## Survey documentation for the Perennial Crop Statistics

***Bangladesh Bureau of Statistics***

***January 2022***

***D R A F T***

The documentation consists of three parts: 1. Reference metadata 2. Releases 3. Process documentation (details about goals, methodology, roles, processes, and evaluation)

The main audience for the survey documentation is the staff working on the survey on a daily basis. In addition, the documentation can be used a) when introducing new staff, and b) when preparing overall plans, conducting quality audits and functional reviews. Finally, the survey documentation can be used when preparing changes, e.g., new IT solutions.

**1. Reference metadata (for internal and external users)**

**1.1 Contact information**

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| Contact organization | Bangladesh Bureau of Statistics (BBS) |
| Contact organization unit | Agriculture Wing |
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**1.2 Statistical presentation**

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| Data description | The Agricultural Wing of the BBS is entrusted with the responsibilities of conducting ACP survey covering six major crops (aus - summer paddy), aman - rainy season paddy and boro – winter paddy, jute, wheat, and potato) and 118 minor crops in the crop groups of cereals, pulses, vegetables, fruits, plantations and fibers) for generation of crop area and yield statistics. The perennial crops are part of the 118 minor crops. The estimation of total quantity production of a specific crop is covering: area cultivated, yield of the crop, and total production.  Land in which crop is produced for two years or more after sowing / planting of seedlings is called permanent or perennial crop land. This type of land does not need to be replanted after harvesting seasonal crops. Permanent crops are all fruit trees, all citrus fruit trees, all nut trees, all berry plantations, all vineyards, all olive trees and all other permanent crops used for human consumption (e.g., tea, coffee or carobs) and for other purposes (e.g., nurseries, plants for plaiting and weaving such as rattan, or bamboo, etc.). Fruits-Perennial crops are one of the 13 categories in which BBS classified the 128 crops. There are 19 crops classified under the category of Fruits-Perennial crops (mango, jackfruit, litchi, guava, blackberry, coconut, lemon, betel nut, and other fruit trees) and considered as permanent crop land. Permanent crops are the land cultivated with long-term crops which do not have to be replanted for several years (such as cocoa and coffee); land under trees and shrubs producing flowers, such as roses and jasmine; and nurseries (except those for forest trees, which should be classified under “forest”).  In Bangladesh, permanent cropland as a share of land area represents 6.4%, as reported in 2018. |
| Classification system | Central Product Classification (CPC) recommended by FAO. The BBS follows the concepts and definitions of the UN and in particular, the FAO guidelines for agricultural statistics. The territorial classification of regional data is broken down according to the NUTS classification. The regional data are available at NUTS 1 and NUTS 2 levels. The geographical classification for country codes is ISO 3166 (Codes for the representation of names of countries and their subdivisions). Subdivisions: a) 64 district (en) / district (fr) / zila (bn); b) 8 division (en) / division (fr) / bibhag (bn) Code source: Bangladesh Standards and Testing Institution (BSTI), 1987-09-09 + ISO/TC 46/WG2 Secretariat and/or ISO 3166/MA. |
| Sector coverage | Main permanent crops from the total operated area of the country: Mango, Jack Fruit, Papya (ripe), Litchi, Guava, Ber, Orange, Pamelo, Lime & Lemon, Tetul, Jamrul, Other Fruits, Other Citrus Fruits, Green Coconut, Wood apple, Black Berry, Kamranga, Jalpai, Amra. |
| Statistical concepts and definitions | Estimation of annual production of crops is essential to calculate the Gross Value Added (GVA) for this sector.  Harvest year means the calendar year in which the harvest begins.  Yield is the harvested production divided by the harvested area.  Total operated area equals area owned plus area taken from others minus area given to others. Operated area also includes uncultivated land including homestead. Total operated area considered owned area of the holders as well area taken from others but deducts area given to others.  For permanent crops the area refers to the production area. All non-productive areas are excluded (e.g., young non-productive plantations, abandoned areas, etc.).  The Agriculture Wing elaborates the questionnaires for conducting the Perennial Crop Production Survey. The aim of the survey is to collect data on production area, harvested production and main area under perennial crops. Area under permanent crops or fruit trees may be of two types, namely:   1. Compact Plantation: Area under compact plantation means the area under fruit trees, plants and shrubs which are planted in a planned and regular pattern within a specified area of land; The land on which crops are planted in a planned and orderly manner is called land / garden under intensive cropping. 2. Scattered Plantation (extensive orchards): These are permanent crops which have plantation patterns so scattered that is not feasible within short time limits to measure and record areas occupied by them. Area under scattered plantation means the area under fruit trees and shrubs which are scattered or located in such a way that it is not feasible to measure and record the aggregate area occupied by such fruit trees, plants and shrubs. Extensive orchards are semi-intensive or extensive fruit crops intended mostly for own consumption.   Permanent crops have been classified into three groups: (1) tree varieties; (2) flowers cultivated for commercial purposes, and (3) nurseries of trees and flowers.  Nurseries are areas of land on which are grown young woody plants intended for transplantation later and include fruit seedlings. |
| Statistical unit | The statistical unit is the agricultural holding, defined as a techno-economic unit of agricultural production under single management comprising of all livestock kept and all land used wholly or partly for agricultural production purposes, without regard to title, legal form, or size. Single management may be exercised by an individual household, jointly by two or more individuals or households or a juridical person such as a corporation, cooperative or government agency.  A holding may consist of more than one parcel (fragment) located in one or more separate areas or mauzas or in more than one administrative unit or division provided that all the separate parcels or fragments form a part of the same technical unit under operational control of the same management. The definition covers practically all holdings or virtually all households engaged in agricultural production and includes livestock with no agricultural land. So, holdings may have no significant agricultural land area, e.g., poultry, hatcheries, holding keeping livestock for which land is not an indispensable element for their production.  There are two types of agricultural holdings: (i) holdings in the household sector – that is, those operated by household members; and (ii) holdings in the non-household sector, such as corporations and government institutions. The majority of agricultural production is in the household sector. The concept of “agricultural holding” is therefore closely related to the concept of “household”. Holdings in the non-household sector are not covered by the survey. |
| Statistical population | Area cultivated with permanent crops by the agricultural holdings in the household sector. |
| Reference area | National and district levels. Mauza is the smallest unit of administrative area in Bangladesh having the boundary demarcated with latitude and longitude values. Mauzas have different sizes with different dimension. |
| Time coverage | The data are annual and presented in time series. At present, the area under crop is estimated by interviewing 5 (five) farmers in each union in the country. However, in the future, according to the sample structure obtained from the Agricultural Census 2019, it will be possible to estimate the area of land under major and minor crops through farmer interview in the selected mouzas (Subjective Method). |
| Base period | Not applicable |

**1.3 Statistical processing**

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| Source data | Data are based on ACP survey, Perennial crop Production Survey, BBS |
| Frequency of data collection | Annual |
| Data collection | Sample Survey, Farm Household response. |
| Data validation | BBS, Agriculture Wing. Arithmetic and qualitative controls are used in the validation process, including comparison with the data of previous periods or other surveys and with administrative data sources. |

**1.4 Quality dimensions**

**Relevance**

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| User Needs | Agricultural statistics are especially useful for market management/monitoring, production forecasts and policymaking in agricultural and food sectors. |
| User Satisfaction | General aim of official statistical producer is to meet the needs of users, and to make an access to statistical data to users in an understandable manner, simultaneously and under the same conditions. BBS is obliged to produce and disseminate official statistics in objective, transparent and professional manner, so that all users are equally treated. |
| Data completeness rate | Estimating the total production of a crop in a given base year is called the annual production of a crop. Annual production includes the area under total crop, yield rate per acre, total production and crop loss calculation. All the lands on which the crop has been cultivated in the annual crop production survey are included in the sample structure. In the context of Bangladesh, mouza is considered as the primary sampling unit (PSU) in crop production and other related surveys. According to the agricultural census, the list of mouzas where the crop has been cultivated is used as a sample structure. Estimating the total production of a crop in a given base year is called the annual production of a crop. |

**Accessible and clarity**

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| Release calendar access | The BBS is the official agency for the release of crop area and crop yield estimates. These official statistics are based on the results of ACP surveys. Besides the BBS, the crop assessment and monitoring activity is also carried out by the DAE of the MoA. As well, a crop calendar is published in the Agricultural Yearbook for 86 crops, including the 19 perennial crops, and providing: (i) time of sowing/transplanting, (ii) time of harvest and (iii) per acre seed requirement. |
| News release | Yearbook of Agricultural Statistics of Bangladesh: Production, area, crop damage, land use, irrigation, inputs etc. <https://databd.co/resources/agricultural-statistics-yearbook> Release calendar: 1. December, for: production, area, crop damage, land use, irrigation, inputs etc., published in the Yearbook of Agricultural Statistics of Bangladesh. 2. March, for: production, area of crops, land use and irrigation statistics, production and price of fertilizer, structural statistics, fish, livestock and poultry production, Agriculture sector contribution in GDP, published in the Statistical Yearbook of Bangladesh (Ag. Chapter). 3. January, for: Agriculture census data, classification of Ag holding, ownership of land, production, sowing and harvesting period of different crop, published in the Statistical Pocketbook (Ag. Chapter). 4. After completion of harvest: Area, yield rate and production of crops by district, published in the Advance Release of Major Crops. 5. Four (4) months’ time lag, for: Area and production index of crops, land use, means of irrigation, irrigated area, area and production, production and sales of inputs, import, procurement and distribution of food, published in the Monthly Statistical Bulletin (Food & Ag. Chapter). 6. Two months after survey, for: Cost of cultivation, labor, fertilizer, harvesting, caring etc., published in: Report on Cost of Production of Major Crops. 7. Ad-hoc news release. |
| Publications | Yearbook of Agricultural Statistics of Bangladesh: Production, area, crop damage, land use, irrigation, inputs etc. <https://databd.co/resources/agricultural-statistics-yearbook> |
| On-line database | Not yet applicable |
| Micro-data access | Not yet applicable |
| Other | Not yet applicable |
| Documentation on methodology | Area under permanent crops (crops with a growing cycle longer than one year) includes land under trees and shrubs producing flowers (rose, jasmine, etc.), and nurseries of fruit trees. It excludes nurseries for forest trees and permanent grassland. The area refers to the physical area of land, regardless of the number of harvests on the same land during one agricultural year. In the questionnaire, this category is broken down into two subcategories: (i) permanent crops under greenhouses or high shelters (permanent installations that can be entered); and (ii) permanent crops outdoors or under low shelters (non-permanent installations covering only the crop).  The production area refers to the area that can potentially be harvested in the reference harvest year. All of the non-producing areas, such as new plantations that have not yet started to produce, should be excluded, as well as the abandoned areas. Isolated trees such as linear-planted trees near roads (not belonging to an agricultural holding and not used for the market) should be excluded.  The current methodology for crop production estimates used by BBS is based on probability sampling, and both objective approach (Observation approach) for six major crops and subjective approaches (interview approach) for all crops (mauza being the primary sampling unit) are followed. The production estimation has two parts (area estimation and yield estimation). Area estimate uses ratio estimate based on previous years estimate at union level that lead to the upazila and zila level estimates which is then used to derive the national estimates. One mauza is randomly selected from each union and a stratified sample of farmers from each mauza is finally selected for each interview. There is no provision to adjust the sampling weight for district level estimates. There is a likelihood of a systematic bias in such estimate.  Main indicators that can be calculated: (i) Perennial crop structures by crop; (ii) Density/number of trees by crop. |
| Quality documentation | Internal quality self-assessments are carried out regularly. Collected data are routinely checked for internal consistency (e.g., outliers and significant variation in time series). |

**Timeliness and punctuality**

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| Timeliness and time lag - final results | Two-three months |
| Punctuality | The data have been published at the time announced in the release calendar. |

**Coherence and comparability**

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| Comparability - geographical | The data on area under cultivation, production area, production and yield are comparable to data published in the previous years because a common methodology is used. Data are comparable across counties. |
| Comparability over time | The data are comparable over time. |
| Coherence - cross domain | The data are closely linked to other agricultural statistics. These data are an input to Crop Production Statistics. |
| Coherence - internal | The internal consistency of the data is ensured by the use of a common methodology for data collection and data aggregation, which corresponds to FAO methodology. |

**Accuracy and reliability**

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| Overall accuracy | Designed: Multistage stratified, FSU: Mouza, SSU, Household. Sampling unit: cluster. Frame used: A list of clusters - Cluster Frame (subset of population). Lowest level of available statistics: Zila. Core data collected but precision is lower than demanded. Overall accuracy is not assessed. |
| Sampling error | Compiled |
| Non-sampling error | Non-sampling errors are associated with other errors that aren’t connected with sample. Non-sampling errors include coverage error, measurement error, response error and processing error. BBS makes efforts to reduce non-sampling errors through continuous methodological improvements and survey process improvements, incl. through minimizing under- and over coverage of the frame |

**2. Releases**

| **ReleaseTitle** | **PlannedReleaseDate** | **ActualReleaseDate** |
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**3. Process documentation (for internal users)**

**3.1 General information**

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| Goals/objectives in workplan/strategy | See reference metadata |
| Other goals | NA |
| Statistical program type | Sample based survey program |
| Methodology (general) | **1. DESIGN OUTPUTS**  See reference metadata  **2. DESIGN VARIBABLE DESCRIPTIONS**  NA  **3. DESIGN COLLECTION**  See reference metadata  **4. DESIGN FRAME AND SAMPLE**  See reference metadata  **5. DESIGN PROCESSING AND ANALYSIS**  See reference metadata  **6. DESIGN PRODUCTION SYSTEM AND WORKFLOW**  See roles and processes below. Each process describes who is doing what, input, output, tools and specific methodology aspects. See also description of IT solution (general) |
| IT solution (general) | NA |

**3.2 Roles and human resources**

| **Name** | **Description** | **Number of staff allocated in one instance of the survey (man-months)** |
| --- | --- | --- |
| Top management - HQ | Director General | NA |
| Subject matter specialist HQ | Subject matter staff allocated to survey | NA |
| Dissemination staff | Staff allocated to dissemination and data storing | NA |
| Other roles HQ (IT etc.) | Staff allocated for data capture tasks | NA |
| District office staff | Enumerators  Supervisors ensuring quality of enumeration | NA |

**3.2 Collection, Processing, Analysis and Dissemination**

**Data collection**

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| Who is doing what | 1. Subject matter specialist prepares data collection: questionnaires, plans etc. 2. District office staff uses paper questionnaire to collect data. 3. District office staff and send questionnaire by post / transport to the headquarters for data transcription? (Or is the data transcription done at the district level). 4. HQ staff do data capture |
| Input | Sample, directory, questionnaires and tools for data capture designed and tested in the design and build phase |
| Output | Directory information, completed paper questionnaires, Input data in CSPro / Stata / SPSS |
| Methodology | See general information |
| Tools | Customized Software (CSpro), SPSS, STATA |

**Data processing**

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| Who is doing what | Subject matter specialists do data editing, create weights |
| Input | Input database: Data file in CSPro |
| Output | Clean database: Stata/SPSS files |
| Methodology | See general information |
| Tools | Customized Software (CSpro), SPSS, STATA |

**Data analysis**

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| Who is doing what | Subject matter specialists prepare tables, do analysis  Technical committee reviews  Top management approves |
| Input | Output from processing phase, draft tabulation plan from design phase |
| Output | Output database: file, report etc. |
| Methodology | See general information |
| Tools | Stata and word |

**Data dissemination**

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| Who is doing what | Subject matter specialist prepares press release with highlights and invite press for presentation of results  Meeting with press  Dissemination staff release report and update release calendar  Press publish press release |
| Input | Output from analysis phase |
| Output | Approved report, pdf file at the website, press release etc. |
| Methodology | See general information |
| Tools | General purpose office tools and web tools |

**3.3 Evaluation**

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| Evaluation: results compared to goals | NA |
| Evaluation: results compared to indicators for processes | NA |
| Issues based on evaluation | NA |
| Recommendations | NA |