Guide for the BRAHMS Botanic Garden app used on Android tablets

Updated March 2024
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Garden app introduction

The BRAHMS mobile app is used, in conjunction with BRAHMS desktop, to gather data and images for plants in botanic gardens or similar areas. The app removes the need for most paper records and optimises the process of updating your garden plant records.

Data for selected plant records are exported from BRAHMS desktop to a bespoke RDE file using the export tool provided. The RDE file is then transferred to your tablet device and opened on the app. Here, you can update your plant records by adding different categories of events and requests, add map data, images and other key categories of data. Example functions are to update stock levels, request labels, register plant moves, add species name verifications, check and/or update plant status, and add comments. You can also define and gather data for your own categories of event and request, for example phenology observations or tree maintenance requirements.

These data are then returned to BRAHMS desktop in the now updated RDE file. Here, they can be reviewed and then submitted to your database, updating existing plant records, registering new plants and adding images.

As with BRAHMS desktop, the app is provided with a flexible data grid with options to select visible columns, query/filter your data and sort records.

The app has the capability to work offline. Thus, you can gather data in garden areas that lack both internet and a phone signal.

Hardware

The app runs under android. We recommend you use the app on 8 – 11” tablets which provides sensible access to the data grids, tool windows and the map functions. It can be used on smaller devices including phones of a sensible size but there will be restrictions with data visibility.

Installation and login

The brahms.apk file is ca. 25 MB. Copy the brahms.apk to your device using Bluetooth, a cable connection or in any other way. Run the installation on your device. This will replace any existing software. For convenience, you can add the BRAHMS icon to the tablet home page.

To login to the app on the tablet, you simply tap the BRAHMS icon and enter the surveyor’s name. To work with the app, you will need to transfer at least one plant record RDE file to your tablet. This process is described below.

Transferring data from BRAHMS desktop to app

Creating an app RDE file

In BRAHMS, in the main plants table, tag the plant records you wish to send to the app. You then select Collections > With tagged > Create a plant RDE…

Your tagged plants would normally form a logical group such as plants from a selected area. You may want to create separate RDE files per garden location. You have the choice of exporting existing events/requests for the selected plants so that these can also be viewed in the app. Existing images are not exported. You can restrict existing events/requests by date range.

You can also restrict plants to those with a status representing ‘alive’. If you have tagged one or more records in the garden localities table, you can also use the option to Export all plants of tagged locations. Once created, the next task is to copy your RDE survey file(s) to your device.
The RDE file creation form. Once created, the RDE file can be copied to your android device.

Transfer of lookup lists

When you transfer to RDE, the relevant lookup lists are included in your RDE file. Thus, you should make sure that these are set as required before creating your RDE files. Having good lookup lists makes everything more efficient.

<table>
<thead>
<tr>
<th>Lookup item</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff person names</td>
<td>These are exported from entries in your Management &gt; Assembled Names list - only for names where 'is Staff' is selected. A list of names is required to select the name of the person doing the survey.</td>
</tr>
<tr>
<td>Event and request categories</td>
<td>These are added in a hierarchy from Event Type -&gt; Event Group -&gt; Event (the same for requests).</td>
</tr>
<tr>
<td>Plant Status categories</td>
<td>For example: Alive and Dead. These will be registered in your custom lookups for the field for LivingStatus. See guide section Confirm/Update status.</td>
</tr>
<tr>
<td>Reasons for plant status change</td>
<td>These are added as events see guide section Confirm/Update status.</td>
</tr>
<tr>
<td>Garden Locations</td>
<td>These are added from your garden locations table.</td>
</tr>
<tr>
<td>Plant sub-areas</td>
<td>These will be available if you have added lookups for you plant sub areas field(s).</td>
</tr>
<tr>
<td>Verifications</td>
<td>These are added as events see guide section Plant name verification.</td>
</tr>
<tr>
<td>Label categories</td>
<td>These should be registered using Collections &gt; Label templates. For example, you may have main Label types as Engraved and Potting. Label template entries can then be added for each of these main label types.</td>
</tr>
</tbody>
</table>

RDE file database content summary

When you create an RDE file for the app, the file includes:

- Data for your selected plants records.
- Optionally, all or selected events/requests already linked to these plants.
- Lookup lists for all relevant fields, taken from your Lookup list table.
- Label format names, taken from the main Label Templates table.
- Garden locations.
Copying RDE files to your tablet

After creation, the RDE file is auto-registered in your RDE manager. You can open and check the RDE file to check the data – although this is not necessary.

Copy the RDE file(s) to your device using any method you like. Bluetooth is convenient but you may also use a cable connection or email. When you copy the RDE file(s) to the device, they normally go to your device’s downloads folder. Note that when returning RDE files from the tablet to your desktop, if the RDE file includes images, we recommend you use a cable connection as this will be faster.

RDE File Manager for the app

Existing Documents list

When opened, the first screen you see is the RDE File Manager with a list of Existing documents. These documents refer to RDE files have already been imported into the app’s workspace. If you do not see any files to import, check you have copied at least 1 RDE file to the tablet.

The app File Manager.

Load RDE from device to app

Use IMPORT AN RDE FILE … to locate and register any RDE files that you have copied to the device but not yet registered within the app. When you import an RDE file, it will be auto opened and also added to the ‘Previously Opened’ list. The next time you wish to use the same RDE file, select OPEN for the selected RDE file.

When you load an RDE file you will be prompted to add the surveyor’s name:
This information is used to populate the various records where events and requests are recorded. These names are added to your BRAHMS desktop records making it easy to see who gathered the data.

Who is doing this survey? offers a list of names as included in the RDE file lookup list. Note that these names come from entries in your BRAHMS Assembled names list and will only include names marked with the ‘Is Staff’ field selected.

Export
Export is used when you have completed your editing tasks with an RDE file. Export creates a zip file that includes the selected RDE file and any images you have taken for the plants in that file. If there are a lot of images, the zip file will potentially be large. The zip file can then be cable-copied back to your desktop and subsequently processed. This is covered in a separate section in this guide.

Delete
Delete will remove the RDE file and any images associated with that file from the app workspace. Do not delete the file until you have used the Export option. Otherwise, you will lose the file and your images.

A warning message is given when you use the Delete option.
After exporting and copying the zip back to your desktop, it is your responsibility to delete any processed files in your device’s downloads folder.

**Data that can be added and edited**

The following data can be added/edited. In some case this results in direct edits to the plant record, while in others, events and/or requests are added.

<table>
<thead>
<tr>
<th>Data</th>
<th>Notes</th>
<th>Updates Plant record</th>
<th>Adds Event/Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Status Confirm</td>
<td>Confirm status of all selected records</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Plant Status Change</td>
<td>Update status of all selected records</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Stock Levels</td>
<td>Updating the remaining stock with notes.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Plant Location</td>
<td>Change to location including subareas.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Name Verification</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Label Requests</td>
<td>Available label formats are as registered in your labels table.</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Comments/Curation notes</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Propagation Requests</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>General Events</td>
<td>Add events as registered in your BRAHMS lookup list.</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>General Requests</td>
<td>Add requests as registered in your BRAHMS lookup list.</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Map Data</td>
<td>Lat/Long</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Images</td>
<td>Add image link</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Plants</td>
<td>New Plant records</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Further details on data editing are provide below.*

**Application main menu**

When you open an RDE file in the app, the menu appears in the top banner area with the RDE file name and some file stats.

The main menu includes the options:

- **Plants**: open the RDE table in an Excel-like data grid with editing tools.
- **Map**: display a map showing all plant records within the current filter group.
- **Events**: lists all plant events
- **Requests**: lists all plant requests
- **Images**: display thumbs for all images linked to plants in the open RDE table.

**Data Grid View**

The Plants View is the main viewing option for your plant records, opened by default when a file is opened. This grid has the following key options:
• Drag columns to change order.
• EDIT/LOAD VIEW: design or select a saved field view.
• To resize field width, drag header dividers.
• Tap header once to sort AZ. Tap again to sort ZA. Tap a third time to remove sort.
• Tap another column to sort on additional column. Sorts are additive.
• Tap the Selected check box to select record(s). This adds a red tick mark.
• Use Clear selection/Select all to tag/untag all records in file, within any filters you may have applied.
• Use Hide unselected to filter to only selected records.
• Use Hide changes to filter to records that have been edited.
• Double tap any cell value to apply a filter on that cell value. Apply filters on multiple values.
• Use ADD FILTER to manually add one or more filter settings.
• A single tap on a record opens the detail of that plant.
• Select ADD PLANT to register a new plant record.
• The Close option closes the opened document. Data are auto saved.

In addition to these grid functions, when the grid is open, you have access to the ‘Act on selected’
functions. These are further discussed below.

A typical Plants grid view.
Editing column views.

Query Filter options in the Plants data grid

Find by ID

Typing into the Find by ID text box auto-filters plant records to those that contain your text entry.

Searching for a plant ID.

Double-tap data value

A double-tap on any data grid cell value will add this property and its value as a selected filter. Filters are additive.
In the above example, 3 filters have been added and can be viewed in a scrollable list. Individual filter selections can be removed using the X option.

Selecting any filter property and data value

By selecting the ADD FILTER option, you can select any data grid column and enter any value. Tapping on the Property text box lists all fields with the more commonly used fields listed at the top. Select ‘Show all properties’ to list less commonly used fields. The filter will be applied on the value added for the selected column using ‘contains’.
Adding a query using ADD FILTER. Commonly used filters are listed at the top of this form (left). Further fields are listed if you select Show all properties (right).

Sorting records

To sort records, simply tap the column header. The first tap sorts A-Z, the next Z-A and a third tap clears the sort. You can sort on multiple columns.

In this example, the data are sorted A-Z by Status and Z-A by remaining stock. The sort arrows indicate the sort direction.

Plant Detail View

Detail view

To select and edit an individual plant record, use a single tap on the plant record in any field. This displays all non-null fields in the left-hand panel. Across the top, there are menu options for Overview, Events, Requests and Images. Using the options on the right panel, you can add and edit the plant map location and add locality notes.
In plant detail mode, after tapping on a record, you can edit and view events, requests, map data and images.

Map data
If the plant already has a map location, the map zooms to and displays that plant. In Edit Map Point mode, the map becomes full screen, and a blue dot indicates your current location – this map marker changes as you move about. A Zoom to current location option is also provided. Tapping on the map updates the plant position which you can then save.

Act on this plant...
Also from the plant detail view, you can use the Act on this plant... options.
Images

To take images, you must be in plant detail mode. From here, select Images > TAKE PHOTO. This uses the device camera as configured on your device and once the image is taken, it will link the image(s) to the current plant record. All images of the current plant are displayed as thumbs on the Images page. On most tablets, you have to select OK to confirm after taking each photo. To delete images, use the DELETE option.

Events and Requests

In plant detail mode, you can create new records using the CREATE EVENT option. To edit an existing event, tap on the event. To delete a record, swiping the record left exposes a DELETE option. The same applies to Requests. You can only delete events and request created on the app.

Online checks for species

Assuming you are online, you can check the current species online using the LOOK UP SPECIES option, currently provided with options for POWO, IPNI and Google Images.

Functions for selected records

Act on Selected

Standard editing functions are available for selected records. These functions are listed in the below screen:
Change location

You can edit plant location details. The Subareas headings will be as defined in your BRAHMS location settings. Lookups are available at all locality levels.

Location names are passed to the app from your lookup lists.
Adjusting stock levels

Plant remaining stock can be adjusted. If the remaining stock is higher than the initial stock, the initial quantity is adjusted up. This option updates the plant record and also adds a stock adjustment event record to selected plant(s).

Stock adjustments are added as events but also update the main plant record.

Confirm / Update Status

Confirm status for selected plants. Adds a confirm event record to selected plant(s). Update status allows you to change the status of a plant. Status values are available as in your BRAHMS lookup list. A reason for status change must be selected from your lookup list, otherwise the Chance Status button is not enabled. Adds a status change event record to selected plant(s).

Your plant status categories are added to your BRAHMS lookup list from Management > Lookup Fields by selecting the field Living Status and adding values as required. Also note that the value representing ‘Alive’ should be entered into your System > Options > Living Collections > Plants > Status code – Living.

The ‘reason for status change’ values are added to your BRAHMS lookup list from Management > Lookup Fields as follows:

EventType: Plant Status
EventGroup: Status Change (parent = Plant Status)
Event: list of values (parent = Status Change)

For further information on editing lookup lists, please refer to the main guide.
Changing plant status. Note the Change Status option is only enabled after the status is changed and a status change reason is provided.

Request Labels

Label formats are listed as added to your plant labels table in BRAHMS desktop.
Add Comments

Add any curatorial notes. These data are stored directly to the plant comments field.

Plant name verification

Add a plant name verification with verification type and notes. Updates plant record and adds a verification event record to selected plant(s). Verification categories and reasons are listed from your BRAHMS desktop lookup lists.

Note that verification change values are added to your BRAHMS lookup list from Management > Lookup Fields as follows:

Verification Category

EventType: Identification
EventGroup: Full Verification; Partial Verification; other values are required (parent = Identification)
Event: list of values (parent = the above group values, for example Full verification; Partial Verification; ...)

For further information on editing lookup lists, please refer to the main guide.

Create Events and Requests

You can add events and requests for other general entries. For example, adding the phenology Observation > Flowering > Full Flower or a request for Maintenance > Tree removal. The event and request categories that you add must first be registered in BRAHMS desktop.

Mapping plants

If you are working offline or in an area with a poor signal, you may want to fully zoom into the area you are visiting prior to going to the field. The map data are cached on the device.
The Map option on the main menu will map all plants within the current filter group. Markers are coloured as shown on the map legend with different colours for Selected, Edited, Alive and Dead (or otherwise not alive).

Display all plants in the current filter group.

Tapping on a marker displays details of that plant in a small map label. It also allows you to select one of the ‘Act on’ options, for example to request labels or change the plant location.

Tapping on the map label opens the plant detail window together with the map point editor.

A long press on the map label opens the main plant data grid with the current plant selected.
You can turn on all map labels using SHOW ALL LABELS but this likely to useful only when you have a smallish number of points and/or are well zoomed in.

**Adding a New Plant**

Select **Add Plant** to register a new plant. When you add a new plant, the new plant Identifier default to PLANT01, PLANT02, etc. Plant IDs must be unique as any images linked to these plants will include the ID as part of the image name. You can add the basic details here. A locality name is required. Images may be linked, and you can also add a map reference.

Later on, when the RDE in being processed prior to transfer to BRAHMS, you can link the plant to an existing Accession - or add a new Accession.
Transfer RDE Data and Images to BRAHMS

Copy and open RDE zip
When you open an RDE zip returned from the app, this will add the RDE file and all associated images to your RDE registered folder. You can either overwrite the original RDE file or, if you wish, rename or move the original. In practice, there’s little point in keeping the original file. When you open the zip to your registered RDE folder, the RDE file will be listed in your RDE file list in BRAHMS.

Images
Before importing RDE files that have images back to BRAHMS, make sure that your shared image folder has been setup and is accessible. The shared images folder is edited using System > Options > Shared Folders.

When the RDE file is imported, the images are physically moved from your default RDE folder to your shared images folder and registered in the BRAHMS images table in that location. This means that other users will be able to see these images from within BRAHMS. Later on, these images may be moved elsewhere.

New plants and accessions
If there are new plants, these will be at the bottom of your RDE file. As a first step, you need to ensure all new plants have an accession number. To add this, use the lookup function provided. New plants that have no Accession cannot be imported.

The Accession Lookup is only enabled for new plants. Choose an existing accession or add a new one.

The transfer process
Import reporting indicates the number of new events, requests and images for existing and new plants.
Newly added plants must be assigned an Accession number. If you do add an accession, the plant will not be imported.

The importer reports on the addition of events, requests, images transfers, image links and new plant additions.

Annex 1. app v. 2.0.0 update summary (July 2023)

<table>
<thead>
<tr>
<th>Revised or new Item</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>User interface/layout</td>
<td>Overall upgrade to app user interface with improved menu layout and grouping of toolbar options.</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Plant detail page</strong></td>
<td>Upgrade to the plant details page with improved layout and a larger map area. Access to 'Act on this plant' options for the current plant. A new Add comments button.</td>
</tr>
<tr>
<td><strong>Query/Filtering</strong></td>
<td>Multiple filter options have an improved scroll-list display. Filter fields are prioritised with commonly used ones at the top of the field list.</td>
</tr>
<tr>
<td><strong>Locate Accession #</strong></td>
<td>A new search option to locate Accession numbers. This auto-updates the data grid as you type.</td>
</tr>
<tr>
<td><strong>Column selections</strong></td>
<td>Data grid column views can now be created, edited, named, saved and deleted more easily. Loading a selected grid view is generally faster.</td>
</tr>
<tr>
<td><strong>New data grids for events and requests</strong></td>
<td>New top level menu options added to access new plant event and plant request data grids.</td>
</tr>
<tr>
<td><strong>Indication of plant ‘edit status’</strong></td>
<td>A new field “Changes” added to the data grid to indicate if a record has been edited. Coded letters indicate the plant record edit status. New events and requests are indicated with E and R respectively. Some edits use more specific codes: M for a map edit, I for an image addition. Thus, for example, it is possible to filter on all records that have had images taken or where map data have been updated.</td>
</tr>
<tr>
<td><strong>Hide changed/unselected</strong></td>
<td>New tick boxes to hide plant records already edited and/or unselected.</td>
</tr>
<tr>
<td><strong>Label requests</strong></td>
<td>Default to 1 per plant. Previous label category remembered.</td>
</tr>
<tr>
<td><strong>Show/Hide edited records</strong></td>
<td>A quick filter to show or hide record that have been edited.</td>
</tr>
<tr>
<td><strong>Map point highlighting</strong></td>
<td>Maps now highlight Selected, Edited, Alive, Dead records in separate colours. Maps have a colour point legend.</td>
</tr>
<tr>
<td><strong>Act on selected on maps</strong></td>
<td>The main map screen has an ‘Act on Selected’ option.</td>
</tr>
<tr>
<td><strong>Map point to plant detail / grid</strong></td>
<td>Tap map point to open legend. Tap legend to open plant detail page. Long press a map point legend open the data grid.</td>
</tr>
<tr>
<td><strong>Copy to clipboard</strong></td>
<td>Long press any field in grid or detail view to copy the data value to clipboard.</td>
</tr>
<tr>
<td><strong>Text field wrapping</strong></td>
<td>Longer text fields like locality notes and comments are displayed in full.</td>
</tr>
</tbody>
</table>
Garden App Privacy Policy

- The BRAHMS garden app software is independent from BRAHMS desktop software. It is managed and licensed by Oxford University Innovation (OUI).
- The app receives plant record data from BRAHMS desktop via a BRAHMS RDE file. The app is used to edit these data by adding information from plant stock inventories. Data from the BRAHMS app are subsequently uploaded to BRAHMS desktop to update plant records.
- Aside from the plant records themselves, the data passed to the app from BRAHMS desktop includes a list of names from the BRAHMS assembled names list and marked as being staff members; a list of garden locations; and various lookup values as utilized by the app to expedite data entry.
- The app utilises the Google Maps API which returns a location and accuracy radius based on information about cell towers and WiFi nodes that the mobile client can detect. Before using this, users must have a Google Maps API key. Users of the BRAHMS app are bound by Google’s Terms of Service as provided here: https://policies.google.com/privacy.
- The app is able to access a number of internet sites (currently IPNI https://www.ipni.org and POWO https://powo.science.kew.org) to help with the verification of plant names.
- Plant records data managed by the app are not shared in any way except when the user selects to physically copy app data as gathered by the app to another device. Copying app data would be the normal procedure to upload the data to BRAHMS desktop.