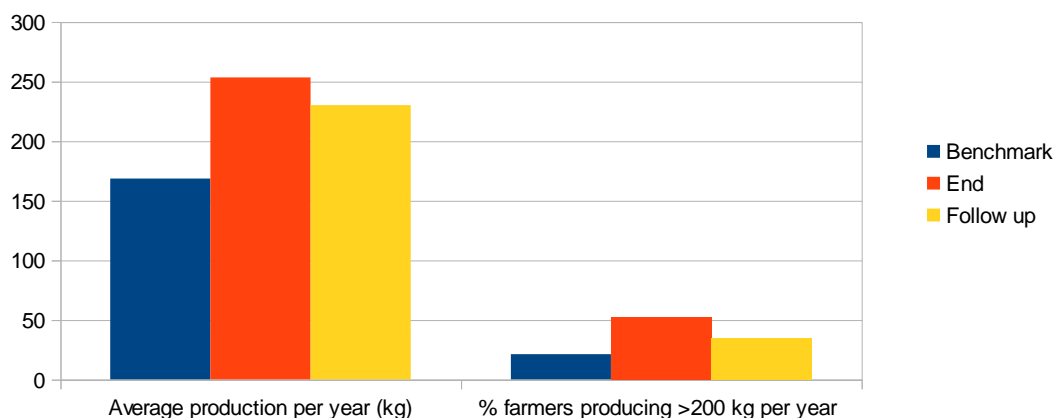
### 4.3 Vegetable production

The vegetable production increased during the FFS and sustained at a high level after 2.5 years. During the follow up survey farmers produced on average about 36% more vegetables compared to the benchmark. The percentage farmers producing over 200 kg per year also increased compared to the benchmark.



| Vegetable production                 | Benchmark | End | Follow up |
|--------------------------------------|-----------|-----|-----------|
| Average production per year (kg)     | 168       | 253 | 230       |
| % farmers producing >200 kg per year | 21        | 52  | 35        |

Vegetable production



#### 4.4 What happens with vegetables

The produced vegetables are partly consumed by the household and surpluses are sold. With the increased production (see 4.3) we see that the percentage sold has increased. This increase which was already visible in the end survey has sustained 2.5 years later.

If we calculate consumption and sale in kg, we see that both the vegetable consumption by the household and the sale of surplus vegetables have increased in the 3 years from starting the FFS until the follow up survey. The vegetable consumption increased almost 13%, while the sale of surplus vegetables more than doubled.

| What happens with vegetables | Benchmark | End | Follow up |
|------------------------------|-----------|-----|-----------|
| Own consumption (percentage) | 73        | 61  | 60        |
| Sale (percentage)            | 26        | 39  | 41        |

| Calculated consumption and sale (kg) * | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
| Consumption per year (kg)              | 123       | 154 | 138       |
| Sale per year (kg)                     | 44        | 99  | 93        |

\* Calculated from average production (kg) and percentage consumption and sold

#### 4.5 Production plan

The homestead module encourages “space planning” so that farmers can make use of different locations in the homestead to produce vegetables. At 2.5 years after completing the FFS most farmers still report that they maintain this practice.

| Production plan (for space planning) | Benchmark | End | Follow up |
|--------------------------------------|-----------|-----|-----------|
| % farmers with production plan       | 1         | 100 | 96        |

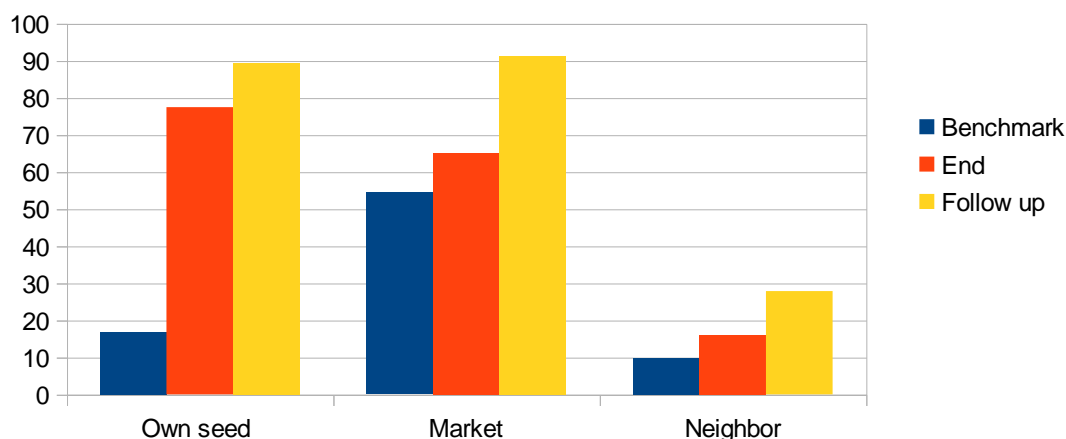
#### 4.6 Source of vegetable seed

Farmers obtain vegetable seeds from different sources. The FFS teaches farmers how to preserve their own seed and encourages the use of high quality commercial seeds. The practice of preserving own seeds seems to have sustained 2.5 years after the FFS. We see that more farmers started buying seeds from markets and exchange of seeds with neighbours also increased.

| Source of seed (% farmers) | Benchmark | End | Follow up |
|----------------------------|-----------|-----|-----------|
| Own seed                   | 17        | 77  | 89        |
| BADC                       | -         | 12  | 0         |
| NGO                        | 0         | -   | 1         |
| Company                    | -         | 6   | 2         |
| Market                     | 54        | 65  | 91        |
| Neighbor                   | 10        | 16  | 28        |

### Sources of vegetable seeds

(% farmers)



#### 4.7 Use of fertilizers in homestead vegetables

Many farmers already used fertilizers in their vegetables before attending the FFS. During the FFS almost all farmers used fertilizers and this practice still sustained 2.5 years later, when 99% of farmers report to use fertilizers.

| Use fertilizer in vegetables             | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
| % farmers using fertilizer in vegetables | 87        | 99  | 99        |

#### 4.8 Pest management in vegetables

In the FFS, pesticide use in homestead gardens is discouraged and Integrated Pest Management (IPM) is promoted. At 2.5 years after the FFS, we see that IPM use has sustained with a large percentage of farmers (78%), although some have reverted to only using chemicals (17%).

Considering the risk of using pesticides in homestead crops it is recommended that the FFS pay more attention to the risks of pesticides and promote safe IPM methods as alternatives

| Pest management vegetables (% farmers) | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
| Do nothing                             | 30        | 1   | 5         |
| Use chemicals                          | 68        | 4   | 17        |
| Use IPM                                | 1         | 95  | 78        |

#### 4.9 Money spent on pesticides

During the FFS season the farmers spent much less money on pesticides, but there may be some bias in the reporting of this during the end survey, as pesticide use in homestead was discouraged during the FFS sessions. After the FFS we see that the percentage of farmers buying pesticides increased again.

Comparing the benchmark with the follow up survey, we see that after 3 years the total amount spent (by all farmers together) is still lower than before the FFS. While the percentage of farmers who use pesticides increased, most of them did this as part of IPM (compare with 4.8).

In the follow up survey we see that the amount of money spent per farmer decreased when compared with the benchmark.

| Money spent on pesticides (Tk)         | Benchmark | End    | Follow up |
|--|-----------|--------|-----------|
| % farmers spending money on pesticides | 63        | 30     | 79        |
| Total Taka spent (all farmers)         | 72,768    | 14,185 | 64,388    |
| Average Taka (all farmers)             | 173       | 34     | 152       |
| Average Taka (users of pesticides)     | 332       | 65     | 294       |

#### 4.10 Number of fruit trees

The average number of fruit trees per homestead had increased during the end survey, and had increased even more during the end survey. This increase is explained by the distribution of some saplings during the FFS, and also by the same farmers participating in the fruits and vegetables program organized as a collaboration between Blue Gold and the BAU germplasm centre.

| Fruit trees                   | Benchmark | End | Follow up |
|-------------------------------|-----------|-----|-----------|
| Average number trees per farm | 33        | 43  | 47        |

#### 4.11 Types of fruit trees grown

During the follow up survey, farmers reported the types of fruit trees in their homestead. This information is not available for the benchmark and end surveys.

The most popular fruit trees are mango, coconut, guava, sapodilla and banana.

| Fruit trees (% farmers who have it) * | Benchmark | End | Follow up |
|---------------------------------------|-----------|-----|-----------|
| Mango                                 |           |     | 98        |
| Grafted mango                         |           |     | 61        |
| Litchi                                |           |     | 31        |
| Grafted litchi                        |           |     | 15        |
| Lemon                                 |           |     | 68        |
| Grafted lemon                         |           |     | 35        |
| Guava                                 |           |     | 90        |
| Grafted Guava                         |           |     | 26        |
| Jujube                                |           |     | 67        |
| Grafted jujube                        |           |     | 23        |
| Sapodilla                             |           |     | 80        |
| Grafted Sapodilla                     |           |     | 37        |
| Jackfruit                             |           |     | 55        |
| Indian berry                          |           |     | 45        |
| Coconut                               |           |     | 93        |
| Date palm                             |           |     | 62        |
| Palm                                  |           |     | 58        |
| Papaya                                |           |     | 67        |
| Banana                                |           |     | 76        |
| Other fruits                          |           |     | 58        |

\* Types of fruit trees are not available in benchmark and end data of Cycle 1

#### 4.12 Pest management in fruit trees

Compared to vegetables, fewer farmers use pesticides in homestead fruits. Most farmers did no pest control in fruit trees at the beginning of FFS, and only 15% used pesticides. This percentage of farmers using pesticides dropped during the FFS, but came back to the same level 2.5 years later. About one third of the farmers kept using IPM methods 2.5 years after the FFS.

| Pest management fruit trees (% farmers) | Benchmark | End | Follow up |
|---|-----------|-----|-----------|
| Do nothing                              | 85        | 9   | 53        |
| Use chemical                            | 15        | 3   | 14        |
| Use IPM                                 | -         | 88  | 33        |

#### 4.13 Farm Yard Manure

In the FFS, farmers learn how to make Farm Yard Manure (FYM). At 2.5 years after the end of the FFS we see that still more than 80% of the farmers prepare FYM. However, while it is recommended to have a roof protecting the FYM pit, we see that many have a pit without roof.

| Farm Yard Manure (% farmers) | Benchmark | End | Follow up |
|------------------------------|-----------|-----|-----------|
| Has no FYM pit               | 77        | 3   | 19        |
| Has pit without roof         | 23        | 33  | 74        |
| Has pit with roof            | 0         | 63  | 7         |

#### 4.14 Common problems in homestead vegetable production

In the follow up survey a question was added to ask about the main problems experienced in homestead vegetable production. Problems reported by most farmers were pest management and high price of quality seed.

| Common problem vegetable production (% farmers) * | Benchmark | End | Follow up |
|---|-----------|-----|-----------|
| Quality seed                                      |           |     | 36        |
| Quality fertilizers                               |           |     | 26        |
| Pest management                                   |           |     | 69        |
| Sweet water                                       |           |     | 38        |
| Lack of knowledge                                 |           |     | 35        |
| High price of seed                                |           |     | 56        |
| Low market price of vegetables                    |           |     | 40        |
| Other problem                                     |           |     | -         |

\* This question was only asked in the follow-up survey

#### 4.15 Linkages with DAE

In the follow up survey some questions were included about linkages of farmers with the Department of Agricultural Extension (DAE). About 31% of the farmers had the mobile number of the SAAO (Sub Assistant Agricultural Officer), while more than 50% of the farmers reported receiving services from DAE.

| Linkage with DAE *            | Benchmark | End | Follow up |
|-------------------------------|-----------|-----|-----------|
| % farmers have mobile of SAAO |           |     | 31        |

| Did you get DAE service? (% farmers) * | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
| Never                                  |           |     | 44        |
| Always                                 |           |     | 52        |
| Sometimes                              |           |     | 4         |

\* These questions were only asked in the follow-up survey

#### 4.16 Mati-o-manush

Another question added in the follow up survey was about the TV program Mati-o-manush, which has regularly reported on Blue Gold activities, including the modules poultry and homestead vegetables. The program seems to be popular in Khulna area as more than half the households are reached.

| Mati-o-manush (% farmers) * | Benchmark | End | Follow up |
|-----------------------------|-----------|-----|-----------|
| Watch never                 |           |     | 41        |
| Watch sometimes             |           |     | 55        |
| Watch always                |           |     | 4         |

\* This question was only asked in follow-up survey

## 5. Nutrition

The nutrition module is included in all FFSs. The module includes cooking procedures, hygiene, ingredients of balanced food, and special food and care required for pregnant women.

### 5.1 Nutrition module

The surveys contained several questions related to the topics covered in the nutrition module. Most of these questions are about certain behaviour or knowledge.

It appears that at 2.5 years after completing the FFS the results are still very good when compared with the benchmark data.

| Questions nutrition module (% farmers)                    | Benchmark | End | Follow up |
|---|-----------|-----|-----------|
| Wash before cutting                                       | 25        | 98  | 95        |
| Wash hand before meals                                    | 25        | 98  | 99        |
| Cook immediately after cutting vegetables                 | 40        | 99  | 98        |
| Knowledge on extra food for pregnant and lactating mother | 45        | 96  | 98        |
| Knowledge on extra food for infant and adolescent         | 52        | 97  | 96        |
| Vaccination for children                                  | 73        | 87  | 89        |
| Prevalence of water borne disease                         | 65        | 34  | 71        |
| Maintain personal hygiene                                 | 47        | 96  | 99        |
| Knowledge on different food category                      | 14        | 100 | 94        |
| Knowledge on special health care for pregnant mother      | 44        | 98  | 97        |
| Knowledge on special health care for lactating mother     | 38        | 98  | 98        |
| Knowledge on nutrient deficiency diseases                 | 9         | 100 | 95        |

### 5.2 Some other questions asked

Even though Blue Gold does not cover these topics, the surveys of cycle 1 contained some questions about drinking water and latrines.

Small improvements are visible during the follow up survey, which could have several reasons (e.g. effect of other projects such as Max Foundation, improved income of farmers).

| Source of drinking water (% farmers) | Benchmark | End | Follow up |
|--------------------------------------|-----------|-----|-----------|
| Tube well                            | 88        | 88  | 91        |
| Pond                                 | 10        | 12  | -         |
| Others                               | 2         | 0   | 9         |

| Type of latrine used (% farmers) | Benchmark | End | Follow up |
|----------------------------------|-----------|-----|-----------|
| Ring slab                        | 92        | 90  | 94        |
| Open                             | 8         | 10  | 6         |

### 5.3 Role of contact farmers

In 2015, almost a year after the end of FFS cycle 1, workshops were organized to develop contact farmers (CF) in each FFS group. These CFs were supported to take a leading role, keeping the FFS groups together, and organizing collective action. Even though for cycle 1, only little support has been given to these contact farmers, a few questions were included in the follow up survey to evaluate their role.

As expected, the result show that contact farmers of cycle 1 FFS are still weak. There is need for improvement as CFs can play a bigger role in collective action, such as organizing vaccination campaigns.

| <b>Role of contact farmers (% farmers) *</b>   | <b>Benchmark</b> | <b>End</b> | <b>Follow up</b> |
|--|------------------|------------|------------------|
| Organize collective input purchase             |                  |            | 22               |
| Communicate with actors for collective sale    |                  |            | 25               |
| Organize vaccination campaigns                 |                  |            | 34               |
| Personal communication with contact farmers    |                  |            | 75               |
| Contact farmers set demo plots                 |                  |            | 50               |
| No communication with contact farmer about FFS |                  |            | 37               |

\* These questions only asked in Follow-up survey

## 6. Conclusions and Recommendations

### 6.1 Conclusions

A follow up survey was conducted in December 2016 with over 400 farmers of 17 FFSs of cycle 1 in Khulna. FFS cycle 1 took place from Nov 2013 to March 2014. The results of the follow up survey were compared with the benchmark data (collected in November 2013), which represent the situation before the training, and with the end data (collected in March 2014).

The data show that 2.5 years after the end of the FFS, the farmers still perform much better than before the training. Consumption and sale of eggs, poultry and vegetables are still considerable higher than during the benchmark survey. This shows that the FFSs have sustainably contributed to better household nutrition and are still generating additional income for the FFS farmers, most of whom are women.

### 6.2 Recommendations

Comparing the follow up data with benchmark and end data has also highlighted some areas where improvements could be made.

Shortage of vaccination services is a problem for poultry production. Even though Blue Gold has (in December 2014) already developed several poultry workers for polders 22 and 30, we see that in the end of 2016 many farmers have still difficulties vaccinating their birds when needed.

Recommendations:

- Update the mapping of available poultry workers in Blue Gold polders.
- Develop more community poultry workers in polders where there is a shortage.
- Provide the Blue Gold Farmer Trainers with a training as poultry workers.

While good progress has been made in reducing pesticide use and introducing Integrated Pest Management we see that there are still farmers who in their homestead gardens rely only on chemical pesticides for pest control. Considering the risk of using toxic chemicals in a homestead context (where children and farm animals can get exposed) it is important that more attention is given to this issue.

Recommendations:

- Additional training for FFS facilitators (farmer trainers) on pesticide risks and IPM methods.
- More attention in the FFS curriculum on IPM and pesticide risk reduction

The agricultural TV program Mati-o-manush seems to be well known by a large part of the FFS farmers. The program can help FFS related messages reaching a large audience, which can contribute to horizontal spreading of information.

Recommendation:

- Continue making use of Mati-o-manush to spread FFS messages.

Not enough attention has been given to contact farmers of FFS cycle 1 (the work with contact farmers started after the FFS. It would be useful (if manpower and financial resources are available) that additional training is provided to contact farmers of cycle 1, and possibly for contact farmers of later FFS cycles.

Recommendation:

- If possible (manpower, finances) provide additional training to contact farmers.

## Annex 1 - Cycle 1

FFS modules: Poultry, Homestead garden, Nutrition  
Data collected in benchmark, end and follow up surveys

|  | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
|--|-----------|-----|-----------|

### Surveys details

| Periods of data collection | November 2013 | March 2014 | Dec 2016 – Jan 2017 |
|----------------------------|---------------|------------|---------------------|
| Number of FFSs in survey   | 17            | 17         | 17                  |
| Total farmers involved     | 425           | 425        | 425                 |
| Records available          | 421           | 421        | 424                 |
| Records missing            | 4             | 4          | 1                   |

### GENERAL INFO PARTICIPANTS

#### Polder

|               |     |     |     |
|---------------|-----|-----|-----|
| Polder 22     | 125 | 124 | 124 |
| Polder 30     | 296 | 297 | 300 |
| Total farmers | 421 | 421 | 424 |

#### Gender

|                  |     |     |     |
|------------------|-----|-----|-----|
| Men              | 54  | 59  | 52  |
| Women            | 367 | 362 | 372 |
| Total farmers    | 421 | 421 | 424 |
| Percentage women | 87  | 86  | 88  |

#### Age

|               |     |     |     |
|---------------|-----|-----|-----|
| Average age   | 36  | 36  | 37  |
| Youngest      | 19  | 19  | 20  |
| Oldest        | 53  | 53  | 60  |
| Total farmers | 421 | 421 | 424 |

#### Education

|               |     |     |     |
|---------------|-----|-----|-----|
| Illiterate    | 8   | 10  | 14  |
| Can sign      | 94  | 85  | 86  |
| Primary       | 85  | 88  | 121 |
| Secondary     | 176 | 181 | 163 |
| Hcc and above | 58  | 57  | 40  |
| Total farmers | 421 | 421 | 424 |

#### Main occupation

|                |     |     |     |
|----------------|-----|-----|-----|
| Agriculture    | 389 | 376 | 360 |
| Day labor      | 3   | 2   | 6   |
| Service        | 2   | -   | 4   |
| Fisherman      | -   | 1   | 4   |
| Small business | 2   | 3   | 4   |
| Others         | 25  | 39  | 46  |



|  | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
|--|-----------|-----|-----------|

|               |     |     |     |
|---------------|-----|-----|-----|
| Total farmers | 421 | 421 | 424 |
|---------------|-----|-----|-----|

#### Area agriculture (decimal)

|                             |       |       |     |
|-----------------------------|-------|-------|-----|
| Average (decimal)           | 150   | 128   | 112 |
| Median (decimal)            | 100   | 75    | 66  |
| Zero area                   | 3     | 4     | 36  |
| Landless (<50 decimal)      | 83    | 100   | 108 |
| Not landless (=>50 decimal) | 338   | 321   | 316 |
| Total farmers               | 421   | 421   | 424 |
| Percentage landless         | 20    | 24    | 25  |
| Min area (decimal)          | -     | -     | -   |
| Max area (decimal)          | 1,200 | 1,200 | 500 |

#### Homestead area (decimal)

|                    |     |     |     |
|--------------------|-----|-----|-----|
| Average (decimal)  | 24  | 23  | 19  |
| Median (decimal)   | 20  | 18  | 13  |
| Zero area          | -   | -   | -   |
| Min area (decimal) | 2   | 2   | 2   |
| Max area (decimal) | 160 | 250 | 200 |

#### Family main income sources

|                |     |     |     |
|----------------|-----|-----|-----|
| Agriculture    | 415 | 414 | 411 |
| Small business | 13  | 9   | 10  |
| Day labor      | 13  | 50  | 17  |
| Other          | 14  | 47  | 3   |
| Total farmers  | 421 | 421 | 424 |

#### Male

|                     |     |     |     |
|---------------------|-----|-----|-----|
| Average male number | 2.3 | 2.3 | 2.3 |
| Min male number     | -   | 1   | -   |
| Max male number     | 8   | 7   | 7   |
| Total male          | 977 | 961 | 965 |
| Total families      | 421 | 421 | 424 |

#### Female

|                       |     |     |       |
|-----------------------|-----|-----|-------|
| Average female number | 2.4 | 2.3 | 2.5   |
| Min female number     | 1   | 1   | 1     |
| Max female number     | 10  | 10  | 20    |
| Total female          | 991 | 988 | 1,039 |
| Total families        | 421 | 421 | 424   |

#### Family size

|                     |       |       |       |
|---------------------|-------|-------|-------|
| Average family size | 4.7   | 4.6   | 4.7   |
| Min family size     | 1     | 2     | 1     |
| Max family size     | 17    | 17    | 21    |
| Total persons       | 1,968 | 1,949 | 2,004 |
| Total families      | 421   | 421   | 424   |

|  | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
|--|-----------|-----|-----------|

## VEGETABLES AND FRUITS

### Vegetables

|                       |     |     |     |
|-----------------------|-----|-----|-----|
| Gourds                | 370 | 417 | 412 |
| Brinjal (eggplant)    | 336 | 394 | 397 |
| Leafy vegetables      | 322 | 389 | 405 |
| Lady fingers          | 251 | 264 | 316 |
| Cabbage / Cauliflower | 137 | 153 | 298 |
| Radish                | 89  | 108 | 297 |
| Tomato                | 132 | 151 | 329 |
| Aroids                | 95  | 261 | 392 |
| Other vegetables      | 86  | 114 | 240 |
| Total farmers         | 421 | 421 | 424 |

### Number of vegetables

|                    |     |     |     |
|--------------------|-----|-----|-----|
| Min vegetables     | -   | 1   | 1   |
| Max vegetables     | 9   | 9   | 9   |
| Average vegetables | 4.3 | 5.3 | 7.3 |
| Count 0            | 4   | -   | -   |
| Count 1            | 14  | 1   | 1   |
| Count 2            | 25  | 4   | 4   |
| Count 3            | 94  | 37  | 15  |
| Count 4            | 118 | 92  | 31  |
| Count 5            | 85  | 94  | 44  |
| Count 6            | 41  | 117 | 44  |
| Count 7            | 11  | 25  | 35  |
| Count 8            | 9   | 43  | 71  |
| Count 9            | 20  | 8   | 179 |
| Total farmers      | 421 | 421 | 424 |

### Vegetable production per year (kg)

|                    |     |       |       |
|--------------------|-----|-------|-------|
| Average production | 168 | 253   | 230   |
| Min production     | -   | 20    | -     |
| Max production     | 700 | 1,200 | 3,000 |
| Median             | 140 | 225   | 170   |
| Count 0 production | 3   | -     | 1     |
| Produce <=50       | 55  | 16    | 75    |
| Produce 51-100     | 123 | 80    | 72    |
| Produce 101-200    | 154 | 106   | 130   |
| Produce 201-300    | 47  | 101   | 67    |
| Produce 301-400    | 24  | 72    | 34    |
| Produce 401-500    | 9   | 26    | 18    |
| Produce 501-1000   | 9   | 19    | 24    |
| Produce > 1000     | -   | 1     | 4     |
| Total farmers      | 421 | 421   | 424   |

|  | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
|--|-----------|-----|-----------|

### Own vegetable consumption (%)

|                         |     |     |     |
|-------------------------|-----|-----|-----|
| Average consumption (%) | 73  | 61  | 60  |
| Zero consumption (%)    | 5   | -   | -   |
| Consumption (<50)       | 78  | 115 | 139 |
| Consumption (=>50)      | 343 | 306 | 285 |
| Total farmers           | 421 | 421 | 424 |

### Vegetable sale (%)

|                  |     |     |     |
|------------------|-----|-----|-----|
| Average sale (%) | 26  | 39  | 41  |
| Zero sale (%)    | 171 | 37  | 75  |
| Sale (<50)       | 286 | 247 | 215 |
| Sale (=>50)      | 135 | 174 | 209 |
| Total farmers    | 421 | 421 | 424 |

### Non vegetable growing months

|               |     |     |     |
|---------------|-----|-----|-----|
| Choitra       | 281 | 48  | 291 |
| Boishak       | -   | 39  | 69  |
| Joista        | 91  | 49  | 19  |
| Ashar         | 88  | 92  | 73  |
| Sraban        | 91  | 44  | 84  |
| Bhdra         | 55  | -   | 45  |
| Ashin         | 42  | 1   | 23  |
| Kartik        | 7   | 2   | 28  |
| Agrohaion     | 2   | -   | 5   |
| Poush         | -   | -   | 1   |
| Magh          | 40  | -   | 2   |
| Falgun        | 99  | -   | 52  |
| Total farmers | 421 | 421 | 424 |

### Non vegetable growing months

|         |     |     |     |
|---------|-----|-----|-----|
| Average | 1.9 | 0.7 | 1.6 |
| Max     | 7   | 2   | 4   |
| Min     | -   | -   | 1   |

### Production plan (for space planning)

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 5   | 419 | 409 |
| No            | 416 | 2   | 15  |
| Total farmers | 421 | 421 | 424 |

### Source of vegetable seeds

|               |     |     |     |
|---------------|-----|-----|-----|
| Own seed      | 71  | 326 | 379 |
| BADC          | -   | 52  | 1   |
| NGO           | 2   | -   | 3   |
| Company       | -   | 24  | 10  |
| Market        | 229 | 274 | 387 |
| Neighbor      | 41  | 67  | 118 |
| Total farmers | 421 | 421 | 424 |

|  | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
|--|-----------|-----|-----------|

#### Do you know how to preserve seeds?

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 38  | 418 | 412 |
| No            | 383 | 3   | 12  |
| Total farmers | 421 | 421 | 424 |

#### Use fertilizer in vegetables

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 368 | 415 | 421 |
| No            | 53  | 6   | 3   |
| Total farmers | 421 | 421 | 424 |

#### Pest management vegetables

|               |     |     |     |
|---------------|-----|-----|-----|
| Do nothing    | 128 | 4   | 21  |
| Use chemicals | 287 | 15  | 72  |
| Use IPM       | 6   | 402 | 331 |
| Total farmers | 421 | 421 | 424 |

#### Money spent on pesticides (Tk)

|                          |        |        |        |
|--------------------------|--------|--------|--------|
| No money used            | 156    | 294    | 91     |
| Use money for pesticides | 265    | 127    | 333    |
| Total participants       | 421    | 421    | 424    |
| Min                      | -      | -      | -      |
| Max                      | 2,000  | 300    | 1,200  |
| Total money              | 72,768 | 14,185 | 64,388 |
| Average money (all)      | 173    | 34     | 152    |
| Average money (users)    | 332    | 65     | 294    |

#### Have fruit trees

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 401 | 421 | 423 |
| No            | 20  | -   | 1   |
| Total farmers | 421 | 421 | 424 |

#### Fruit trees

|                               |      |      |      |
|-------------------------------|------|------|------|
| Average number trees per farm | 33.1 | 42.8 | 47.0 |
|-------------------------------|------|------|------|

#### Fruit trees \*

|                  |  |  |     |
|------------------|--|--|-----|
| Mango            |  |  | 416 |
| Grafted mango    |  |  | 260 |
| Litchi           |  |  | 130 |
| Grafted litchi   |  |  | 62  |
| Lemon            |  |  | 290 |
| Grafted lemon    |  |  | 150 |
| Guava            |  |  | 380 |
| Grafted Guava    |  |  | 112 |
| Jujube           |  |  | 283 |
| Grafted jujube   |  |  | 97  |
| Sapodilla        |  |  | 340 |
| Grafted Sapodila |  |  | 155 |
| Jackfruit        |  |  | 233 |
| Indian berry     |  |  | 191 |

|               | Benchmark | End | Follow up |
|---------------|-----------|-----|-----------|
| Coconut       |           |     | 396       |
| Date palm     |           |     | 262       |
| Palm          |           |     | 247       |
| Papaya        |           |     | 284       |
| Banana        |           |     | 323       |
| Other fruits  |           |     | 248       |
| Total farmers |           |     | 424       |

\* Type of fruit trees are not available in benchmark and end data of Cycle 1

#### **Pest management fruit trees**

|               |     |     |     |
|---------------|-----|-----|-----|
| Do nothing    | 358 | 38  | 224 |
| Use chemical  | 63  | 11  | 59  |
| Use IPM       | -   | 372 | 141 |
| Total farmers | 421 | 421 | 424 |

#### **Farm Yard Manure**

|                      |     |     |     |
|----------------------|-----|-----|-----|
| Has no FYM pit       | 325 | 13  | 81  |
| Has pit without roof | 95  | 141 | 312 |
| Has pit with roof    | 1   | 267 | 31  |
| Total farmers        | 421 | 421 | 424 |

#### **Common problem vegetable production \***

|                                |  |  |     |
|--------------------------------|--|--|-----|
| Quality seed                   |  |  | 151 |
| Quality fertilizers            |  |  | 111 |
| Pest management                |  |  | 291 |
| Sweet water                    |  |  | 160 |
| Lack of knowledge              |  |  | 147 |
| High price of seed             |  |  | 239 |
| Low market price of vegetables |  |  | 171 |
| Other problem                  |  |  | -   |
| Total farmers                  |  |  | 424 |

\* This question was only asked in follow-up survey

#### **Mati-o-manush \***

|                 |  |  |     |
|-----------------|--|--|-----|
| Watch never     |  |  | 174 |
| Watch sometimes |  |  | 233 |
| Watch always    |  |  | 17  |
| Total farmers   |  |  | 424 |

\* This question was only asked in follow-up survey

#### **Have mobile no. of SAAO \***

|               |  |  |     |
|---------------|--|--|-----|
| Yes           |  |  | 132 |
| No            |  |  | 292 |
| Total farmers |  |  | 424 |

\* This question was only asked in follow-up survey

|  | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
|--|-----------|-----|-----------|

**Did you get DAE service? \***

|               |  |  |     |
|---------------|--|--|-----|
| Never         |  |  | 188 |
| Always        |  |  | 221 |
| Sometimes     |  |  | 15  |
| Total farmers |  |  | 424 |

\* This question was only asked in follow-up survey

**POULTRY**

**Chicken**

|                                      |       |       |       |
|--------------------------------------|-------|-------|-------|
| Farmers with chicken                 | 348   | 415   | 359   |
| Farmers without chicken              | 73    | 6     | 65    |
| Total farmers                        | 421   | 421   | 424   |
| Min chicken                          | -     | -     | -     |
| Max chicken                          | 47    | 50    | 25    |
| Total chicken                        | 2,397 | 5,879 | 2,553 |
| Average chicken (for all)            | 5.7   | 14.0  | 6.0   |
| Average chicken (for those who have) | 6.9   | 14.2  | 7.1   |

**Chicks**

|                                     |      |       |       |
|-------------------------------------|------|-------|-------|
| Farmers with chicks                 | 84   | 300   | 224   |
| Farmers without chicks              | 337  | 121   | 200   |
| Total farmers                       | 421  | 421   | 424   |
| Min chicks                          | -    | -     | -     |
| Max chicks                          | 30   | 90    | 45    |
| Total chicks                        | 851  | 4,613 | 2,745 |
| Average chicks (for all)            | 2.0  | 11.0  | 6.5   |
| Average chicks (for those who have) | 10.1 | 15.4  | 12.3  |

**Ducks**

|                                    |       |       |       |
|------------------------------------|-------|-------|-------|
| Farmers with ducks                 | 338   | 342   | 375   |
| Farmers without ducks              | 83    | 79    | 49    |
| Total farmers                      | 421   | 421   | 424   |
| Min ducks                          | -     | -     | -     |
| Max ducks                          | 30    | 40    | 100   |
| Total ducks                        | 2,305 | 4,203 | 3,431 |
| Average ducks (for all)            | 5.5   | 10.0  | 8.1   |
| Average ducks (for those who have) | 6.8   | 12.3  | 9.1   |

|  | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
|--|-----------|-----|-----------|

### Ducklings

|                                  |     |       |       |
|----------------------------------|-----|-------|-------|
| Farmers with ducklings           | 23  | 355   | 126   |
| Farmers without ducklings        | 397 | 66    | 298   |
| Total farmers                    | 420 | 421   | 424   |
| Min ducklings                    | -   | -     | -     |
| Max ducklings                    | 23  | 30    | 95    |
| Total ducklings                  | 188 | 4,556 | 1,384 |
| Average ducklings (for all)      | 0.4 | 10.8  | 3.3   |
| Average ducklings (for who have) | 8.2 | 12.8  | 11.0  |

### Total birds

|                 |       |        |        |
|-----------------|-------|--------|--------|
| Number of birds | 5,741 | 19,251 | 10,113 |
| Total farmers   | 421   | 421    | 424    |
| Average birds   | 13.6  | 45.7   | 23.9   |

### Eggs per hen per year

|                       |        |        |        |
|-----------------------|--------|--------|--------|
| Count farmers         | 360    | 416    | 403    |
| Total of Eggs per hen | 20,914 | 36,158 | 36,589 |
| Average eggs per hen  | 58     | 87     | 91     |

### Eggs per duck per year

|                        |        |        |        |
|------------------------|--------|--------|--------|
| Count farmers          | 334    | 419    | 415    |
| Total of Eggs per duck | 23,352 | 50,943 | 50,045 |
| Average eggs per duck  | 70     | 122    | 121    |

### Consume own eggs

|                                      |       |        |       |
|--------------------------------------|-------|--------|-------|
| Farmers eat own eggs                 | 393   | 416    | 407   |
| Farmers not eat own eggs             | 28    | 5      | 17    |
| Total farmers                        | 421   | 421    | 424   |
| Min                                  | -     | -      | -     |
| Max                                  | 70    | 90     | 80    |
| Total                                | 7,465 | 11,662 | 9,889 |
| Average (for all)                    | 17.7  | 27.7   | 23.3  |
| Average (for those who eat own eggs) | 19.0  | 28.0   | 24.3  |

### Consume own poultry

|                                   |     |       |     |
|-----------------------------------|-----|-------|-----|
| Farmers eat own poultry           | 320 | 405   | 373 |
| Farmers not eat own poultry       | 101 | 16    | 51  |
| Total farmers                     | 421 | 421   | 424 |
| Min                               | -   | -     | -   |
| Max                               | 15  | 30    | 20  |
| Total                             | 503 | 1,221 | 721 |
| Average (for all)                 | 1.2 | 2.9   | 1.7 |
| Average (for who eat own poultry) | 1.6 | 3.0   | 1.9 |

|  | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
|--|-----------|-----|-----------|

### Selling eggs

|                                       |        |        |        |
|---------------------------------------|--------|--------|--------|
| Farmers sell own eggs                 | 191    | 412    | 369    |
| Farmers not sell own eggs             | 230    | 9      | 55     |
| Total farmers                         | 421    | 421    | 424    |
| Min                                   | -      | -      | -      |
| Max                                   | 800    | 2,500  | 2,000  |
| Total                                 | 26,700 | 91,624 | 87,262 |
| Average (for all)                     | 63     | 218    | 206    |
| Average (for those who sell own eggs) | 140    | 222    | 236    |

### Selling poultry

|                                    |       |        |       |
|------------------------------------|-------|--------|-------|
| Farmers sell own poultry           | 164   | 391    | 351   |
| Farmers not sell own poultry       | 257   | 30     | 73    |
| Total farmers                      | 421   | 421    | 424   |
| Min                                | -     | -      | -     |
| Max                                | 70    | 450    | 190   |
| Total                              | 1,742 | 12,733 | 7,771 |
| Average (for all)                  | 4     | 30     | 18    |
| Average (for who sell own poultry) | 11    | 33     | 22    |

### Pigeon

|                                     |      |      |      |
|-------------------------------------|------|------|------|
| Farmers with pigeon                 | 23   | 26   | 40   |
| Farmers without pigeon              | 398  | 395  | 384  |
| Total farmers                       | 421  | 421  | 424  |
| Min pigeon                          | -    | -    | -    |
| Max pigeon                          | 100  | 100  | 100  |
| Total pigeon                        | 392  | 444  | 464  |
| Average pigeon (for all)            | 0.9  | 1.2  | 1.1  |
| Average pigeon (for those who have) | 17.0 | 17.1 | 11.6 |

### Vaccinate poultry

|               |     |     |     |
|---------------|-----|-----|-----|
| Never         | 348 | 20  | 138 |
| Sometimes     | -   | 9   | 164 |
| Always        | 73  | 392 | 122 |
| Total farmers | 421 | 421 | 424 |

### Have hazal

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 2   | 399 | 358 |
| No            | 419 | 22  | 66  |
| Total farmers | 421 | 421 | 424 |

### Use water and feed in hazal

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 3   | 401 | 362 |
| No            | 418 | 20  | 62  |
| Total farmers | 421 | 421 | 424 |



|  | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
|--|-----------|-----|-----------|

**Chick separation \***

|                         |     |     |     |
|-------------------------|-----|-----|-----|
| After 1 week (improved) | -   | 380 | 300 |
| After 2 weeks           |     |     | 36  |
| After 3 weeks           |     |     | 7   |
| After 4 weeks           |     |     | 37  |
| Never (traditional)     | 421 | 41  | 44  |
| Total farmers           | 421 | 421 | 424 |

\* In Benchmark and End survey the answer was recorded as “improved” or “traditional”  
In the Follow-up survey the interval (weeks) of chick separation was recorded.

**Shed type**

|               |     |     |     |
|---------------|-----|-----|-----|
| Traditional   | 419 | 47  | 137 |
| Improved      | 2   | 374 | 287 |
| Total farmers | 421 | 421 | 424 |

**Common problems poultry production \***

|                                  |  |  |     |
|----------------------------------|--|--|-----|
| Quality of chicks / ducklings    |  |  | 156 |
| High price of chicks / ducklings |  |  | 187 |
| High price commercial feed       |  |  | 314 |
| Timely vaccination service       |  |  | 236 |
| Poultry diseases                 |  |  | 298 |
| Low market price of egg          |  |  | 127 |
| Low market price of poultry      |  |  | 139 |
| Lack of knowledge                |  |  | 88  |
| Total farmers                    |  |  | 424 |

\* This question was only asked in follow-up survey

**Have mobile number of DLS \***

|               |  |  |     |
|---------------|--|--|-----|
| Yes           |  |  | 118 |
| No            |  |  | 306 |
| Total farmers |  |  | 424 |

\* This question was only asked in follow-up survey

**Service from DLS \***

|               |  |  |     |
|---------------|--|--|-----|
| Never         |  |  | 180 |
| Sometimes     |  |  | 228 |
| Always        |  |  | 16  |
| Total farmers |  |  | 424 |

\* This question was only asked in follow-up survey

|  | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
|--|-----------|-----|-----------|

## NUTRITION

### Do you wash your vegetables before cutting or after cutting?

|                     |     |     |     |
|---------------------|-----|-----|-----|
| Wash after cutting  | 317 | 7   | 20  |
| Wash before cutting | 104 | 414 | 404 |
| Total farmers       | 421 | 421 | 424 |

### Do you wash your hand properly before having meal

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 107 | 413 | 421 |
| No            | 314 | 8   | 3   |
| Total farmers | 421 | 421 | 424 |

### Do you cook vegetable immediately after cutting?

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 170 | 417 | 415 |
| No            | 251 | 4   | 9   |
| Total farmers | 421 | 421 | 424 |

### Knowledge on extra food for pregnant and lactating mother

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 191 | 403 | 415 |
| No            | 230 | 18  | 9   |
| Total farmers | 421 | 421 | 424 |

### Knowledge on extra food for infant and adolescent

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 217 | 409 | 409 |
| No            | 204 | 12  | 15  |
| Total farmers | 421 | 421 | 424 |

### Vaccination for children

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 308 | 365 | 377 |
| No            | 113 | 56  | 47  |
| Total farmers | 421 | 421 | 424 |

### Prevalence of water borne disease

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 273 | 142 | 303 |
| No            | 148 | 279 | 121 |
| Total farmers | 421 | 421 | 424 |

### Source of drinking water

|               |     |     |     |
|---------------|-----|-----|-----|
| Tube well     | 370 | 370 | 385 |
| Pond          | 44  | 50  | -   |
| Others        | 7   | 1   | 39  |
| Total farmers | 421 | 421 | 424 |

### Maintain personal hygiene

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 199 | 405 | 421 |
| No            | 222 | 16  | 3   |
| Total farmers | 421 | 421 | 424 |

|  | Benchmark | End | Follow up |
|--|-----------|-----|-----------|
|--|-----------|-----|-----------|

#### Knowledge on different food category

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 60  | 419 | 398 |
| No            | 361 | 2   | 26  |
| Total farmers | 421 | 421 | 424 |

#### Knowledge on special health care for pregnant mother

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 186 | 412 | 413 |
| No            | 235 | 9   | 11  |
| Total farmers | 421 | 421 | 424 |

#### Knowledge on special health care for lactating mother

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 162 | 411 | 415 |
| No            | 259 | 10  | 9   |
| Total farmers | 421 | 421 | 424 |

#### Knowledge on nutrient deficiency diseases

|               |     |     |     |
|---------------|-----|-----|-----|
| Yes           | 39  | 420 | 401 |
| No            | 382 | 1   | 23  |
| Total farmers | 421 | 421 | 424 |

#### Type of latrine used

|               |     |     |     |
|---------------|-----|-----|-----|
| Ring slab     | 387 | 381 | 400 |
| Open          | 34  | 40  | 24  |
| Total farmers | 421 | 421 | 424 |

#### Other questions \*

|   |  |  |     |
|---|--|--|-----|
| Collective input purchase                     |  |  | 92  |
| Collectively communicate with actors for sale |  |  | 108 |
| Vaccination campaign                          |  |  | 145 |
| Personal communication                        |  |  | 320 |
| Visit demo plots                              |  |  | 210 |
| No communication                              |  |  | 155 |
| Total farmers                                 |  |  | 424 |

\* These questions only asked in Follow-up survey

## Annex 2 – List of FFS in Cycle 1, Khulna

| FFS ID | WMG                       | Polder | Union       | Upazila    | Facilitator 1 | Facilitator 2 |
|--------|---------------------------|--------|-------------|------------|---------------|---------------|
| 1      | Hatbari *                 | 22     | Deluti      | Paikgachha | Shahidul      | Zahida        |
| 2      | Senerber                  | 22     | Deluti      | Paikgachha | Shahidul      | Zahida        |
| 3      | Gopepagla *               | 22     | Deluti      | Paikgachha | Shahidul      | Zahida        |
| 4      | Saidkhali *               | 22     | Deluti      | Paikgachha | Shahidul      | Zahida        |
| 5      | Bigardana                 | 22     | Deluti      | Paikgachha | Waliullah     | Hafsa         |
| 6      | Durgapur                  | 22     | Deluti      | Paikgachha | Waliullah     | Hafsa         |
| 7      | Noai                      | 22     | Deluti      | Paikgachha | Waliullah     | Hafsa         |
| 8      | Darun Mallik              | 22     | Deluti      | Paikgachha | Waliullah     | Hafsa         |
| 9      | Khalsibunia               | 30     | Batiaghata  | Batiaghata | Salam         | Nargis        |
| 10     | Chak Solemari             | 30     | Batiaghata  | Batiaghata | Salam         | Nargis        |
| 11     | Hogolbunia Dakshin        | 30     | Batiaghata  | Batiaghata | Salam         | Nargis        |
| 12     | Hogolbunia Uttar & Madhya | 30     | Batiaghata  | Batiaghata | Salam         | Nargis        |
| 13     | Hatbati Uttar             | 30     | Batiaghata  | Batiaghata | Rasel         | Aklima        |
| 14     | Hatbati Dakshin           | 30     | Batiaghata  | Batiaghata | Rasel         | Aklima        |
| 15     | Baguladanga-Patharghata   | 30     | Batiaghata  | Batiaghata | Rasel         | Aklima        |
| 16     | Basurabad                 | 30     | Batiaghata  | Batiaghata | Rasel         | Aklima        |
| 17     | Katianagla                | 30     | Gangarampur | Batiaghata | Zakir         | Nasima        |
| 18     | Masiar Danga              | 30     | Gangarampur | Batiaghata | Zakir         | Nasima        |
| 19     | Kanthaltala Gondhamari    | 30     | Gangarampur | Batiaghata | Zakir         | Nasima        |
| 20     | Phultala                  | 30     | Batiaghata  | Batiaghata | Zakir         | Nasima        |

\* The FFS marked with \* were not included in the report (Technical note #17)