

BSF Reproductive Performance Indicators

Guide for web application setup and usage

1. General information:

Black Soldier Fly (BSF) waste treatment facilities are not easy to run. One of the most challenging tasks is having a stable production of young larvae. This production can easily decline if small mistakes are made in the reproduction units (e.g. grow-out containers, love cages and hatchling showers).

This web-app was made to simplify the performance monitoring of BSF reproduction units and enable early interventions to rescue larvae production. Experience shows that most facilities already collect data from their reproduction units, however only very few facilities analyse this data. We want to provide an easy to use, one-stop solution to data analysis.

The analysis is based on the Reproductive Performance Indicator (RPI) framework. RPIs are very flexible and enable the analysis of data sets despite missing data points or missing measures. More information can be found on how the RPIs work in the “Interpreting outputs” section below.

2. Step by step setup:

2.1 Data formatting:

In order to use the web application, your data has to be filled in a spreadsheet. This spreadsheet has to have a specific format. The template for this format can be found here: [Template](#). You do **not** need to fill all columns for the application to work. However, the 5 column names highlighted in green have to be part of the spreadsheet (even if left empty). Information about what steps are important and how to fill the columns can be found in Figure 1 and 2.

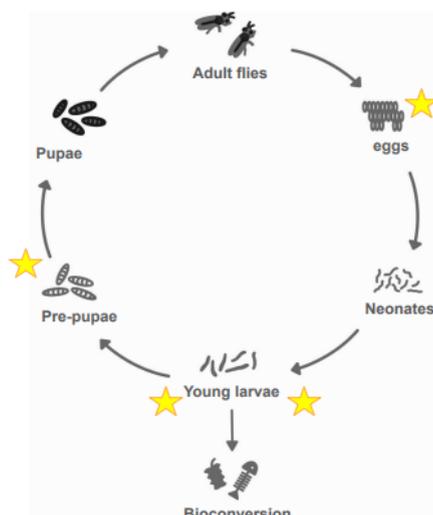


Figure 1: BSF life cycle. The data points marked with a star are used to calculate the RPIs. That is: (1) the number of larvae introduced into the reproductive cycle, (2) the number of pre-pupae introduced into the love cages, (3) the egg mass produced by the love cages, (4) the number of larvae produced by the cycle.

N	O	P	Q	R
date	egg_out	pp_count	larvae_in	larvae_out
01/12/2025	19.52		17332	216000
03/12/2025	31.84			
15/12/2025		27311		
22/12/2025	39.68	24480	21665	416640
29/12/2025	48			
05/01/2026		30792	30331	447680
12/01/2026		42165	43330	1385554

Figure 2: Description of the columns to be filled-in order to make the dataset compatible with the tracking web-application. Some columns can be left empty

As you can see by the example in Figure 2, not all data points have to be filled in at every point in time. The application simply skips the empty values as it assumes nothing was harvested at that point in time. Moreover, entire columns can be left empty, the application will generate as many graphs as possible with the data available.

Examples of correctly filled and wrongly filled datasets can be found under the [following link](#).

2.2 Application usage

The application requires 4 steps to run:

1. Click the share button
2. Copy the link
3. Paste the link
4. Click calculate

General access

Anyone with the link ▼ Viewer ▼
 Anyone on the Internet with the link can view

Viewers of this file can see comments and suggestions

Copy link Done

3. Interpreting outputs

The performance is calculated based on the Reproductive Performance Indicator (RPI) system. It gives insight about how each stage of the reproduction unit is going in your facility. Figure 3 explains the main principles of it.

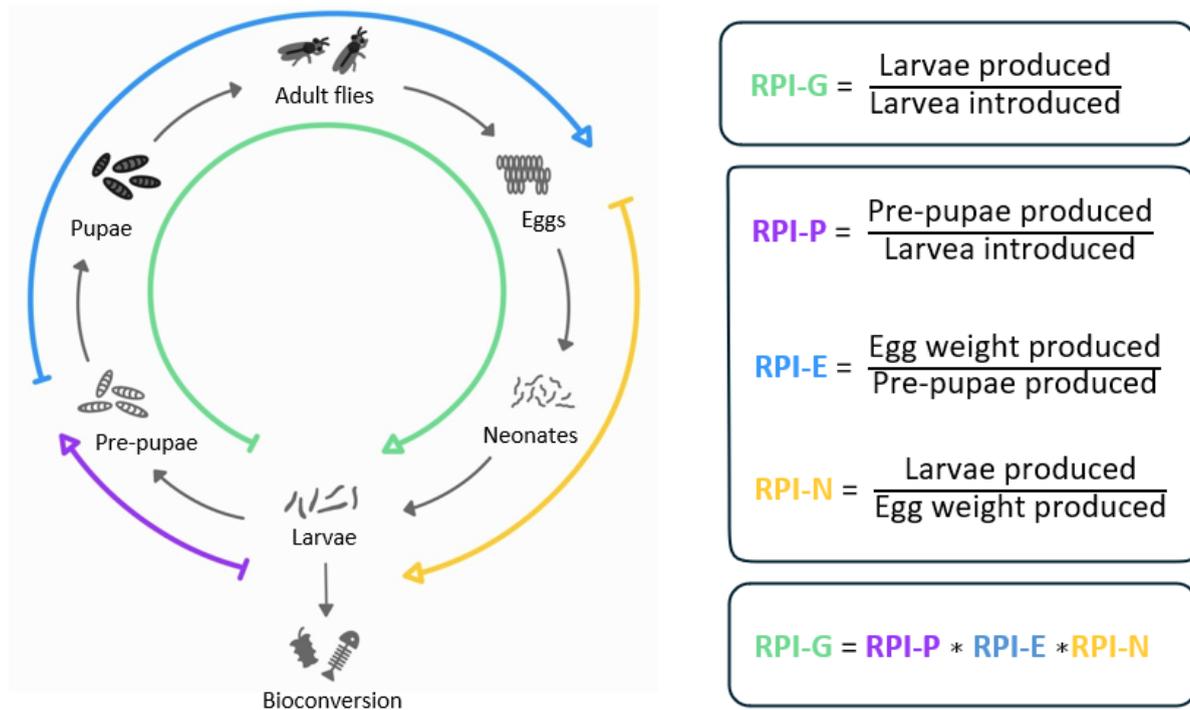


Figure 3: Description of Reproductive Performance Indicators

RPI-P: The RPI of the pupae, this measures the performance of the grow-out process of your facility.

RPI-E: The RPI of the eggs, this measures the performance of the adult fly life stages of your facility.

RPI-N: The RPI of the neonates, this measures the performance of the hatchery in your facility.

RPI-G: The General RPI, this measures the overall performance of your facility.