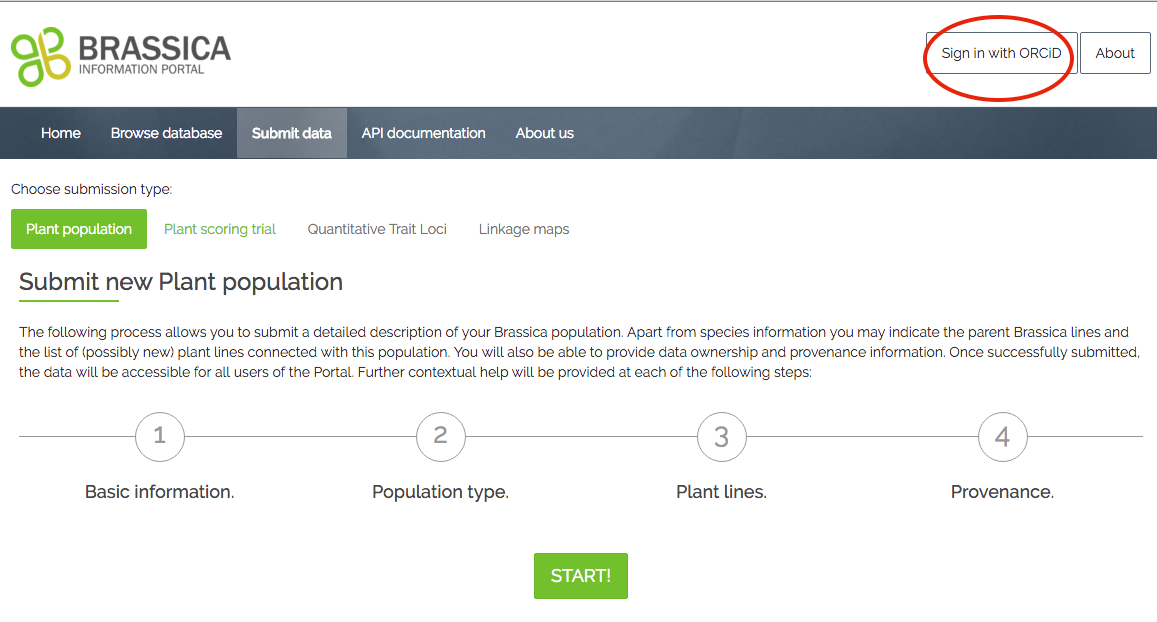
This document is a manual for the steps taken during the data upload workshop on the 07.09.2016.

It lists the steps necessary to use the ruby client to submit population data and the wizard to submit trial data to the Brassica Information Portal.

It further names all fields required for the submission of a new experimental plant population and plant trial.

In order to submit content to the Brassica Information Portal, you need to sign in with your ORCiD account. If you don’t have an ORCiD account yet, you will be referred to their services from our Sign in.

Please create an account prior to the workshop, as our time is limited.



Your submission is split into two different submissions which need to be executed in the following order:

1. Population Submission (ruby script)
2. Trial Submission (web- interface based)

**Population Submission using the ruby client**

You submit your experimental plant population first. This is the collection of the genetically different plant material used for your trial. In your trial submission you are asked for the name of your experimental population, which is why it is necessary to submit population information first. The fields required and the population submission client are specific to a diversity foundation set, not a crossing population.

The population submission client is a ruby script parsing information (objects) from a .csv spreadsheet provided by the user to the mapped location in the BIP database via the BIP-API. In order to understand the underlying resource and attribute names used in the script, please see the respective tables in the [API-documentation](https://bip.earlham.ac.uk/api_documentation).

During your submission you will be using terminal. Please be familiar with the basics in navigating folders and moving and manipulating files. We will be working in pairs for this part so if you are not comfortable, I will pair you up with a more experienced person.

**Install software:**

-download ruby 2.3+

-for OS X e.g. use brew:

download brew following the instructions on the website:

<http://brew.sh/>

then type:

brew install ruby

-for Windows, use rubyinstaller:

Download the installer by following the instructions on the website:

<http://rubyinstaller.org/>

**Files required:**

In the workshop materials folder, files required for the population submission are files numbered with 1\_ to 2\_. 1b and 2b are used for an extended population submission with more complex script modification. We will start with the following files:

**1\_BnaDFFS.csv**

* The input .csv file which contains metadata about the experimental population

**2\_population\_submission.rb**

* The ruby client, which helps to transfer (“parse”) the content from 1\_BnaDFFS.csv into the Brassica information portal.

1\_BnaDFFS.csvreflects the content of the current commands in the population\_submission.rb client and can be altered to your requirements/ available data.

**File manipulation:**

The population\_submission.rb client currently enables the submission of all fields listed in table 1.

This section walks you through each step that needs to be taken in order to modify your script and input template for your own population submission The order of steps reflects the logical submission of information rather than the way things appear in the script.

**Population description:**

For your own population submission, you will have to alter the following information directly in the script:

ACTION: Beneath “ 1. Creating experimental plant\_population “, you will see information as displayed in figure 1.

Please enter your population information such as the

- name,

- description

- establishing\_organisation

- .population\_type

- taconomy\_term\_id

directly in the script.

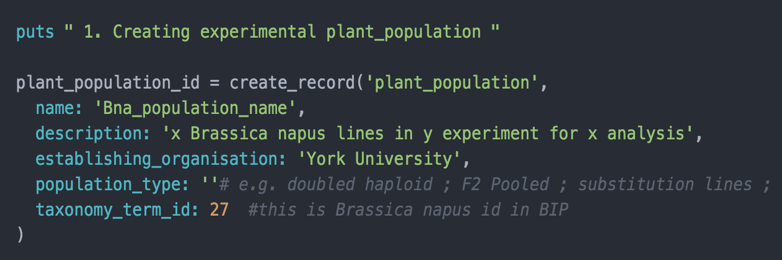


Figure 1 example text describing the plant population in population\_submission.rb

Nomenclature examples for the plant\_population.name are: Bna\_TNDH (Doubled Haploid mapping population derived from cross between Tapidor DH and Ningyou 7) or BnaDFS (a *Brassica napus* diversity foundation set).

If you are going to submit a population with species other than Brassica napus, please contact me to receive the appropriate identifier.

**The .csv file**

|  |
| --- |
| **Table 1. Fields required\* for the submission of an experimental Population. They are presented below by <resource\_name>.<attribute\_name>.**   * Plant\_populations.name * Plant\_populations.population\_type * Plant\_populations.description * Plant\_population.establishing\_organization * Plant\_lines.plant\_line\_name * Taxonomy\_terms.id * Plant\_varieties.plant\_variety\_name * Plant\_accessions.plant\_accession * Plant\_accessions.year\_produced * Plant\_acessions.originating\_organisation   \*Note that more fields are available for submission of information to the BIP; to find the description of their names, please go to our [API-documentation](https://bip.earlham.ac.uk/api_documentation). |

With the help of the script population\_submission.rb you are able to read in the content of your own .csv input file with your population metadata to the Brassica Information Portal.

The template input\_file.csv (Figure 2) reflects the current commands in the population\_submission.rb client to read in data from that .csv file. It can be altered to the information available on your experimental plant population.

The template file contains the minimal requirements of information for a population submission to the Brassica Information Portal. An addition that is not required is the submission of a list of sequence identifiers from SRA. Make sure you remove the code handling the sequence identifier submission from the script in case you don’t have sequence identifiers to submit.

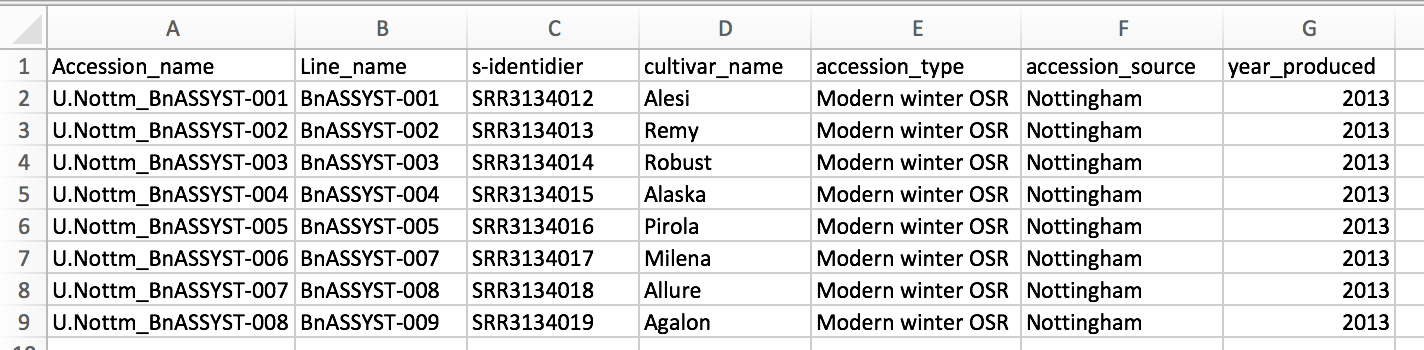


Figure Input\_file.csv is a template that corresponds to the population submission client, available online.

**Defining the input to the script**

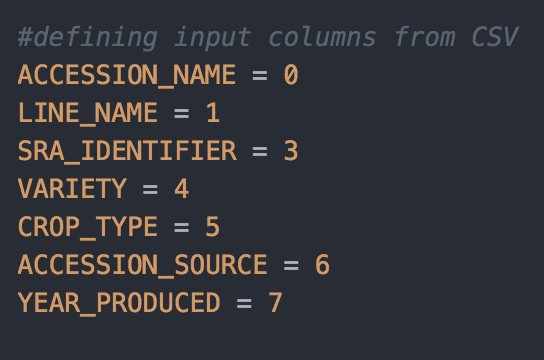


Figure 3 the input variables must correspond to the location of the column headers in your .csv file.

ACTION: In section “# defining input columns from CSV in the script”

you define the script’s input parameters using the columns from your .csv. You can add more input parameters. A list of required and additional parameters can be found in table 1 and the API documentation.

0 in the script is the first row in your .csv. 1 is the second row in your .csv. For example, in Figure 3, Accession\_name information is located in the first column in the .csv template (Figure 2), but needs to be defined as “0” in the script ( Figure 3).

**Manipulating a function**

You may not have SRA identifier information for your population. Therefore, you have to remove any code that deals with the submission of this information. The first step is to re-define the input of your script ( see Fig.3), where the variable SRA\_IDENTIFIER needs to be removed and the input column numbers changed accordingly.

Further, remove sequence\_identifier information from the function that defines the submission of plant\_line associated information (as shown in Fig. 4). Finally, find the line where the function gets called on the bottom of the script and remove the input variable from there (as shown in Fig 5).

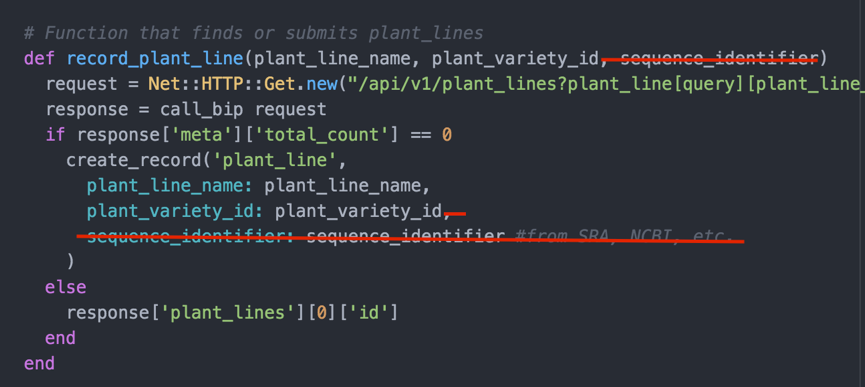


Figure function that records plant\_line information. Crossed out is the code that would enable sequence\_identifier submission.

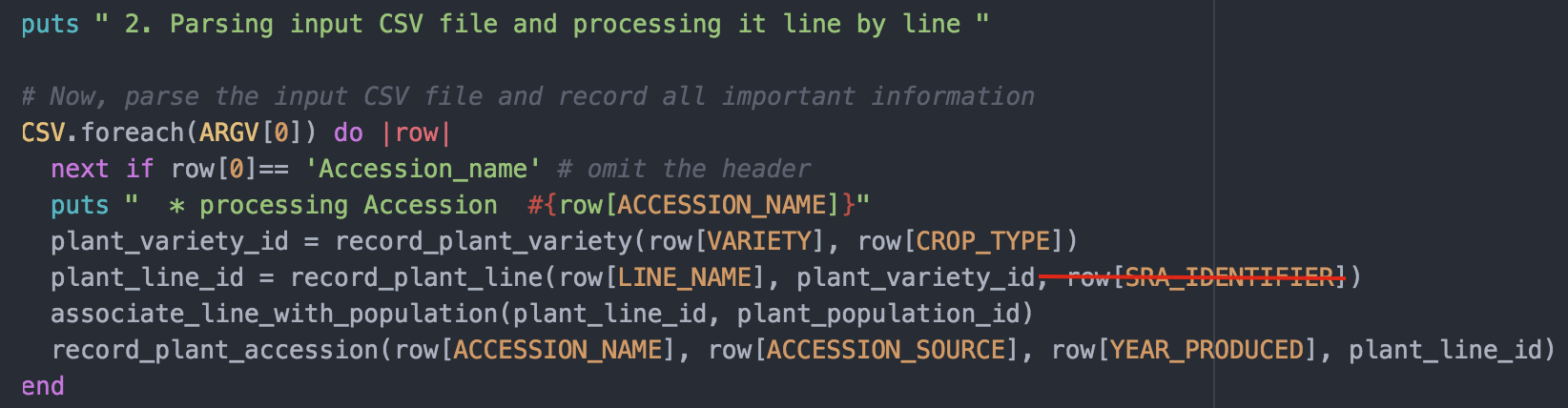


Figure The calling of functions like “record\_plant\_line” from Fig.4 is located at the end of the script. Crossed out is the code related to SRA sequence identifier submission.

In the same fashion as the ability to submit SRA sequence information has been removed from the script, one can add more objects that facilitate the submission of additional information. The API documentation lists all possible objects that you could submit information to. In the case of Population submission, you can add objects related to the Plant\_population, Plant\_lines, Plant\_accessions and Plant\_varieties.

**Double-checking the script**

-          Are all .csv headers correctly associated with the variables in the script?

-          Do variables need to be added to the script?

* If yes: make sure you add them in the appropriate create\_record function, with the wording of the fields exactly as shown in the API documentation
* Typos in the newly-added input parameters?, check with the API documentation

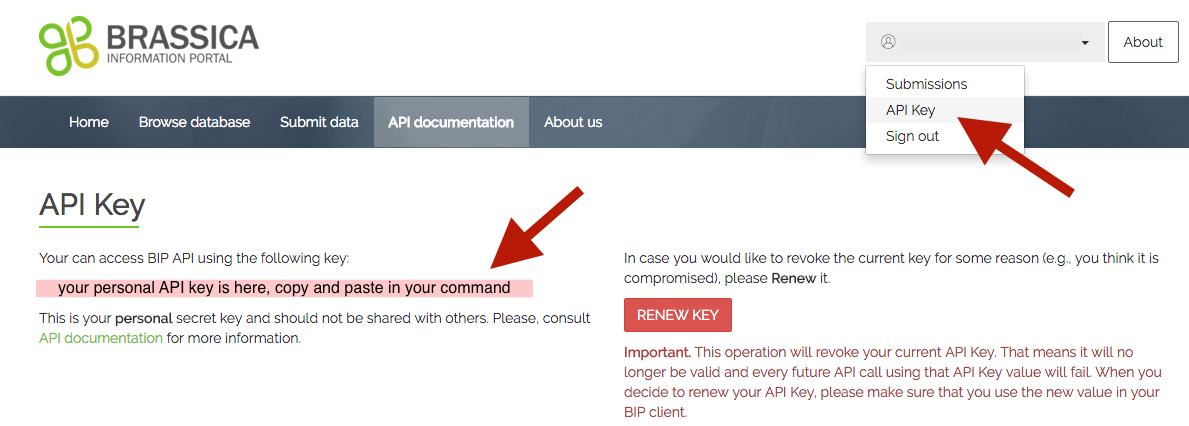
- Do variables need to be /deleted from the script?

* If yes: make sure you delete them in section #defining input columns from CSV, in the create\_record function, and at the end of the script, where you call the function and define the input parameters.

**API key:**

Sign in to BIP to retrieve your API key:

1. Click on API key in the popup bar under your user name.
2. Copy the API key and paste in your command to run the submission client (see below).

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**Run submission client:**

After double-checking your submission file and script, run the following command in your terminal. Make sure your input file and the submission script are located in the same folder or add the paths to their name:

ruby population\_submission.rb <your\_input\_file.csv> <your\_api\_key>

**Trial Submission using the wizard**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| /Users/hildegaa/Desktop/Screen Shot 2016-07-22 at 11.05.21.png  After submitting your Population, you can submit the trait scoring data (your measured traits) of your trial. This is a 6-step process, during which you also submit metadata that describes your trial.  The wizard walks you through all the steps, offering compulsory and optional fields to be filled out. On the right side, you see a list of all fields during the submission process. Those fields marked with \* are compulsory for the submission.  **Step 1** asks you for general trial information. In this step you link your previously submitted plant\_population to your plant\_trial, by selecting your experimental plant\_population from a drop-down menu.  **In step 2** you define the traits which you have investigated during your trial. Some fields are compulsory, following the Crop Ontology model of <Trait><Method><Scale>. Other information can be added in case it is available. We advise to add as much information as possible to make your data reusable and comparable. **In step 3** you specify what information you will upload together with your trait scores. This can be the number of technical replicates or the trial design in case you want to submit raw data. Also, you specify whether you give information on the plant\_lines or plant\_varieties associated with your germplasm.  **In step 4** you will be able to download the template you use for the submission of your trait data. It has been created according to the choices you have made so far in your submission (e.g. traits to be submitted). If you see that the headers don’t correspond to the data you want to submit, navigate back to previous submission steps and amend them accordingly. An altered template can then be downloaded at this step.  Please **be careful when pasting your trait scores** beneath the correct headers, as they may not appear in the order they are recorded in your source spreadsheet.  **Step 5** is optional, where you can submit an image of the trial layout, in case you submit raw data. Such an image would be helpful to interpret patterns in the raw data.  **Step 6** asks you to fill in some information about the provenance of the data you just submitted. You can choose to put an embargo on the data and wait with the submission until for example your paper is ready to be published. | **Trial submission**   |  |  |  | | --- | --- | --- | | **Step 1 - Trial information** | | | | Plant trial name\* | | | | Project name\* | | | | Experimental plant population\* | | | | Trial year\* | | | | Trial description\* | | | | select: data status: raw vs. processed (analysed) data | | | | Institute\* | | | | Terrain | | | | Soil type | | | | Statistical factors | | | | Country\* | | | | Place name\* | | | | Trial location site name | | | | Latitude | | | | Longitude | | | | Altitude | | | |  | | | | Step 2 -Traits | | | | Select trait descriptors\* | | | | | When adding new trait descriptor: | | | | Descriptor name\* | Materials | Precautions | | Trait category\* | Instrumentation required | Scoring  method | | Units of measurements\* | Calibrated against | Possible interactions | | Score type | Likely ambiguities | Additional annotations | | Where to score | Controls |  | |  |  | | | Step 3 - Scoring template design | | | | Select genetic material origin | | | | plant lines | | | | plant varieties | | | | specify technical replicate numbers (raw data) | | | | select design factors: block plot rep etc (raw data) | | | |  | | | | Step 4 - Scoring Template Submission | | | | download .csv file template | | | | add trait scores to corresponding header | | | | add plant scoring unit (=sample\_id)\*, plant accession\*, originating organisation\*, | | | | Plant line or variety\* | | | | upload .csv file\* | | | |  | | | | Step 5 Submit Trial Layout | | | | Submit image of trial layout | | | |  | | | | Step 6- Provenance | | | | Data owned by | | | | Data provenance | | | | Comments | | | | Visibility-public/private\* | | | |