

Observations & Sub-Observations

BMS 11.0 Manual

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About

Once the study design has been generated or imported, the Observations table is populated with independent study variables and sub-observation datasets can be created to record repeated measures.

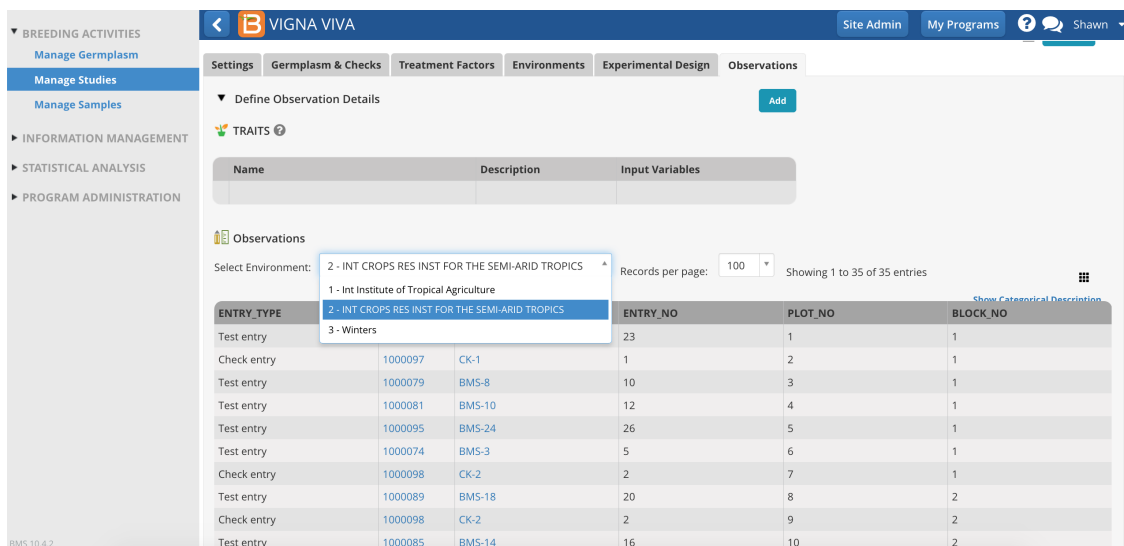
v12 Beta

Observation and sub-observation tabs are under active development. V12 has expanded functionality under sub-observations that will be migrated to the observation tab in upcoming releases.

Observations

The rows of Observations table represent the experimental units, which are randomized or non-randomized depending on design. Experimental units can be defined in many ways: plots, pots, individual plants, fruits, ect. The manual will use "plots" to describe the highest level of observation, as this is the most common experimental unit in breeding.

- Saving the trial will paginate the Observations table by environment. Select any environment to review the plot details.



VIGNA VIVA Site Admin My Programs ? Shawn

Settings Germplasm & Checks Treatment Factors Environments Experimental Design **Observations**

Define Observation Details Add

TRAITS

Name	Description	Input Variables

Observations

Select Environment: 2 - INT CROPS RES INST FOR THE SEMI-ARID TROPICS Records per page: 100 Showing 1 to 35 of 35 entries

ENTRY_TYPE	ENTRY_NO	PLOT_NO	BLOCK_NO
Test entry	23	1	1
Check entry	1000097	CK-1	1
Test entry	1000079	BMS-8	1
Test entry	1000081	BMS-10	1
Test entry	1000095	BMS-24	1
Test entry	1000074	BMS-3	1
Check entry	1000098	CK-2	1
Test entry	1000089	BMS-18	2
Check entry	1000098	CK-2	2
Test entry	1000085	BMS-14	2

This study is an augmented randomized block design where 25 test entries and 2 checks are evaluated at 3 environments. Within each environment there are 5 blocks of 5 test entries and 2 check entries for a total of 35 plots.

Reveal/Hide OBS_UNIT_ID & Others

Independent variables can be hidden and revealed in the tabular user interface. One important column, OBS_UNIT_ID, is hidden by default, because it is not meant to be human readable. OBS_UNIT_ID is an alphanumeric sequence designed for data capture that uniquely identifies the observation. The OBS_UNIT_ID is appropriate for barcoding the observation unit

(plot, plant, pot, ect...). When the Study Book fill is exported

- Make columns of data by visible/hidden by selecting the dotted rectangle.

ENTRY_TYPE	GID	DESIGNATION	ENTRY_NO	PLOT_NO	BLOCK	TRIAL_INSTANCE
Test entry	1000083	BMS-12	14	16	3	
Check entry	1000097	CK-1	1	17	3	
Test entry	1000076	BMS-5	7	18	3	
Check entry	1000098	CK-2	2	19	3	
Test entry	1000091	BMS-20	22	20	3	
Test entry	1000084	BMS-13	15	21	3	
Test entry	1000072	BMS-1	3	22	4	
Test entry	1000082	BMS-11	13	23	4	
Check entry	1000097	CK-1	1	24	4	
Test entry	1000094	BMS-23	25	25	4	

OBS_UNIT_ID is revealed in the user interface after the selection.

ENTRY_TYPE	GID	DESIGNATION	ENTRY_NO	OBS_UNIT_ID	PLOT_NO	BLOCK_NO
Test entry	1000085	BMS-14	16	9205b42f-fdea-4309-bb9b-d3fe90109eee	10	2
Test entry	1000087	BMS-16	18	865d0787-30c5-4bef-9df7-471400c69bb9	11	2
Test entry	1000073	BMS-2	4	5d0c1a9a-30db-4e56-a65a-6aa8f1351c35	12	2
Check entry	1000097	CK-1	1	3316e07d-7165-4fbf-a662-df1bc0acf3ed	13	2
Test entry	1000080	BMS-9	11	7e83ed87-3803-441a-a210-d578e623321c	14	2
Test entry	1000075	BMS-4	6	f1cdc54e-cd9f-4027-a0ba-d6b423bd969	15	3
Test entry	1000083	BMS-12	14	e10a7a67-c366-4b82-98eb-...	16	3

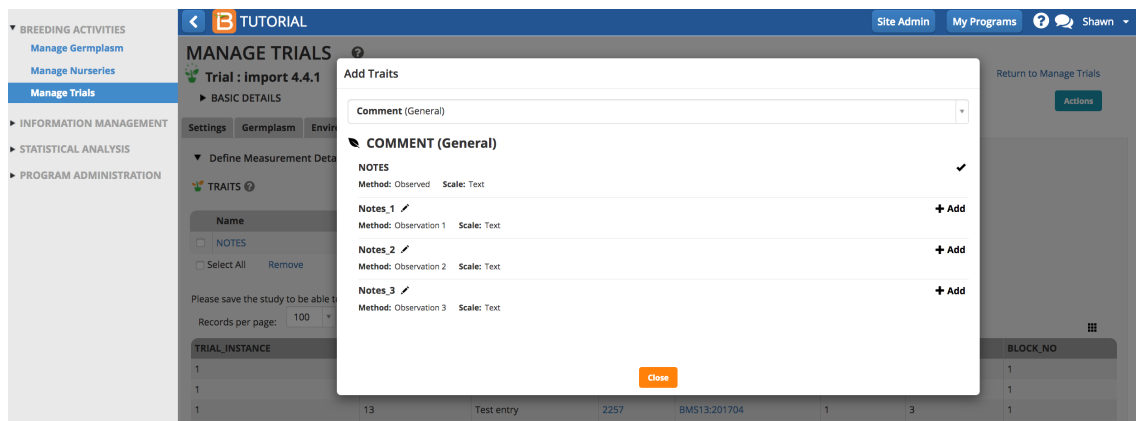
Add Traits

Traits and trait aliases are defined by the crop ontology. If you do not find a trait of interest from the drop down menu, see [Manage Ontology](#) for instructions on adding new traits. If the desired trait cannot be found, the new trait must be added to the crop ontology.

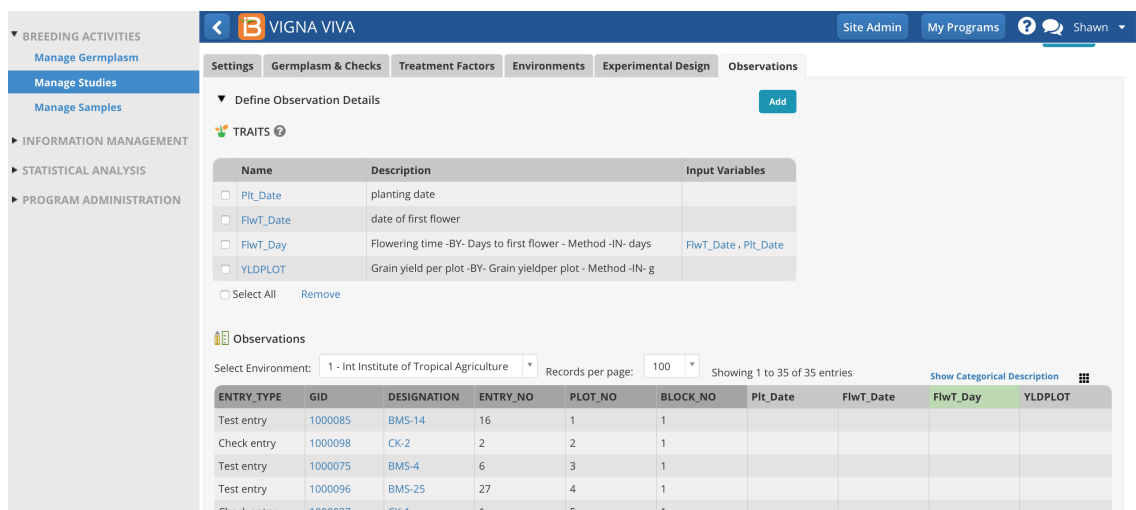
- Select the **Add** button to specify traits to measure, or the dependent variables. Type a word or part of a word that describes the trait that will be measured. You can search by name or the alias of the variable.

Name
Ear length (Morphological)
Ear number (Agronomic)
Ear position (Agronomic)
Ear rot incidence (Biotic stress)

Once selected, the traits of interest will appear as an empty column of data in the measurements table.



The saved study is ready for (1) data collection or the creation of a (2) sub-observation dataset to record repeated measures.



Create Sub-Observation Unit Dataset (beta)

Once experimental design has been generated and the Observation table established, you are able to create additional data collection tables for repeated measures (sub-observations units).

Common repeated measures include:

- Measure individual plants within a plot
- Measure different quadrats within a plot

Beta

Sub-Observation are under active development. Expect expanded and unified functionality in upcoming releases.

- Create sub-observation units to take repeated measures.

MANAGE STUDIES
v12 Performance Trial

TRAITS

Name	Description	Input Variables
<input type="checkbox"/> Plt_Date	planting date	
<input type="checkbox"/> FlwT_Date	date of first flower	
<input type="checkbox"/> FlwT_Day	Flowering time -BY- Days to first flower - Method -IN- days	FlwT_Date , Plt_Date
<input type="checkbox"/> YLDPLOT	Grain yield per plot -BY- Grain yieldper plot - Method -IN- g	

Observations

Select Environment: 1 - Int Institute of Tropical Agriculture Records per page: 100 Showing 1 to 100 of 156 entries

ENTRY_TYPE	GID	DESIGNATION	ENTRY_NO	PLOT_NO	BLOCK_NO	Plt_Date	FlwT_Date	FlwT_Day	YLDPLOT
Test entry	1000130	DF32	42	1	1				
Check entry	1000077	BMS-6	8	2	1				

Define Sub-Observation Units

Example Plant Sub-Sampling

In the following example, a maize breeder is planning to measure the height of 5 plants per plot at maturity.

- Select Plants as the sub-observation units.

Subdivide Observations

* indicates a mandatory field

How would you like to define the number of sub-observations per parent unit? *

☒ Plants

☐ Quadrats

☐ Time Series

☐ Custom

Cancel Continue

- Name the sub-observation data set. Specify the number of plants per plot. Leave PLANT_NO as the default numbering variable. Choose which study locations to subsample and Save.

Specify Plants

* indicates a mandatory field

Name for plants dataset: *

Specify a maximum number of plants for each parent unit (up to 25): *

Choose a variable to number the plants: *

Select the environments for which you would like to generate plants: *

TRIAL_INSTANCE	LOCATION_NAME
<input checked="" type="checkbox"/> 1	Int Institute of Tropical Agriculture - (IITA)
<input checked="" type="checkbox"/> 2	INT CROPS RES INST FOR THE SEMI-ARID TROPICS - (ICRISAT)
<input checked="" type="checkbox"/> 3	INT CENTER FOR AGRICULTURAL RES IN THE DRY AREAS - (ICARDA)

Showing 1 to 3 of 3 entries

Back Save

- Select Add to add plant level trait and selection details.

MANAGE STUDIES ?

v12 Performance Trial Save Return to Manage Studies

► BASIC DETAILS Actions

Settings **Germplasm & Checks** Treatment Factors Environments Experimental Design Observations **Plants: 19**

Plants: 19

▼ Define Observation Details

TRAITS Add SELECTIONS Add

Name	Description	Input Variables

Name	Description

Observations ACCEPTED PENDING Show Categorical Description

Select Environment: 1 - Int Institute of Tropical Agriculture Filter by status: All

► Batch Actions

ENTRY_TYPE	GID	DESIGNATION	ENTRY_NO	PLOT_NO	BLOCK_NO	PLANT_NO
Test entry	1000130	DF32	42	1	1	1
Test entry	1000130	DF32	42	1	1	2
Test entry	1000130	DF32	42	1	1	3
Test entry	1000130	DF32	42	1	1	4

Each plot now contains 4 rows corresponding to 4 plants per plot.

- Add traits and selection. The plants dataset is now ready to accept measurements and selections from the plants sub-sampled per plot.

MANAGE STUDIES ?

v12 Performance Trial Save Return to Manage Studies

► BASIC DETAILS Actions

Settings **Germplasm & Checks** Treatment Factors Environments Experimental Design Observations **Plants: 19**

Plants: 19

▼ Define Observation Details

TRAITS Add SELECTIONS Add

Name	Description	Input Variables
<input type="checkbox"/> PlntHt_cm	Plant height	
<input type="checkbox"/> NodWt_Frsh_g	Nodule weight (g)	

Remove

Name	Description
<input type="checkbox"/> NPSEL	Number of plants selected - counted (number)

Remove

Observations ACCEPTED PENDING Show Categorical Description

Select Environment: 1 - Int Institute of Tropical Agriculture Filter by status: All

► Batch Actions

ENTRY_TYPE	GID	DESIGNATION	ENTRY_NO	PLOT_NO	BLOCK_NO	PLANT_NO	PlntHt_cm	NodWt_Frsh_g	NPSEL
Test entry	1000130	DF32	42	1	1	1			
Test entry	1000130	DF32	42	1	1	2			
Test entry	1000130	DF32	42	1	1	3			
Test entry	1000130	DF32	42	1	1	4			

Example Custom Sub-Sampling

In the following example, a maize breeder is planning to gather ears of interest from experimental plots to take ear-specific measurements. The breeder doesn't know in advance how many ears will be collected, but expects to collect no more than 7 per plot.

- 'Ears' is not a default sub-sampling option. Select the Custom option and Continue.

MANAGE STUDIES ?

SS2 Save Return to Manage Studies

► BASIC DETAILS Actions

Settings **Germplasm & Checks** Treatment Factors Environments Experimental Design Observations **Plants: 19**

Plants: 19

▼ Define Observation Details

TRAITS Add

Name	Description
<input type="checkbox"/> Plt_Date	planting date
<input type="checkbox"/> Mat_Date	maturity date
<input type="checkbox"/> Mat_DT_day	Maturity time BY Days to maturity - Computation IN Day

Select All Remove

Subdivide Observations

* indicates a mandatory field

How would you like to define the number of sub-observations per parent unit? *

☐ Plants

☐ Quadrats

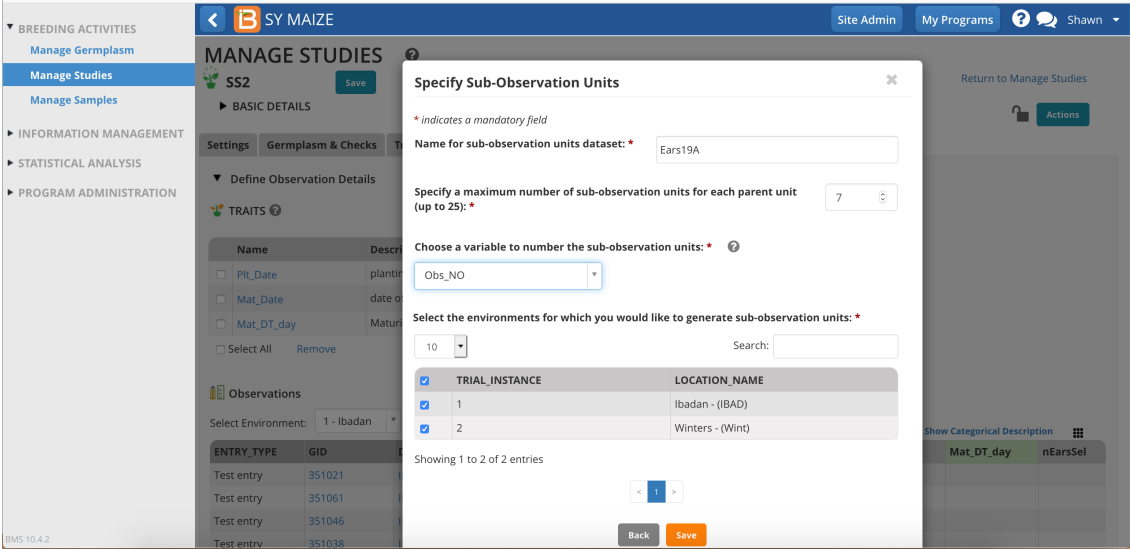
☐ Time Series

☒ Custom

Cancel Continue

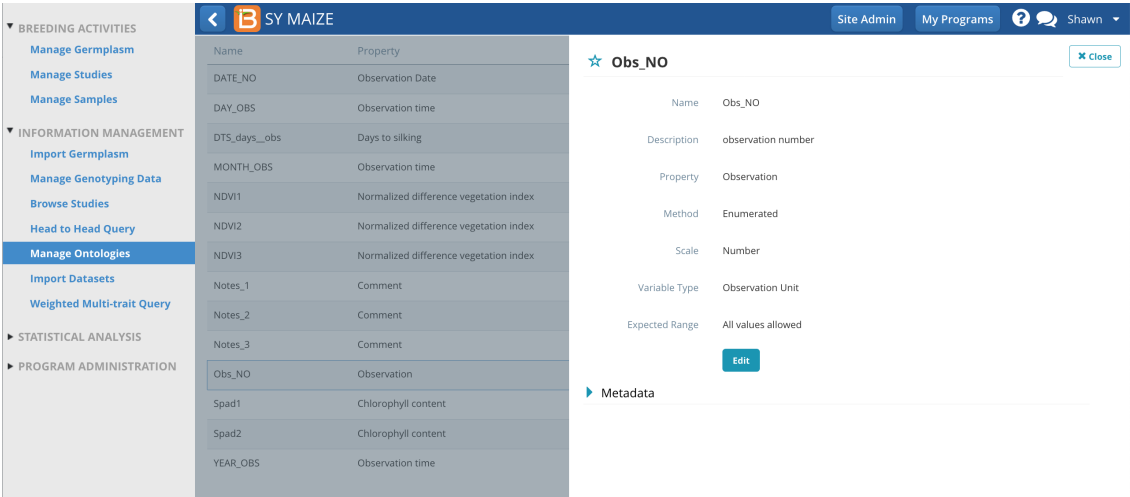
- Give the sub-observation data set a unique name.

- Specify 7 ears as the maximum collected per plot.
- Choose a numbering variable. In this case, Obs_NO. Note: custom sub-observations units will not have a corresponding numbering variable until you create one (see details in blue info box below).
- Choose to sub-sample both study locations.
- Save.

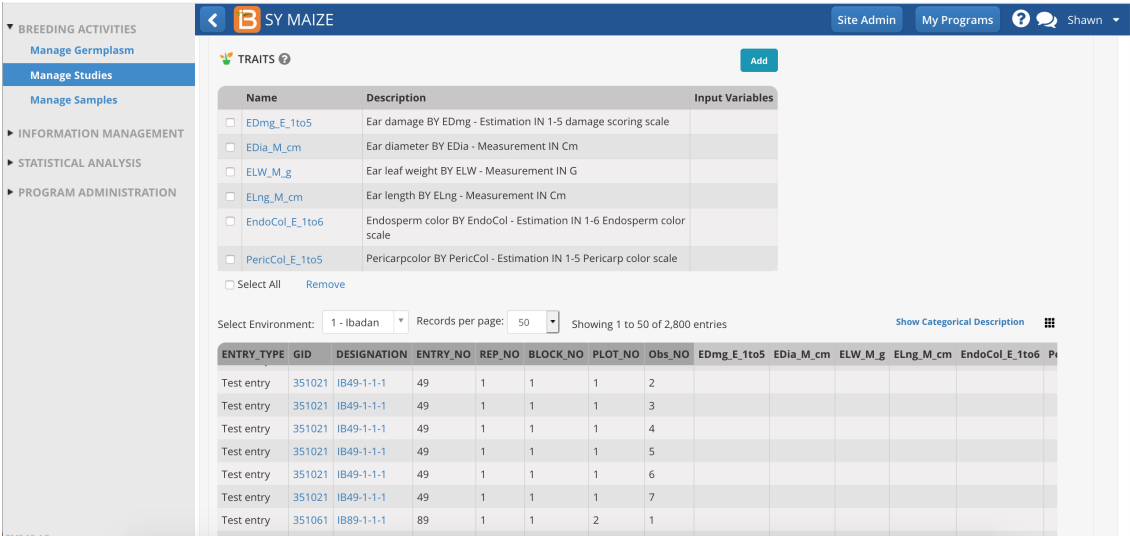


Customize Observation Unit Variable

The observation unit variable, Obs_NO, provides a generic way to number any observation. Alternatively a more specific term, like EAR_NO, could be created via [Manage Ontologies](#).



- The Ears sub-observation dataset is now ready to accept 7 ear measurements per plot. Add ear traits to the dataset and Save.



Related Materials

- [Manage Studies](#)
- [Settings](#)
- [Germplasm](#)
- [Environments](#)
- [Treatment Factors](#)
- [Study Design](#)
- [Data Collection](#)