

BETTER COTTON ASSURANCE PROGRAMME: Working with Results Indicators

This document provides guidance on the required methodologies to use for Results Indicator Data collection and sampling. It also presents what measures are regularly taken to ensure data is credible, how Better Cotton analyses Results Indicator Data, and what information is shared back to partners for learning purposes.



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BETTER COTTON ASSURANCE PROGRAMME

Working with Results Indicators

Overview

Reporting on Results Indicators is fully integrated into the Better Cotton Assurance Programme to ensure that sustainability improvements are adequately measured everywhere Better Cotton is produced. This data must be collected every season at Producer Unit (PU) or farmer level depending on the category of farmer (Smallholders, Medium Farms and Large Farms). Farms are categorised in recognition of the differences in production methods and workforces they use. Smallholders and Medium Farms are grouped into Producer Units, while Large Farms go through the assurance process on an individual basis. Smallholders are further organised into Learning Groups (LGs).

The table summarises the indicators to be collected and reported for each type of farm.

Better Cotton Results Indicators				
Results Indicators	Measurement	Small-holders	Medium Farms	Large Farms
Pesticide use	Kilograms / hectares (of total active ingredient)	✓	✓	✓
Fertiliser use	Kilograms / hectares (of total fertiliser)	✓	✓	✓
Water use for irrigation	Cubic metres / hectares	✓	✓	✓
Yield	Total cotton harvested (kilograms lint or seed) / total cotton harvested area (hectares)	✓	✓	✓
Profitability	Net income / hectare	✓	✓	
Gender Inclusion	Number of farmers and workers receiving Better Cotton training broken down by gender, by training topic	✓	✓	

Note: Large Farms are not required to report on the profitability indicator as Better Cotton is primarily concerned with supporting and monitoring improved livelihoods for Smallholders and Medium Farms. The Profitability indicator (a first step in understanding the economic situation) is therefore only collected from and communicated about Smallholder and Medium Farms.

Similarly, in regard to the indicators on the elimination of child labour, our greatest concern is monitoring and supporting progress in geographical areas typically dominated by family Smallholder and Medium Farms. Therefore, these social indicators have not been reported by Large Farms in the past. Large Farms are also not required to report on the Women's inclusion Results Indicator.

However, Large Farms are still required to meet Decent Work Principles and Criteria defined in the Better Cotton Standard System, which include topics pertaining to child and forced labour and gender issues. Additionally, Decent Work issues are being addressed within Better Cotton's Social

Impact Working Group, which discusses these important issues in the context of all farm-type contexts. New, more robust indicators will be introduced on these topics for the most appropriate farm types under the revised Monitoring, Evaluation and Learning (MEL) Evidence Framework in due course, which may be collected through targeted data collection, outside of the annual Results Indicator performance monitoring system. This revised MEL Evidence Framework will also incorporate the [Delta Indicators](#), developed in the course of the Delta Project. As some of these Delta indicators are already being monitored as part of the Better Cotton Results Indicators, they are indicated in the corresponding sections in this document.

As of the 2023-24 season, no Better Cotton countries are required to collect Comparison Farmer data. As Better Cotton's RI data analysis and reporting model has now shifted to evaluating insights into our impact over time, the former way of evaluating Better Cotton Farmer results against the Comparison Farmer benchmark within a single season has been phased-out. Therefore, the Comparison Farmer data is no longer needed.

Results Indicators reports are to be provided to Better Cotton **within 12 weeks of the end of harvest**. Better Cotton reserves the right to cancel a licence if requirements on Results Indicators reporting are not met.

This document is divided into the following sections:

- Section One defines the Results Indicators
- Section Two explains the sources and flow of Results Indicator Data

This document is accompanied by templates for data collection tailored for each category of farmer, as well as an explanatory document to assist Producer Units and Large Farms in using the templates, including the compilation of data for Producer Units.

Section One: Better Cotton Results Indicators Defined

Introduction

Better Cotton exists to help cotton farming communities survive and thrive, while protecting and restoring the environment. Collecting, sharing, and learning from Results Indicators helps to:

- Measure changes brought about through implementing the Better Cotton Standard System (BCSS)
- Show progress over time and evaluate success and existing challenges
- Provide the basis for further impact studies
- Ensure accountability, credibility, and transparency to its beneficiaries, donors and members
- Inform strategy on how to improve the Better Cotton Standard System
- Strengthen capacity by learning from experience

For these reasons, Better Cotton requires its partners to collect data on environmental, economic, and social results experienced by Better Cotton Farmers. In the past, these results have been compared to non-Better Cotton Farmers using conventional methods working in the same area. Going forward, Better Cotton will be analysing the longitudinal trends of Better Cotton Farmer results over time.

Environmental Indicators

1.1 Pesticide Use – Delta Indicators #1 and #2

The indicator measures the **amount of pesticide active ingredient applied, per hectare of cotton harvested**.

1.1.1 Definitions

The term “**pesticide**” includes (but is not limited to) insecticides, herbicides, acaricides, fungicides and plant growth regulators (PGRs), applied in any way to the field between the harvesting of any previous crop (including non-cotton crops), and the harvesting of the cotton crop under consideration.

- A commercial **pesticide product** is a composition of 1 or more chemical or biocontrol active ingredients, often referred to by its trade name. For example, “Bace 50” , “Lancergold” or “Round-up” .
- An **active ingredient** is a chemical present within a pesticide product that is used to kill, control or repel pests. For example, “Buprofenzin” and “Acephate” are the active ingredients in pesticide product “Bace 50” .
- The **concentration** of a pesticide product, denoted in grams per litre or kilograms (g/l or g/kg), is the composition or percentage (%) of active ingredients within a pesticide product. For example, in product Bace 50, the concentration of Buprofenzin is 15% (150 grams/litre) and Acephate is 35% (350 grams per litre).

Alternative crop protection methods are low-risk substances that are used for crop protection classified as carrying a low [toxic load score](#) (according to the [Toxic Load Indicator - TLI methodology](#), classified by a pesticide expert). The TLI methodology evaluates and compares the potentially harmful effects of pesticides to humans and the environment based on credible, open-source classification systems. A lower score indicates a less toxic pesticide. Alternative crop protection methods may include biopesticides (including homemade concoctions), biocontrol agents, pheromone or hormone traps, plant extracts, viruses, and beneficial insects.

1.1.2 How to report pesticides

Each farmer records in the Farmer Field Book (FFB) the total amount of pesticide applied to the cotton crop each year per active ingredient, and the concentration of the active ingredient in grams per kilogram or litre of pesticide applied. For multiple applications, the farmer should note the total

number of sprays. Both commercial pesticide products and alternative crop protection methods must be reported. Reporting inerts, synergists, adjuvants or other additives also contained within the product is not required.

See the reference document [“Reporting on Results Indicators guidance on pesticides v1.0”](#) for more detailed guidance and examples on reporting pesticides.

1.1.3 How Better Cotton analyses pesticide data

Based on the total amount of pesticide applied and the concentration of active ingredient, Better Cotton calculates the amount of active ingredient of synthetic and organic pesticides. Farmers should not make this calculation when reporting the data. The calculation is as follows:

1. To convert from volume of pesticide applied to weight of active ingredient applied, the total volume or weight applied (in litres or kilograms) is multiplied by the product concentration (in grams of active ingredient per litre or kilogram) and divided by 1,000 to give a result in kilograms of active ingredient applied.
2. The total weight of active ingredient applied (in kilograms) is then calculated by summing the individual results for each of the different pesticides applied.
3. The total weight of each pesticide applied is then divided by the total number of hectares of cotton grown by the farmers from whom the data on pesticide application was collected, so that an average of kilograms of active ingredient applied per hectare for each different active ingredient is analysed.

For the purposes of calculating the average use of active ingredient per hectare, both the total area harvested by all farmers in the Producer Unit as well as the total area harvested by only those farmers using a given active ingredient are considered.

Better Cotton groups pesticides (by active ingredient) depending on their hazard levels or highly hazardous pesticide (HHP) status:

1. Pesticide active ingredients listed in Annexes A and B of the **Stockholm Convention** e.g. Endosulfan
2. Pesticide active ingredients and formulations listed in Annex III of the **Rotterdam Convention** e.g. Methamidophos, Parathion, Monocrotophos
3. Pesticides listed under the **Montreal Protocol** e.g. Endosulfan
4. **Acute toxicity**: classes Ia or Ib of the WHO Recommended Classification of Pesticides by Hazard
5. **Carcinogenicity**: categories 1A and 1B of the Global Harmonized System (GHS)
6. **Mutagenicity**: categories 1A and 1B of the GHS
7. **Reproductive toxicity**: categories 1A and 1B of GHS
8. Other synthetic pesticides
9. Low-risk substances

Better Cotton communicates on:

- National average use of pesticide active ingredient applied per hectare
- National average frequency of low-risk substances

Better Cotton also monitors Delta Indicators:

1. National average use of pesticide active ingredient applied per hectare, aggregated by HHP status
2. National average Toxic Load Indicator (TLI) score per hectare (TLI scores per active ingredient are multiplied by the total amount applied and divided by total area)

1.2 Fertiliser Use – Delta Indicator #5

The indicator measures the **amount of fertiliser applied, per hectare of cotton cultivated.**

Farmers record the total amount in kilograms or litres of each type of fertiliser or soil conditioner applied to the field growing cotton either prior to planting or during the season on each farm. The starting point for calculating the season should be after the harvest of the previous crop (whether cotton or another crop). All types of fertilisers applied should be recorded, whether they are mineral, organic, or synthetic. Better Cotton does not require chemical analyses to be conducted to determine the nutrient levels of non-standard or home-made fertilisers.

Farmers and Producer Units report on the exact Nitrogen (N), Phosphorus (P_2O_5) and Potassium (K_2O) composition of each fertiliser. Where known, the type of macronutrients should be reported. For example: Urea, Diammonium Phosphate, etc. Reporting on the composition of other individual micronutrients is not required (e.g. Sulfur (S), Calcium (Ca), Magnesium (Mg), etc.). The detailed information is stored by Better Cotton to be used in future more detailed analysis and studies. Better Cotton communicates on:

- National average use of commercial fertilisers per hectare
- National average use of organic fertilisers per hectare

1.3 Water Use for Irrigation – Delta Indicator #3a

The indicator measures the **volume of water used for irrigation, per hectare of cotton cultivated.** Water use is not recorded for rain-fed cotton cultivation.

A cotton crop should be considered irrigated if it receives one or more irrigations in a season. The farmer records:

- The total volume of water extracted in cubic metres (m³) applied to irrigate the cotton crop (1 cubic metre = 1,000 litres). This includes any pre-watering or watering-up irrigations required to prepare the seed bed or establish the crop.
- The area of cotton irrigated in hectares.

These two figures are used to calculate the average water use per hectare.

Economic Indicators

1.4 Yield – Delta Indicator #8

The indicator measures the **volume of harvested cotton, per hectare**.

Farmers record the total amount, in kilograms, of seed cotton (pre-ginning) they harvest and the total area, in hectares, harvested (not the area initially planted, as these areas may differ).

The yield is calculated in metric tonnes (MT) of lint cotton (post-ginning) produced per hectare. As the total production at farm level is expressed in kilograms of seed cotton, Better Cotton converts the unit of measurement by multiplying the amount of seed cotton in kilograms by the average national gin turnout ratio (set separately for each country) and dividing by 1,000.

The expression of yield in terms of lint cotton is most relevant to the majority of supply chain actors and the public, so this is what is communicated externally. For learning purposes, Better Cotton reports yield back to Smallholder and Medium Farm Producer Units expressed in seed cotton harvested per hectare, as this is normally more relevant to those farmers.

1.5 Profitability or Gross Margin – Delta Indicator #9

The indicator measures **profitability, defined as the net income earned from producing the cotton crop**. It is calculated as the gross income received from the sale of the cotton crop minus the total variable costs of growing the cotton crop. The profitability is expressed per hectare and per season.

To enable detailed analysis and comparison, a fixed set of variable costs and sources of income are listed in the Farmer Field Book. The following provides guidance on the information required (gross income and variable costs) to calculate profitability.

Gross Income from cotton

Farmers record gross income from the sale of their cotton crop in local currency in the Farmer Field Book.

Costs of cultivation

Farmers record variable costs they spent during the production of their cotton crop. Categories of costs are defined in the data collection templates and further explained in the accompanying instructions for each type of farm.

Better Cotton never communicates absolute values of profitability; rather profitability is presented in terms of relative comparisons of data.

Profitability data does not need to be reported by Large Farms.

Social Indicators

Better Cotton considers social issues experienced by farmers and workers in terms of its Decent Work Principles and Criteria. Many of the Decent Work issues that Better Cotton and its Programme Partners (PPs) work on are related to complex and deep-rooted socio-economic challenges. Issues like child labour are not simple or easily resolved and do not lie wholly within Better Cotton's and its partners' sphere of influence. Better Cotton's dual focus is to apply standards while also striving to create conditions that enable cotton producer communities to meet the standards.

The indicators "Elimination of Child Labour A – Leveraging Partnership With Local Specialist Organisations" and "Elimination of Child Labour B – Improving Understanding and Awareness" have been removed as of 2020. These indicators were simple, actionable, and appropriate in the early stages of Better Cotton, but more change-oriented social indicators have been developed (including those on eliminating child labour) in the revised Monitoring Evaluation and Learning (MEL) Evidence Framework. These indicators will not be collected via annual Results Indicator monitoring but rather through focused, targeted data collection exercises.

Social indicators are not reported by Large Farms.

1.6 Inclusion by Gender in Better Cotton Activities

The indicator measures the **number of farmers and workers receiving Better Cotton training by gender (by training topic)**.

In particular, reaching women and building their capacity to improve farming practices has been a consistent challenge for the Better Cotton Standard System. This indicator is therefore meant to capture the extent to which Better Cotton training programmes are reaching female farmers and workers as a first step to supporting women's access to information and improved working conditions. The Larger issues of gender and women's empowerment have been taken up in recent years by Better Cotton's Gender Working Group, which in 2023 has evolved into the Better Cotton Social Impact Working Group. Additional, more robust indicators may be considered in the future.

Section Two: Sources and Flow of Data

1. Farmer Field Book

The starting point for all data collection and reporting associated with the Results Indicators is the information recorded by the farmer during the season in their Farmer Field Book or equivalent record keeping system. An example Farmer Field Book (FFB) template indicating the sort of information that should be recorded by farmers is provided in the Appendices of the Better Cotton Assurance Programme.

Note that the actual format of the FFB should be tailored to what is most suitable for the farmer, and could equally be in the form of a computerised record-keeping system in the case of Large Farms.

The critical issue is the recording of the actual data and information required (e.g. water use, fertiliser use, pesticide use, costs, etc.).

2. Sampling Approach for Smallholders

Producer Units (PUs) are groups of cotton farmers that live in the same area. Producer Units may be comprised of either Medium Farms or Smallholders. Smallholder Producer Units gather around 3,500-4000 farmers organised in Learning Groups (some exceptions exist of Larger PUs). Each Learning Group (LG) has on average 35 Smallholder producers. Therefore, there are, on average, 100 Learning Groups per Producer Unit. Medium Farm Producer Units do not organise into Learning Groups.

As Better Cotton becomes more widespread - expanding from four countries in 2010 to 24 in 2021 - and the number of Results Indicator Data rapidly increases, the costs and effort associated with the collection and management of detailed Results Indicator Data from hundreds of thousands of farmers has become increasingly high.

Note: these sampling requirements also apply to PUs in the set-up phase. I.e. new groups of farmers who are organised to participate with BCI for the first time; PUs in the set-up phase are not being assessed for licensing in the upcoming season.

2.1 Fixed sample

A ‘lead farmer’ is identified in each Learning Group (LG) based on the existing leadership of the group. Lead farmers are expected to facilitate the learning of all LG members.

Lead farmers will be responsible for accurately measuring and recording detailed data on their activities. The Results Indicator Data of all lead farmers will be collected and reported to Better Cotton on a yearly basis. Lead farmers are also expected to support other farmers to maintain their FFBs and to identify and share learning based on the Results Indicator Data.

Collecting Results Indicator Data from all lead farmers is much simpler than random sampling run annually. It also offers a good basis for measuring change over time as data from the very same farmers can be compared from one year to another. Better Cotton recognises that such a fixed sample is likely to affect the representativeness of the data. Lead farmers may indeed be the best performers or receive more support and their practices may not be representative of that of all the farmers in the LG.

2.2 Randomly selected groups

In order to avoid selection bias and also to capture the differences within LGs, Results Indicator Data is also collected from a sample of **Learning Groups per Producer Unit as follows:**

1. For each smallholder Producer Unit, determine the required population size (using a 95% confidence level and confidence interval of 10).
2. Randomly select 9 Better Cotton farmers, and 1 Lead Farmer per Learning group until the required sample size is met. (Note: if there are fewer than 10 farmers per LG, continue sampling LGs until the required sample size is met)

Such a sample will be representative of the population of the whole PU. The random selection of the LGs is made automatically on a yearly basis by Better Cotton and communicated to the PU. Elements of stratification such as facilitator, villages, and previous selection are included in the automatic calculation.

The combination of the lead farmer and the randomly selected groups will inform on changes over time, adoption rates, as well as on the parameters of the whole PU, minimising the risk of bias.

In addition to collecting data from farmers participating in the Better Cotton System, Better Cotton and its partners believe it is valuable to use complementary mechanisms to put the data into context. Another method used is commissioning independent case studies.

2.3 Summary of the RI data collection process for Smallholders

1. All farmers participating in the Better Cotton programme record data in their Farmer Field Books or other data management system from the beginning of each season.
2. Better Cotton randomly selects 9 Better Cotton farmers, and 1 Lead Farmer from Learning Groups (LG) from each Producer Unit (PU) until the required sample size is met (using a 95% confidence level and confidence interval of 10).
3. Four (4) weeks after the receipt of the Farmer Lists, Better Cotton informs Producer Units of the Learning Groups selected.
4. Each Producer Unit informs the selected Learning Groups that Results Indicator Data is to be collected.
5. The selected Learning Groups each collect data from all farmers in their groups and submit compiled reports to the Producer Unit.
6. The remaining Learning Groups submit Results Indicator Data for the lead farmer (the fixed sample) in their groups.

EXAMPLE: The table below summarises the sampling methodology, considering an average size PU with 3,500 Better Cotton farmers, 100 LGs with 35 farmers per LG.

Sources of data	Sampling	Estimated Number of farmers providing data per PU	Advantages
Lead Farmers	1 lead farmer per LG	100, considering 100 LGs	Capacity to collect and record accurate data Enables comparisons over time
Sample of LGs (95% confidence level, confidence interval 10)	9 Better Cotton farmers per LG per PU (until the required sample size is met)	9 farmers x 11 LGs = 99, considering LGs with 35 farmers each	Representative sample Informs on differences within LG and different adoption level with lead farmer

**Note that due to covid limitations, the number of samples was adapted for the 2022-23 season. Consult the document ["2022-23_BCI RIR COVID-19 Memo_Final"](#) for further details.*

Representativeness

The sampling approach adopted to collect Results Indicator Data is representative. For farmers grouped in Smallholder Producer Units, data from a representative sample is collected on a yearly basis. For an average-sized Producer Unit of 3,500 farmers, data is collected from about 199

farmers: 100 lead farmers and 99 farmers randomly selected LGs. This is associated with a 10-point confidence interval and a 95% confidence level.

Beyond its mere size, the representativeness of the sample is ensured by the selection approach. It is further strengthened by the comparison with the data collected by the independent case studies.

3. Medium Farms

In the case of Medium Farms, RI data is collected from a sample of farmers within a Producer Unit as follows:

1. For each Medium Farm Producer Unit, determine the required population size (using a 95% confidence level and confidence interval of 10).
2. Randomly select Better Cotton farmers until the required sample size is met.

Such a sample will be representative of the population of the whole PU. The random selection is made automatically on a yearly basis by Better Cotton and communicated to the PU. Elements of stratification such as facilitator, villages, and previous selection are included in the automatic calculation.

Note: these sampling requirements also apply to PUs in the set-up phase. I.e. new groups of farmers who are organised to participate with BCI for the first time; PUs in the set-up phase are not being assessed for licensing in the upcoming season.

**Note that due to covid limitations, the number of samples has been adapted. Consult the document ["2022-23_BCI RIR COVID-19 Memo_Final"](#) for further details.*

4. Large Farms

In the case of Large Farms, data is collected from all participating farmers. Therefore, no sampling methodology is required.

Summary of the data collection process for Large Farms

Sources of data	Sampling
Participating Large Farms	100%

**Note that due to covid limitations, the number of samples has been adapted. Consult the document ["2022-23_BCI RIR COVID-19 Memo_Final"](#) for further details.*

5. Learning and continuous revision

Better Cotton operates in a continuous cycle of learning and improvement. The Results Indicators, along with the other aspects of the Assurance Programme, contribute to this learning cycle.

Due to the sheer volume of data collected, compiled, and analysed since the first Better Cotton harvest, Results Indicators have been aggregated at the country level and top line results shared back to partners once a year. Better Cotton has developed a data warehouse and is piloting digital data collection tools that will make collecting and sharing results with individual Producer Units and Programme Partners more streamlined, thus improving opportunities for learning from data closer to real-time. Once data is cleaned, an automatic summary will be made for Producer Units and Large Farms.

Besides, Better Cotton uses the Results Indicators to identify the need to adapt or update the standards, assurance mechanisms, and the overall MEL system (indicators, collection practices, analysis and reporting tools, etc.).

6. Reporting

Better Cotton analyses Results Indicator Data and then uses that data in a variety of ways. These include (but are not limited to):

- Country-level analyses presented in the Impact Reports released to the public and published on the Better Cotton website.
- Quarterly reports to the Better Cotton Council, which governs Better Cotton.
- Quarterly reports to Better Cotton funding partners.

Better Cotton is careful to report on Results Indicator Data in a clear way. The monitoring of Results Indicators in itself does not measure the impact of the Better Cotton Standard System. Rather, the data follows the situation and results of Better Cotton Farmers through longitudinal trends analyses, demonstrating their progress over time or highlighting where challenges remain. Better Cotton is aware of the importance of measuring, and when feasible with available resources and methodologies – attributing impact.

7. Results Indicator Data Flow

The graphic below illustrates the general flow of Better Cotton Results Indicator Data. The green boxes indicate the actors who record or compile information. They are linked with arrows to show the direction of data flow. The grey boxes describe the responsibility appropriate to the corresponding actor. The curved arrows show the feedback of results Better Cotton will give to the Programme Partners (PPs), Large Farms, and information communicated to external audiences. The PPs further share the information with the other actors with whom they work.

