

Product Life cycle management for innovative Seed companies



Versioning:

Version	Date	Author	Main changes
1.0	20/09/2024	Maryam	First published version
1.1	14/10/2024	Maryam	Updated the catalogue, observations, trial and organization module descriptions.
1.2	14/11/2024	Maryam	Updated the catalogue (templates), variety images tools, observations files/media view
1.3	04/12/2024	Maryam	DAM, Observation charts, Trial varieties (replications and custom fields)
1.4	22/12/2024	Maryam	Improved and added content to DAM, Charts, and also the assets tab in varieties

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Introduction

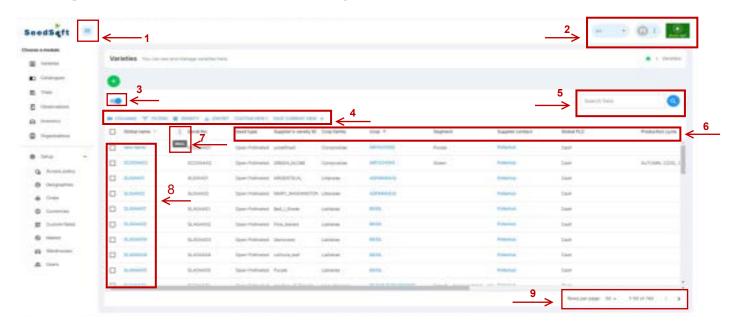
Seedsoft is designed to assist you in efficiently managing portfolio of Seeds Varieties their Life Cycle and the corresponding trials.

The system has six main interconnected modules:

- <u>Varieties</u>
- Catalogues
- Trials
- Observations
- <u>Inventory</u>
- Organizations

Throughout the next pages, each module will be explained in detail

Navigation of the SeedSoft system



- By clicking on the menu button, you can expand or collapse the menu section.
- 2. Select language and access profile sections/ settings through these buttons. Your logo is also displayed on the top right corner.
- 3. By toggling this switch, you can change the **status of the table**. When you hover over the switch, a small tooltip will appear, explaining the function of the switch.
- 4. Using the buttons at the top of the list, you can manage and control your data grid. Filter, arrange columns, define density, and export the selected varieties. Any changes made at this level can be saved under your desired title using "Save Current View," which is next stored in "Custom View" next to it for your future access to the same customized list. These changes could include applying filters, expanding lists, using column menu items, changing the order or size of the columns and more.

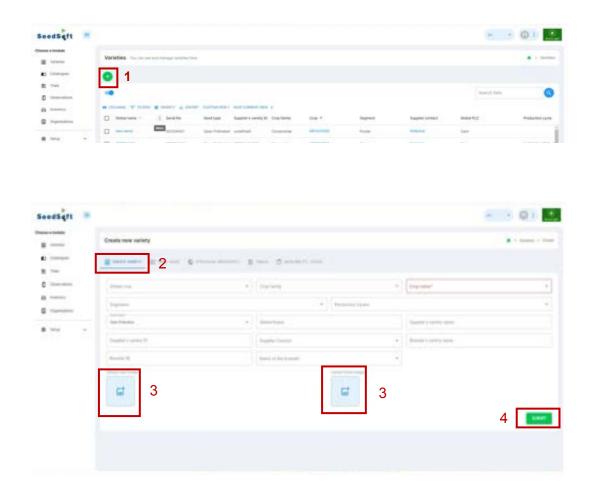
- 5. There is an advanced search field at the top of each list where you can search and view any item that you need from the list. This is a full-text search considering everything stored in the database for a particular module.
- 6. In each data grid, you'll have access to various properties for each column. Some are fixed in every table, but the admin can also add custom fields and decide whether they should be displayed in the tables or not.
- 7. By clicking on the menu icon next to each column title, you can sort, pin, filter, set aggregation, group, hide/show, and manage columns. The menu for numerical columns is located on the left side of the column title.
- **8.** The blue color indicates a link, and by clicking on it, the relevant details will be displayed.
- 9. At the bottom right, you can access pagination and easily navigate through pages. Note: It is better to perform any operations on the lists after loading is finished to ensure accurate results.

Varieties Module

This module provides the space to store, maintain, and report on all varietal information.

- 1. On the Varieties page, click on "Add Variety."
- 2. On this page, enter/select details of your variety, such as crop name, crop family, global crop, etc. (Fields highlighted in red are mandatory).
- 3. You can then upload images
- 4. Finally submit the variety information.

Now your variety is saved, and you can see it in the varieties list.



By clicking on a variety global name, a page will open that includes five sections:

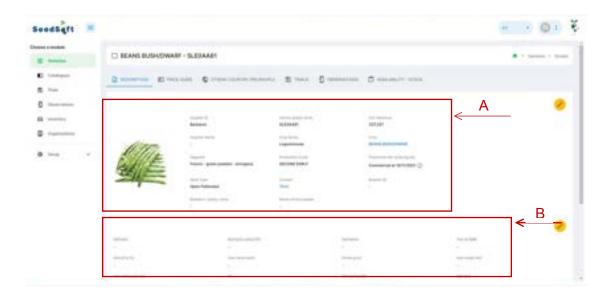
- <u>Description</u>
- Price guide
- GTM/Local pricing/PLC
- Trials
- Observations
- Availability stock

Description:

A. The first section provides an overview of the variety.

Update: You can use zoom in/zoom out tools and download images within a variety.

- B. The second part contains custom fields fully customizable by SeedSoft client.
- C. The last section includes traits that are crop specific. Typical example could be a Watermelon trait called: 'Seedless?' with the options: 'seeded, seedless, edible seeds'.





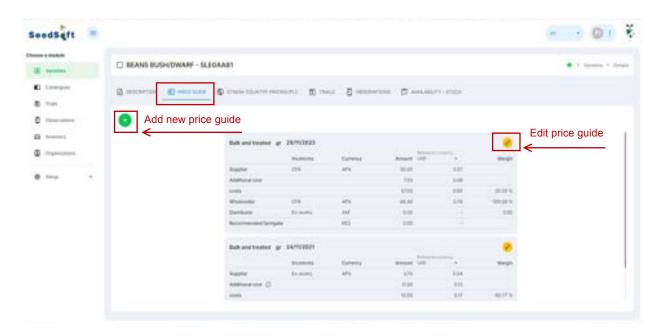


By clicking the pen button on the right, you can edit details (values) of that section.

Price Guide:

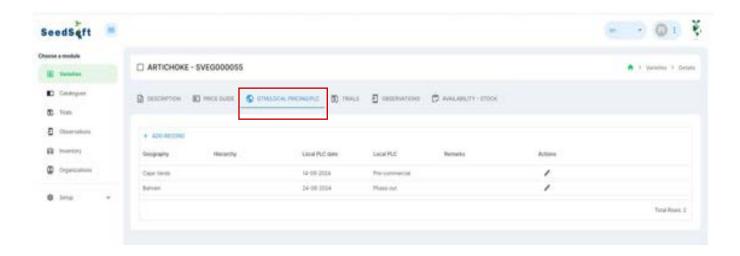
This section supports the collection of high-level pricing information per variety.

Using the add and edit buttons, you can add a new price guide or edit existing ones.



GTM/Local Pricing/PLC

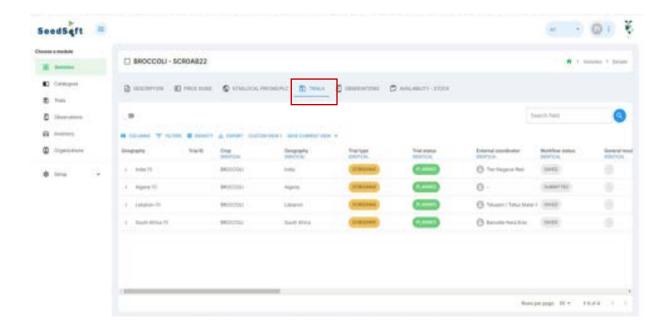
This section is used to store and manage the 'geographical' PLC. This means that instead of having one PLC for the whole world you can indicate the life cycle much in more detail. For instance a product is already commercial globally, but still in Development in France.



Trials

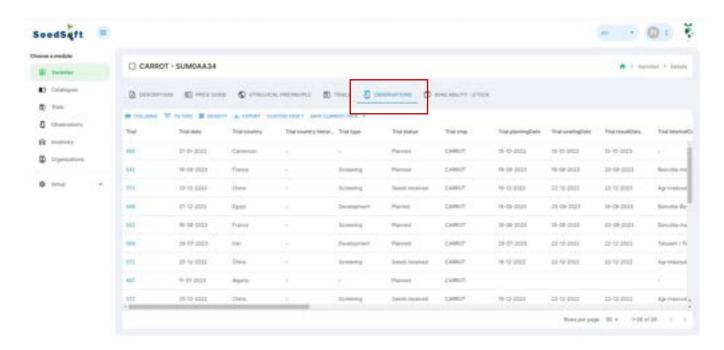
In this section, you can view trials of that specific variety conducted in different geographies, along with all other trial properties (please refer to the <u>trial module section</u> for details).

Update: Trial type and status colors are now customizable by the admin in the "Options" module.



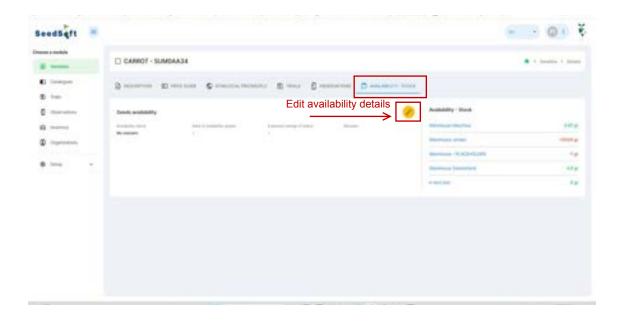
Observations

Each variety might include one or several trials and observations for those trials. You can see the observation list for that trial(s) in this tab.



Availability stock

This section gives information on future availability of the sample seeds at breeder/supplier level as well as current sample seeds stock levels in various warehouses.

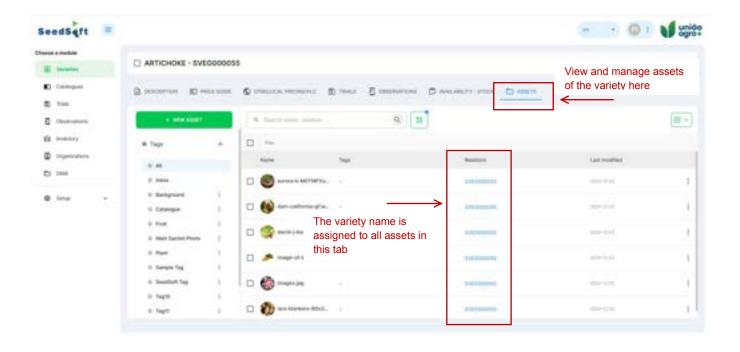


Assets

All assets of the variety are displayed in this tab (If there is any), and you can manage them by assigning tags, editing data, or use editing tools for image assets (crop, rotate, etc).

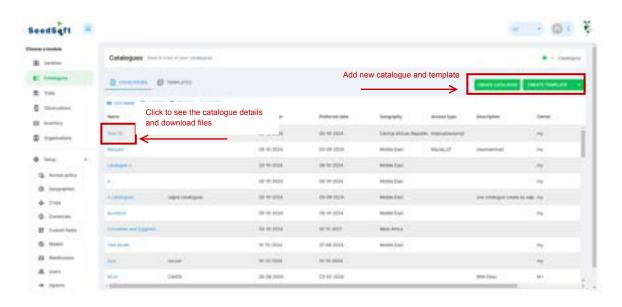
Note:

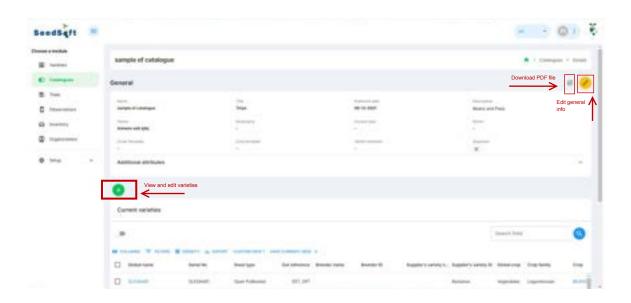
- 1. Any new asset uploaded in this tab will receive the variety name as its relation
- 2. In addition to their current location, these assets are also available in the DAM.



Catalogue Module

In this section, create a catalogue of varieties. You'll also have the option to download the catalogue.

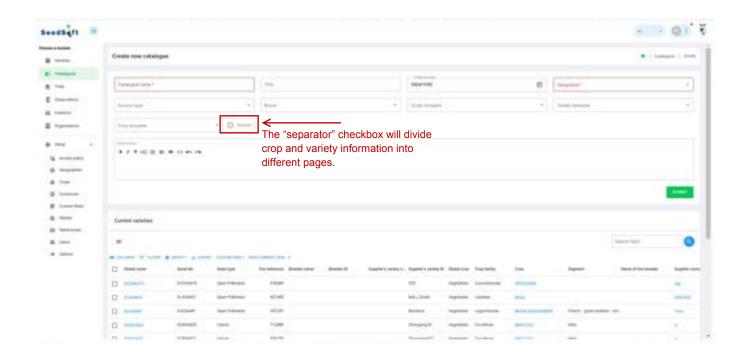




Creation of a new catalogue:

To create a new catalogue, press the "add new catalogue" button. At top section, you should fill out the fields of basic information:

- Name
- Title
- Date
- Description
- Access type
- Brand: Brands are defined in by admin
- Cover template: Here you can select from the cover templates you previously created.
- Variety template: Here you can select from the variety templates you previously created
- Crop template: Here you can select from the crop templates you
 previously created. The "separator" check-box needs to be ticked
 for this template to be used. In this case whenever varieties from a
 new crop are shown in the catalogue, the crop page will also be
 introduced.

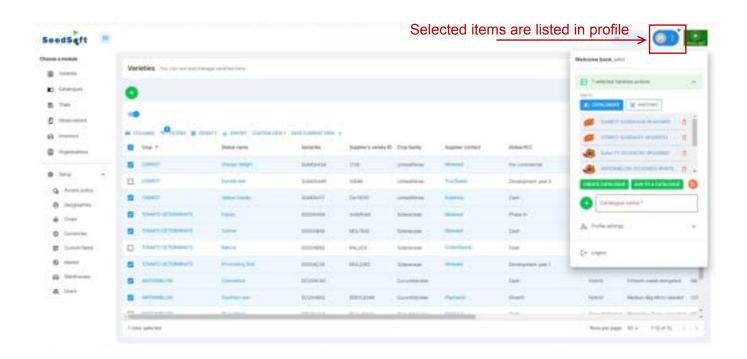


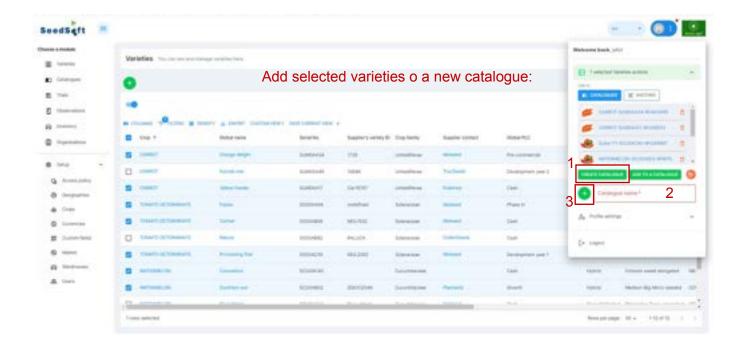
You will then see a new page where you can edit catalogue information, add add varieties or generate the PDF.

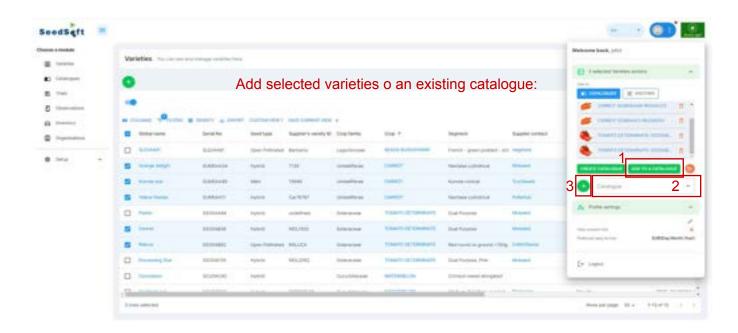
Add varieties to a catalogue:

There are two methods for adding varieties to a catalogue:

- 1. Click on "add variety to this catalogue" button. When the variety table opens, you can select as many as varieties needed (if you don't see any varieties, you may need to switch off the visible PLC). By clicking on the "add button" the selected varieties will be added to the catalogue.
- 2. In the varieties table, you can select as many varieties as needed. Then, through the profile section in the top right corner, you can view the selected varieties and add them to either an existing catalogue or a new catalogue.

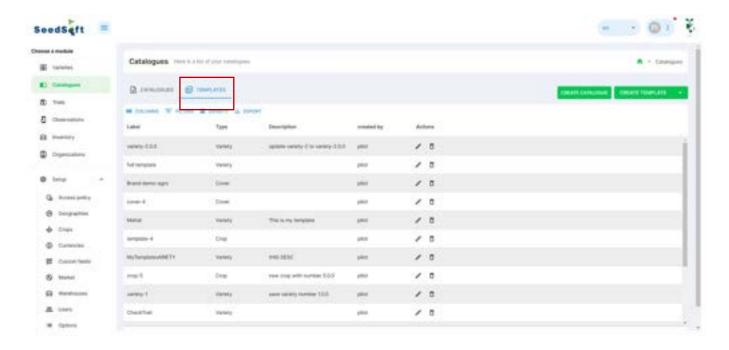






Templates:

In the "Templates" tab, you can view, edit, and delete templates.

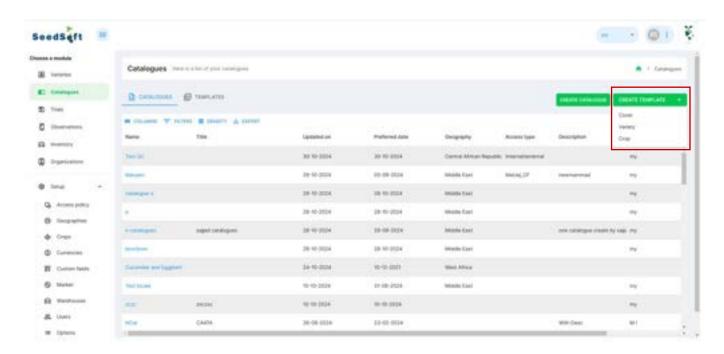


Creation of a new template:

By clicking on "Create Template," you will see three options:

- Cover
- Variety

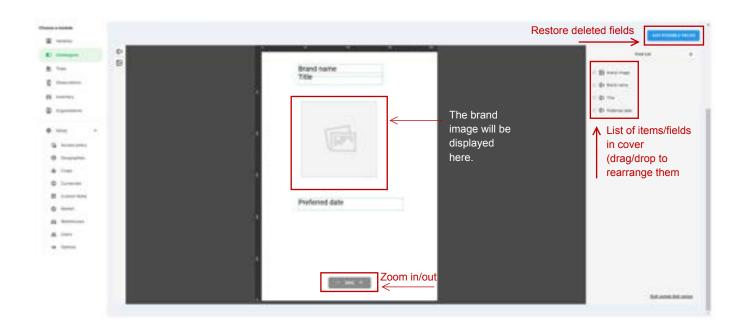
Crop



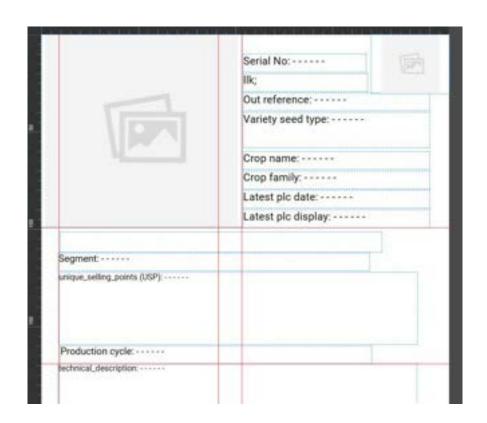
To create a cover template, click on "Cover," and you will be directed to the creation page. In the top section, you should enter the label and description. (This section is same in all three options cover/variety/crop)



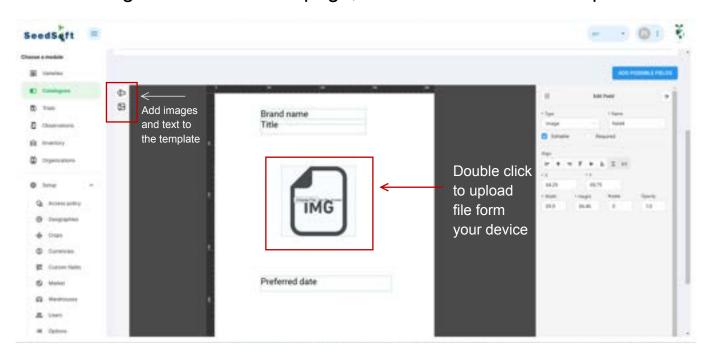
In the second section, at first view, you'll see the main page, and the items/fields on it will be displayed in the right column: Here, you can view a list of all items on the cover and use drag-and-drop to rearrange them.



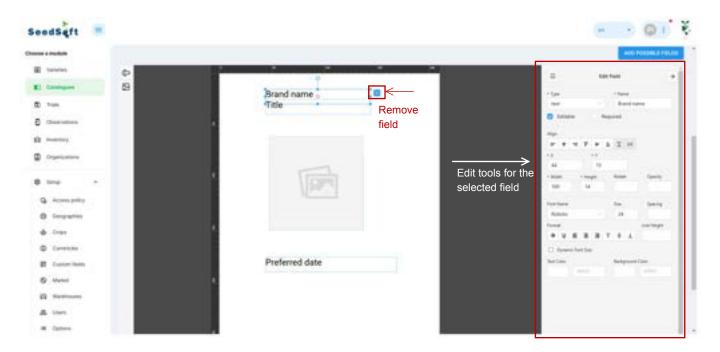
In order to help position fields on the template you can also 'pull' guidelines from the side or top of the page:



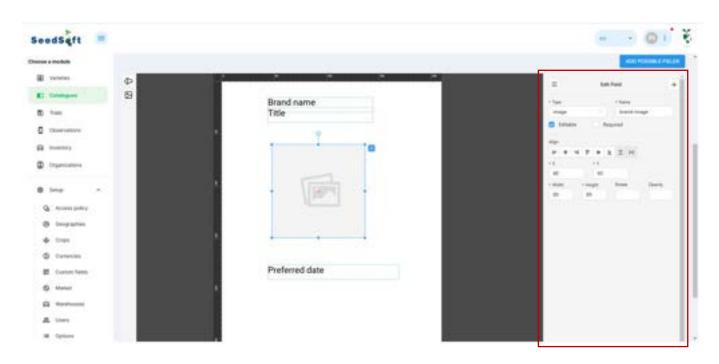
To add images and text to the page, use the buttons at the top left:



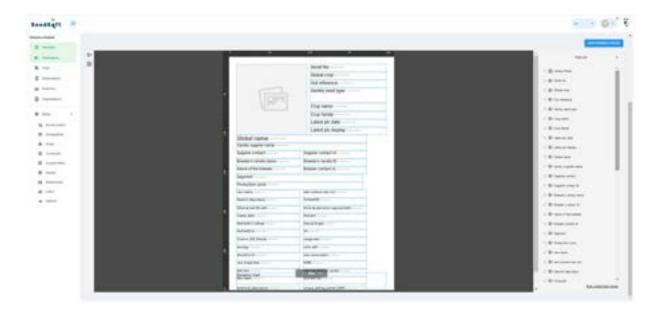
When you click on a field, you'll have access to various tools to add, remove, and edit them, allowing you to customize the appearance of the cover.



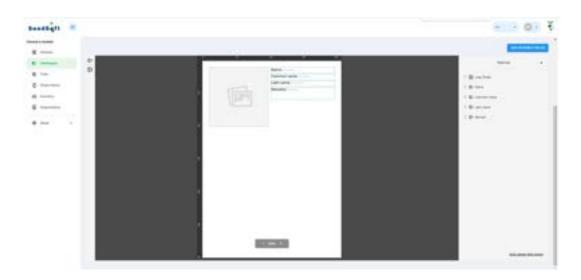
If the field is an image, the edit tools will include:



To create a template for varieties of the catalogue, click on "variety," and you will be directed to the creation page. By selecting this template when creating a catalogue, all varieties in the catalogue will utilize this template.



To create a template for crops of the catalogue, click on "crop," and you will be directed to the creation page. By selecting this template when creating a catalogue, all crops in the catalogue will utilize this template.



Trials Module

The trials module is used to create, track and edit information about trials.

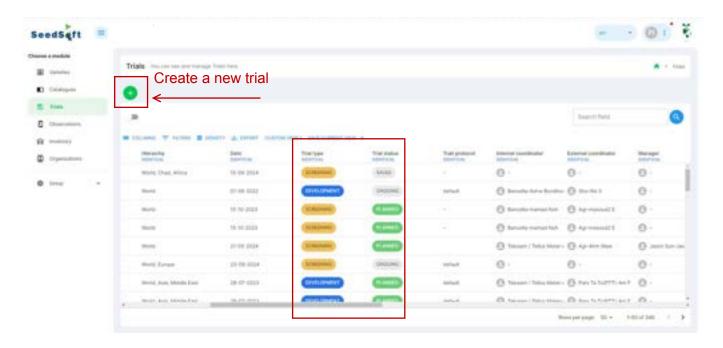
In particular a user can plan the trial including all the relevant details - location, responsible trial officer, trial protocol, varieties in the trial, sowing, planting, results and observation dates.

Explanation of some of the fixed fields of a trial:

- External coordinator name: If an external coordinator is a user in the system, they will gain access to this trial. Additionally, if 'Shared with Organization' is clicked, all people within the external coordinator's organization will also gain access to the trial.
- Protocol allows the user to choose which protocol (from the ones available for the crop) will be used to assess this trial.

Additionally – as for any other module in the system, a SeedSoft client can choose to add custom fields to the trials.

Update: With the provided color palette, the colors for trial status, trial type, and PLC status can be customized (Admins can select colors in the options module).



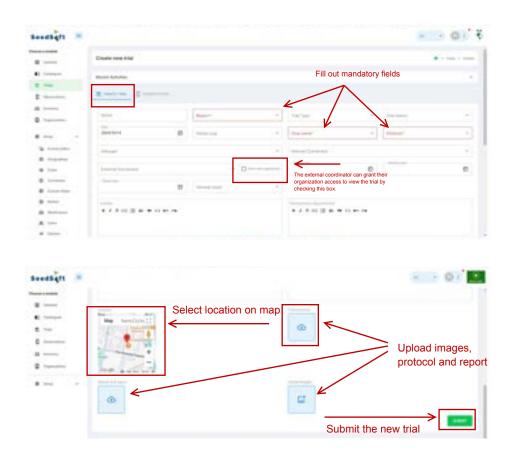
Creation of a new trial:

To create a new trial, press the "add new trial" button.

- On this page, you should submit the basic details of a trial such as region, crop name, trial type, dates, protocol, trial status, responsible people, sowing & planting info, remarks, requirements, etc.
- As soon as you select the crop name, the protocol drop-down list will be updated, allowing you to choose from the protocols specific

to that crop. Once the protocol is selected for a trial, **it cannot be changed** in further edits.

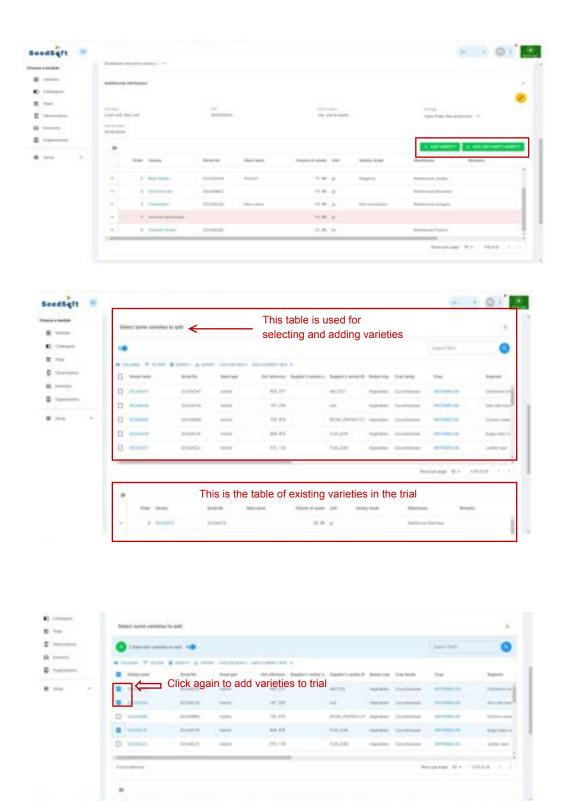
 Afterward, the user can specify the location on a map, upload the trial protocol, trial report, and trial images.



Trial Varieties:

 In the next page you can specify varieties or third-party varieties.

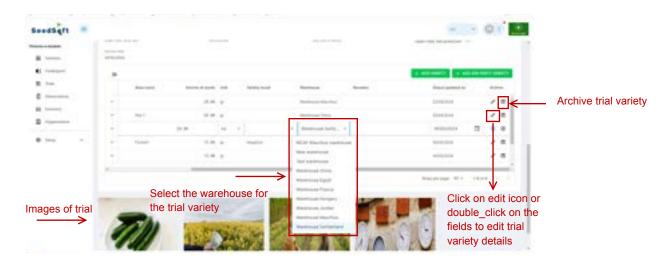
By clicking on "Add Variety" you can mark varieties from the list (If you don't see any varieties, you may need to switch off the visible PLC.) By clicking the "Add" button for the second time, the selected varieties will be added to the trial.



For third-party varieties, you should fill out the form below. Include details such as the volume of seeds, order, variety name, variety result, warehouse, etc.



After submitting varieties, you can edit and manage them in the table. Double click on each field to change or add a warehouse, volume of seed, variety result, etc.

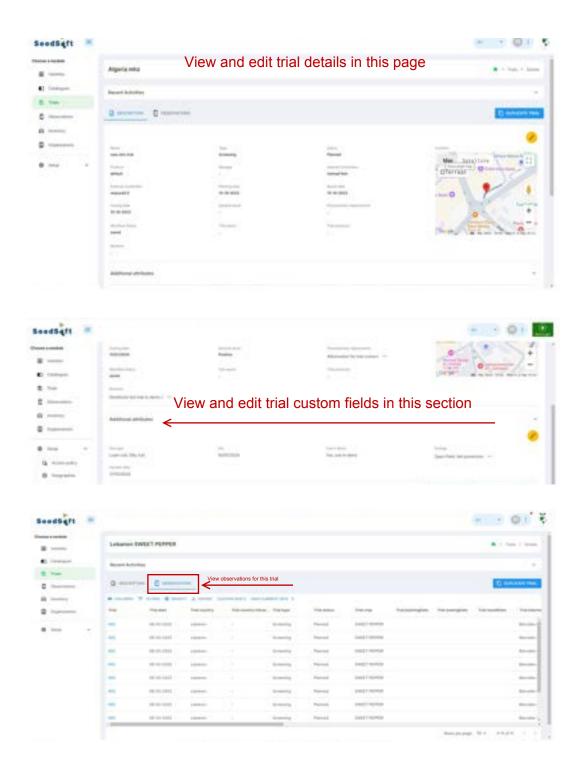


Note: The varieties with no assigned warehouse are highlighted in light pink.

Inside the trial page, you can see more detailed information about the trial in the description section and also observations.

New: Custom fields are now viewable and editable in trial varieties and observation tables.

Trial Details:

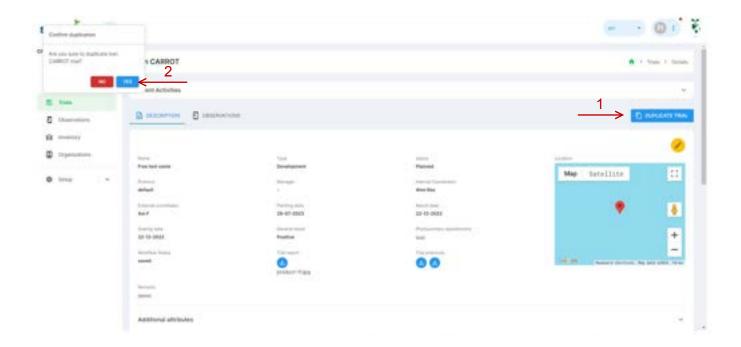


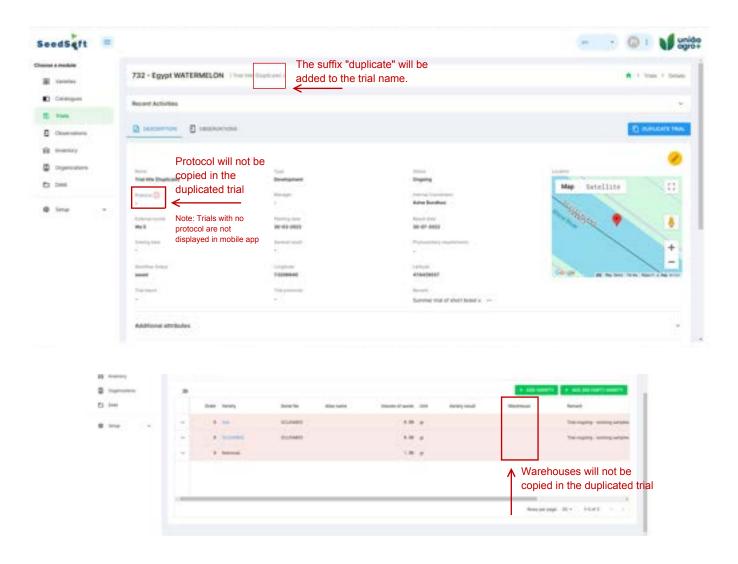
Duplicate a trial:

To create a trial with similar details to an existing one in the system, click on the "Duplicate Trial" button within the trial details page. This will copy the entire details of that trial, including the description and

varieties (except for the varieties' warehouses and protocol). You can then change any details that might differ from the first trial after that.

Note: Observations shouldn't be repeated from trial to trial; therefore, this information is not copied. Additionally we're also not repeating the warehouse selection in the trial as this would trigger immediate deduction of the seeds from the warehouse and we want to leave this decision to the user.



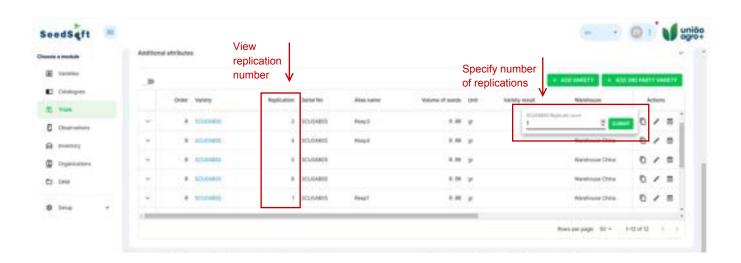


Replicate trial varieties:

A variety in a trial can be "**Replicated**" with the same details and information, along with a specific replication number. The purpose of this feature is to allow for different versions of the same variety when the observation situation differ for each.

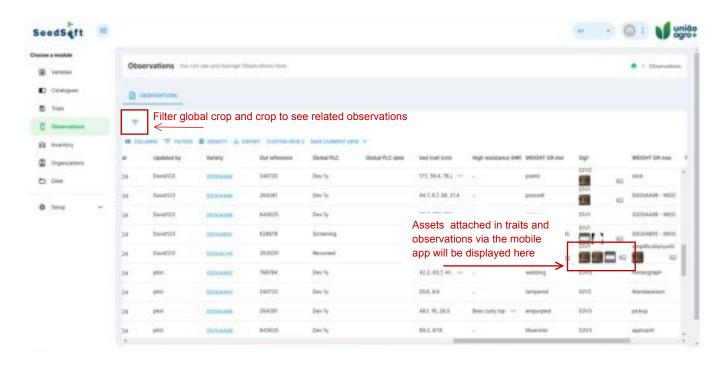
To add replications, you can easily click on the "Replication" button in the actions menu and specify the number of times you want the variety to be replicated. Finally, each replicated variety will be assigned a unique replication number, which will be displayed in the table.

P.S. Both replications and custom fields of a trial variety are visible in the observations data grid as well.



Observations Module

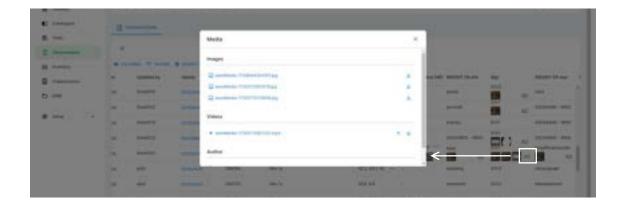
This section of the app gives the user access to all observation data (and photos) collected. As comparing different crops doesn't make sense, the user is obliged to select one crop. As soon as done, all observations done with this crop will be displayed and further filtering is then possible.





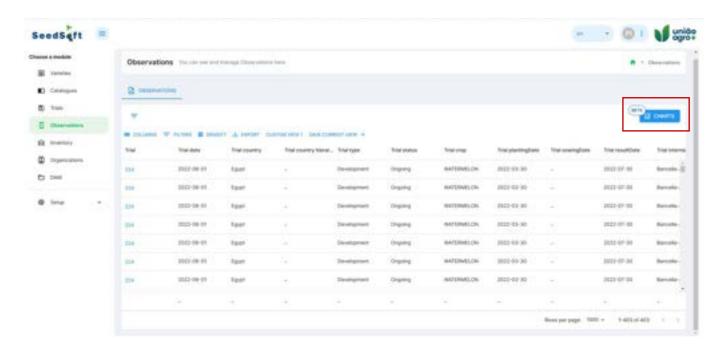
View and download assets:

By clicking on the "Media" Button you can view and download all assets related to the variety of an observation.



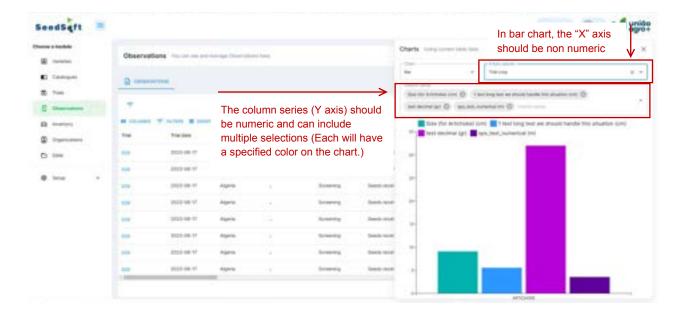
Observation Charts: (Beta Version)

Use various numerical inputs within the observations table to generate a chart for further analysis of your data.

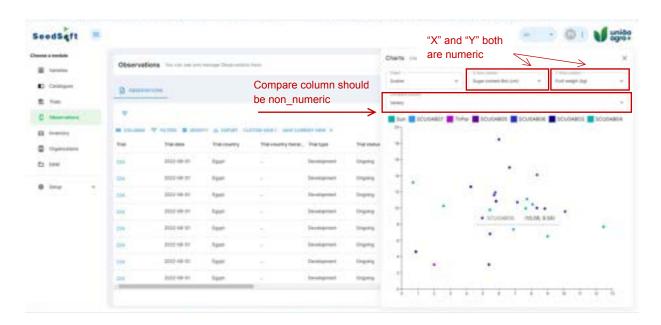


There are two types of charts in observation table:

1. **Bar Chart:** Use one or several numerical data against a meaningful comparable criterion to view data on bar chart.

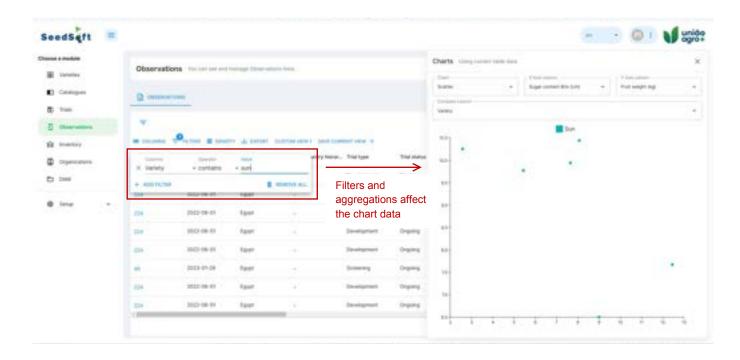


2. **Scatter Chart:** Use one numerical data against a meaningful comparable criterion to view data on scatter chart.



Note: The charts are connected to the observation table, and by applying filters, groupings, or aggregations, the charts dynamically respond and mirror the data from the observation table in real time.

For example as soon as a particular variety is selected in the table, the chart data will adjust to display information relevant to that variety.

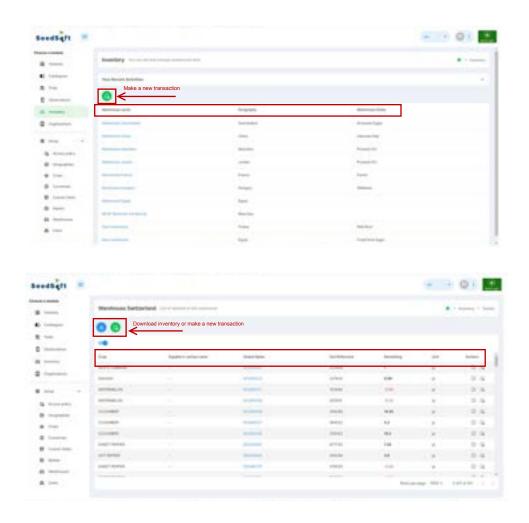


You can also **drag the chart sheet to the right and left** to view different widths.

Inventory Module

In this section, you can check the crop and variety inventory in various warehouses located in different countries, as well as the warehouse entity.

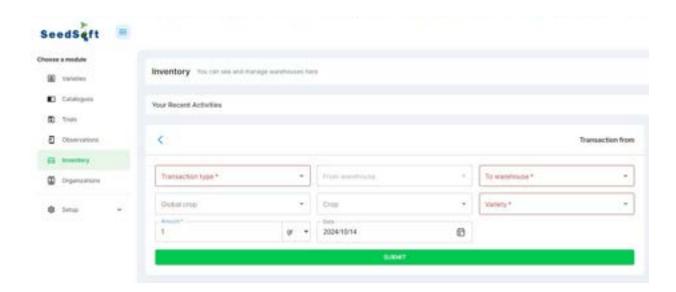
By clicking on each warehouse name, a list of crops in that warehouse, their global name, coded reference, remaining quantity (after transaction process), and unit will be displayed, along with actions you can take on each: review history (of transaction) or make a new transaction on that inventory/ warehouse. You can also download the inventory of that warehouse using the download button at the top of the list.



Make a transaction:

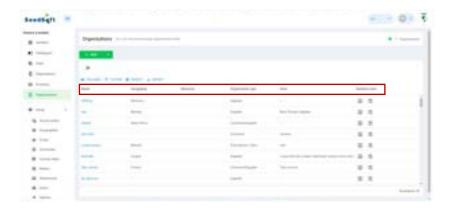
By clicking on the "make a transaction" button, you can create a new transaction between warehouses. There are three types of transactions, and other fields need to be filled out depending on the transaction type that you select:

- Transfer (In/Out): Transfer seeds from one warehouse to another.
 For instance from central warehouse, to trial coordinators home.
- 2. **Receive**: Receive crops into a specified warehouse from an external source (Breeder, suppliers)
- 3. **Deduction**: Correction of stock levels in case of inventory mismatches, germination level driven losses or write offs.



Organization Module

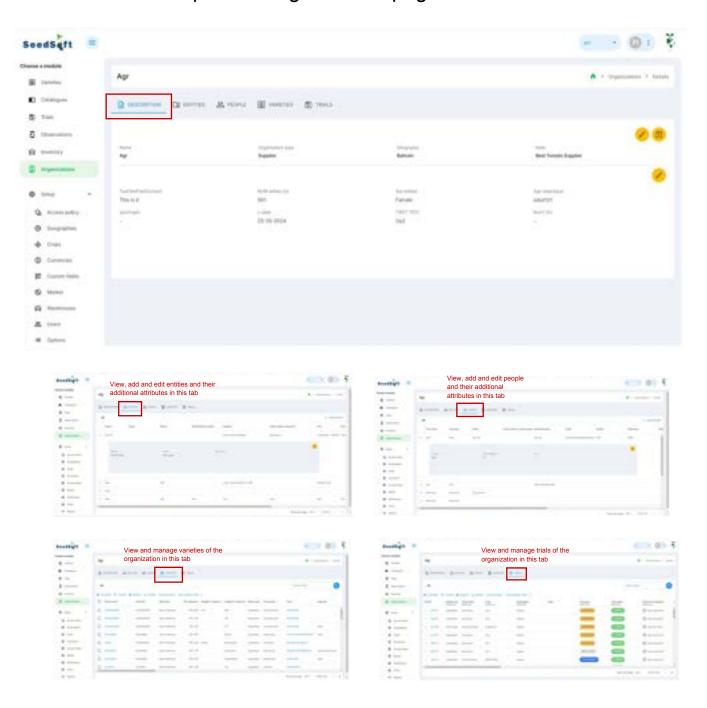
In this section, you can view a list of organizations, their type/role (supplier, customer, warehouse, etc.), location, varieties, and trials.



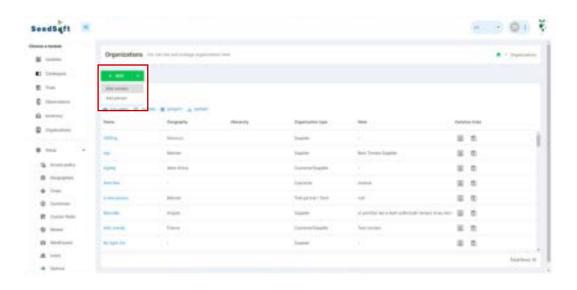
An organization is a **contact** in the system that may include entities in different geographies, along with people working within the organization. Each individual **may be connected** to a specific entity.

You can add a new entity or person, and for additional fields, the admin can define them as needed and they will be displayed in "additional attributes".

Varieties and trials associated with the organization are displayed at the other tabs at the top of the organization page.



By clicking on the add button in this page, you can see two options: "add contact" and "add person".



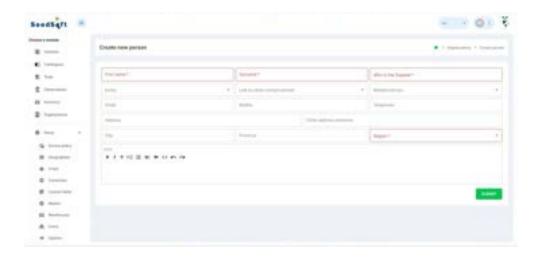
Creation of a new contact (organization):

On this page, you can create a new organization by adding the organization type, geography, name, and remarks. To add people or entities, you can open the related organization later and add the people/entities to it.

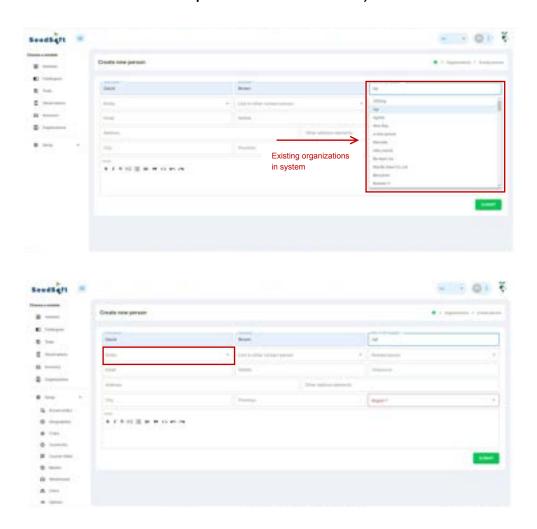


Creation of a new person:

On this page, you can create a new contact (person). When you type the organization name, a list of existing organizations will be displayed, and you can add the contact to one of them.

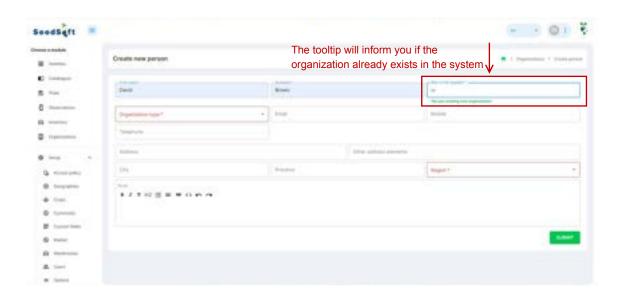


By selecting an existing organization from the list, you can also choose the specific entity within that organization where this person works (this is optional and also link this person to another).



The second scenario occurs when the organization you want to add does not exist in the system. In this case, after entering the name of the organization, the "organization type" field will be displayed, allowing you to create both the person and the organization they belong to.

In this case, the entity will be automatically created, and you can edit the information later on each organization's details page.



DAM (Digital Asset Management) Module

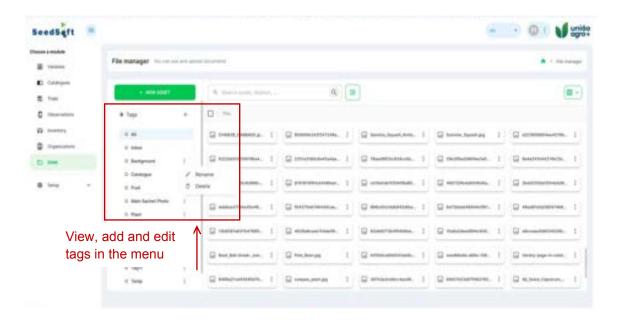
You can now easily view, add and manage Digital Assets (such as images, videos or documents) related to different parts of the system (observation attachments, trial images, variety images, etc.) or independently uploaded in the "**DAM**" module.



Tag:

To **categorize** and **organize** assets in DAM, tags can be assigned to assets. An asset can have one or multiple tags.

- All asset in DAM module will be displayed in "All".
- Users with enough access rights can add, rename or delete tags
- The 'Inbox' tag is assigned to all assets uploaded in an observation using the Seedsoft mobile app. From here, you can assign other tags to new assets, and they will be transferred to that tag.

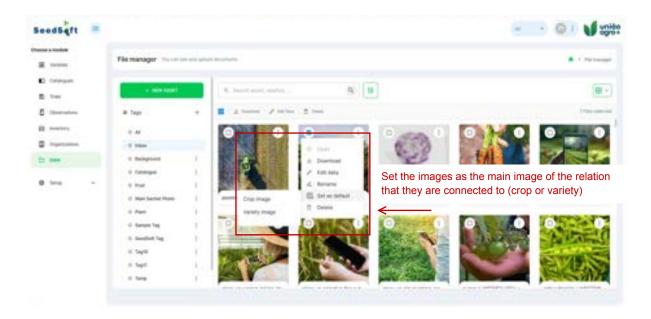


Relation:

Each asset can be connected to one or more models in the system, such as variety, trial, observation, crop, etc.

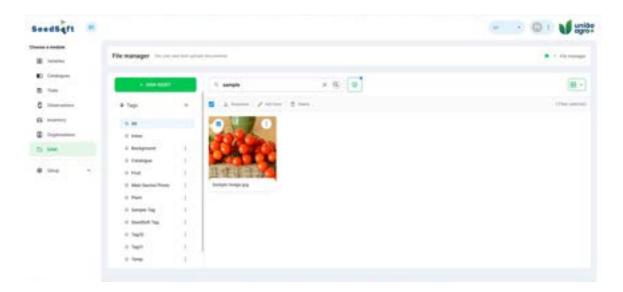
For example, if an observer attaches an asset in the mobile app to a particular observation, the name of that observation will be assigned to the asset's metadata, and this way the asset and the observation will be connected.

Note: Images uploaded in the DAM module can be set as the main image for the variety or crop that they are related to.



Search and Filters:

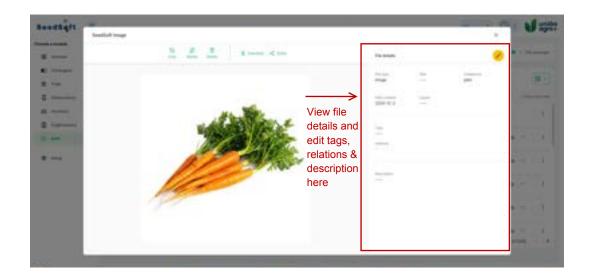
In the DAM module, you can search for assets based on file name, and you can also use smart filtering to find assets based on their relations.

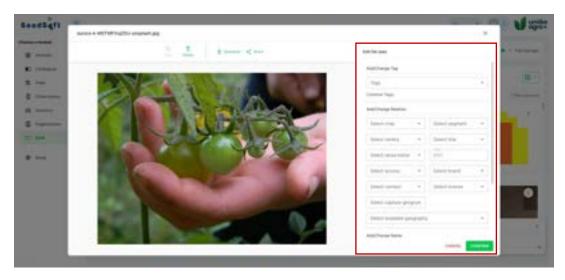


Edit Asset:

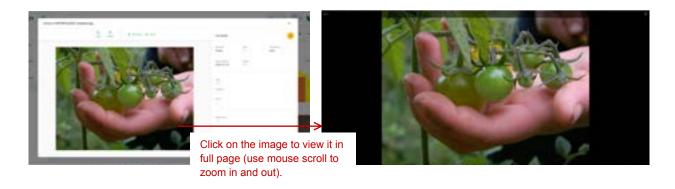
Tags and relations are both modifiable

Manage and edit tags, relations, and description for a single asset

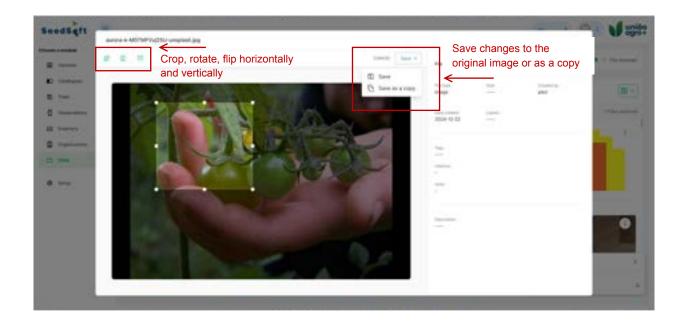




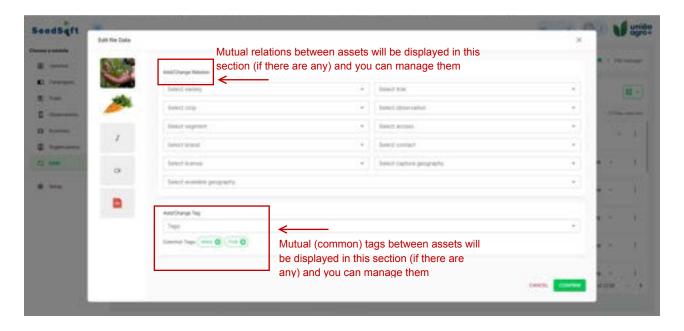
• Use available tools to edit image assets



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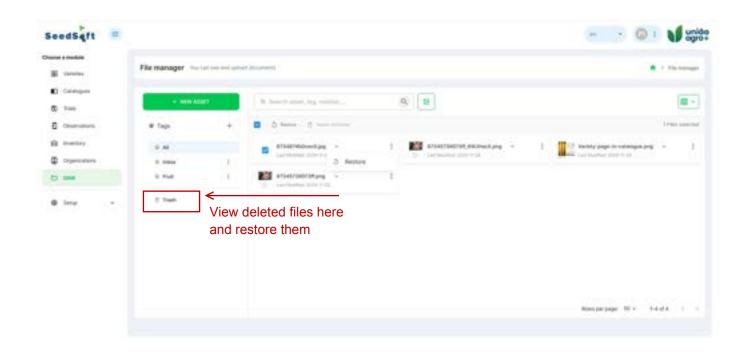


Manage and edit tags and relations for multiple assets.



Trash:

You can find deleted files in "Trash" and restore them from there.



Glossary

<u>A</u>

Aggregation (in data tables): Allows to see data in an aggregated form (sum of a group, average of several numbers etc.) in a data grid. The most frequently used ones are:

A. Identical: If all items in a that column within a group are identical, they'll be displayed at the 'group level'

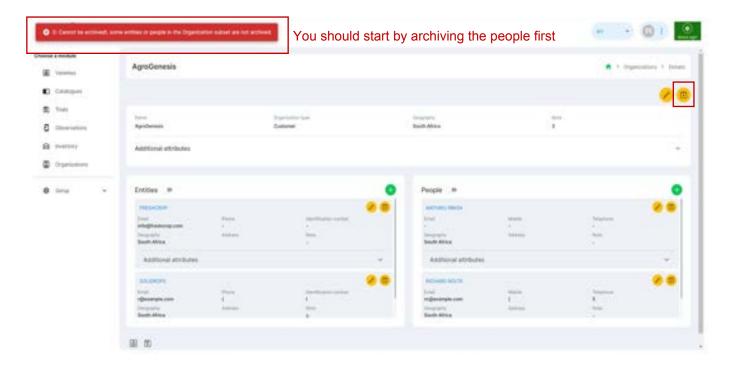


- B. Average: instead of seeing individual values for a field of group, a mathematical average will be shown.
- C. Size: The total number of items in a column.
- D. Sum: Shows the result of adding all numbers together in a numerical column.
- E. Min: Shows the minimum amount in a column.
- F. Max: Shows the maximum amount in a column.

Archive: An option to hide items that are no longer in use. You can restore archived items whenever needed. In most modules, you'll see a switch that, when turned on, shows archived rows or

items in the list. You can easily unarchive them using the "unarchive" button.

Note: To archive an item, you must first archive all related or subordinate items. For example, you cannot archive an organization until the people and entities associated with it are archived.



<u>B</u>

Breeder: The individual or company who has bred a seed variety.

C

Chart: A statistical view of the numeric data in the observations table allows for more effective and easy analysis and assessment of the data.

Crop (or species): Lowest level of aggregation of products in SeedSoft usually corresponding to agronomical species. However, there can be exceptions – for instance a SeedSoft user can choose to have Tomato Determinate and Tomato Indeterminate as separate crops.

Crop family: A group of related crops within the same botanical family, sharing similar characteristics and growing conditions. Example: Solanaceae (tomatoes, peppers, eggplants). In SeedSoft it's the second (after Crop) product grouping level.

Coded reference: A randomly created numerical code for each variety. Can be used to as an alternative to Serial number in order to maintain product secrecy.

[Data Grid] Columns: Through this section you can control and manage columns.

[Data Grid] Custom view: In this section a user can manage saved views of a data grid.

Custom field – a field added by the SeedSoft client to a module of the system. This field will be added to all 'members' of the module (for instance all varieties or all trials). A custom field can be a 'text' / 'text area' (for longer texts), 'numeric', 'date', 'single- or

multi select' type. The admin can also specify access levels required to see the field and then add these levels to user roles (see access management).

D

Data grid: This is the name of the tables used in SeedSoft:

-							
m c	OLUMNS PRETINS	■ belarty & Export	CUSTOM VIEW I	SAVE CURRENT VIEW	+		
	Global name	serial no	Seed type	Supplier id	Crop family	Crop 1	зедте
	Volow Feeder	SUMDAATI	Hybrid	Car76767	Umbeliferae	CAMOT	Nantai
	Orange stelight	SUMDAA34	Hybrid	1729	Umbeliferae	CAIROT	Montal
	Kurode star	SUMCAA49	Main	15646	Umbeliferae	CAMOT	Kurodi

<u>E</u>

External coordinator: An individual external to the SeedSoft client responsible for observing and managing a trial.

<u>F</u>

Farm gate price: Price of seeds as paid by the farmers.

[Data Grid] Filter: Data Grid function allowing to filter the list in a granular way by different columns or their combination You can add filters and choose whether to filter based on both criteria or

only one (AND/OR). There is also a "remove all" option that allows you to clear all filters and view the default list.

<u>G</u>

General result [Trial]: Indicates the final result of a trial. The options can be adapted in a client system, as standard they are:

- A. Negative
- B. Non conclusive
- C. Positive

Global crop: In SeedSoft it's the third (after Crop and Crop Family) product grouping level. For instance: 'Field Crops' and 'Vegetables'

Group by: Grouping all columns based on/prioritized by that specific column title.

• **[Trait]** Grouping: Through the options module, the admin can define trait groups. While creating or editing a trait, you can specify the group and select which group the trait should belong to (this is displayed in mobile app).

<u>H</u>

Hierarchy (geography): The link between a particular geographical region and the 'World'. For example: World/Asia/India/Gujarat. It is fully configurable in SeedSoft.

Incoterms: Widely-used terms of sale, are a set of 11 internationally recognized rules which define the responsibilities of sellers and buyers.

Read more

Internal coordinator: An individual within the organization who is responsible for observation and managing a trial.

<u>L</u>

Legend: A short guide or tooltip that briefly explains the concept behind a trait or specific field for the observer. For example, the "Trial Result" legend might include options like "Canceled," "Planned," or "Completed," providing clarity on each term's meaning and usage.

M

Manager [Trial]: An individual within the organization who is responsible for management of a specific trial.

Margin: The difference between a product selling price and the cost of production (or purchase), can also be expressed a percentage ratio of profit to revenue.

0

Observation (In trials): Data and photos gathered in the field during a visit. Typically, each visit to a field is one observation in SeedSoft. Each trial can have an unlimited number of observations associated with it.

P

Product Life cycle (PLC): All the stages of product's existence from early breeding, through adaptation trials, commercial presence to obsoletion. The various stages can be defined by the client. As standard they are defined as:



Protocol: Refers to a specific selection of traits assessed in a trial. For example, depending on skills of an observer or needs of a particular trial, one protocol might have only a few traits focusing on fruit quality and yield, while another might be much more extensive and cover diseases, plant behaviour, seed germination and post-harvest performance.

Note:

- 1. Once a protocol is selected for a trial, it cannot be changed afterward.
- 2. Protocols are defined and linked to a crop in the options module by the admin.

R

Relation: Each asset is connected to one or more specific section in the system, such as variety, trial, observation, segment, etc.

These relations can be defined either in DAM by manually adding

the relations to assets, or they can have default relations when they are added through related section.

<u>S</u>

Scope (of traits): There are two available scopes of traits in

SeedSoft:

1. Web (descriptive): describing the variety in variety details /

catalogues.

2. Mobile (observable): Visible in mobile and used to observe

varieties in the field.

The same concept – fruit length for the same variety can look

different. As a observable trait fruit length might be an array of

numbers: [10.5, 12.3, 14.3, 10.7, 11.0] whereas the descriptive

trait of fruit length might be: "in normal conditions 90% of fruits

between 11-13cm".

Serial number: A unique identifier assigned to a variety used for

tracking and record-keeping purposes. When creating a variety, a

serial number will be auto-generated by the system. The format

of the serial number must be defined at the beginning of working

with SeedSoft

Seed type: There are two types of seeds:

- A. Open Pollinated (OP): Naturally pollinated seeds that can be saved and replanted, producing consistent plants.
- B. Hybrid (F1): Cross-pollinated seeds from different parent plants, offering specific traits but not true-to-type if replanted.

Segment: A categorization of varieties within a crop. A variety can belong to many segments. An example is a Watermelon variety belonging to segments: Elongated Seeded and Crimson Sweet.

Supplier: The contact or individual that provides seeds (varieties). There are three fields in varieties related to suppliers:

A. Supplier's variety name

B.Supplier's variety ID

C.Name of the supplier

T

 Tag: To categorize and organize assets in DAM, tags are assigned to assets. An asset can have one tag or multiple tags.

Trait: A distinguishing characteristic or feature of a crop, can be resulting from its genetic makeup or influenced by environmental factors (e.g., color, firmness, etc.). In case of SeedSoft there are 2 scope or types of traits: observable (collected in the field) and

descriptive (used in the variety description for technical and marketing purposes). All traits can be stored as:

- A text field
- A numerical field (incl. several number per cell)
- Single- and multi select
- Date

Transaction [warehouse]: Transactions are the process of moving sample seeds and include three types – see the corresponding module.

Trial ID: An ever-incrementing and unique number of a trial.

Trial status: Status of the trial shows the progression of the trial from start to completion. The statuses can be defined by SeedSoft clients and typically include at least 3 statuses:

A. Planned: The process of planning the trial and observation stages.

B. On-going: Typically after the first observation

C. Completed: Successfully finished.

Trial type: Trial types are indicating the reason for performing a trial. The reasons are client-configurable. A standard set from SeedSoft is:

- A. Screening typically trial of a large number of varieties to choose the promising candidates for more detailed trials in a particular geography
- B. Development trial of a small number of new varieties with properly chosen internal and external benchmarks to find the best performers.
- C. Pre-commercial trial of a variety chosen for commercialization, mostly for final positioning and demonstration purposes
- D. Regulatory for registration in a particular geography
- E. Other if none of the above fits

Trial sowing date: Date when the seeds are sown.

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