

## **Observations & Sub-Observations**

#### BMS 11.0 Manual

About v12 Beta Observations Reveal/Hide OBS\_UNIT\_ID & Others Add Traits Create Sub-Observation Unit Dataset (beta) Beta Define Sub-Observation Units Example Plant Sub-Sampling Example Custom Sub-Sampling Related Materials

## 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.

▼ BREEDING ACTIVITIES	< 🔁 VIGNA	VIVA					Site Admin	My Programs	🕐 👤 Shawn 🝷
Manage Germplasm	Settings Germpla	sm & Checks	Treatment Fac	tors Environments	Experimental Design	Observations			
Manage Studies									
Manage Samples	<ul> <li>Define Observa</li> </ul>	tion Details				Add			
► INFORMATION MANAGEMENT	🝟 TRAITS 🚱								
STATISTICAL ANALYSIS	Name			Description	Input Variables				
PROGRAM ADMINISTRATION									
	🔃 Observations								
	Select Environment:	2 - INT CROP	S RES INST FOR TH	HE SEMI-ARID TROPICS	Records per page:	100 * Show	ring 1 to 35 of 35 entri	PS	
		1 - Int Institut	e of Tropical Agricu	lture			0		
	ENTRY_TYPE	2 - INT CROP	5 RES INST FOR THE	SEMI-ARID TROPICS	ENTRY_NO	ENTRY_NO PLOT_M		BLOCK_NO	Towney Hoternan
	Test entry	3 - Winters			23	1		1	
	Check entry	1	000097 СК-	-1	1	2		1	
	Test entry	1	000079 BM	15-8	10	3		1	
	Test entry	1	000081 BM	IS-10	12	4		1	
	Test entry	1	000095 BM	15-24	26	5		1	
	Test entry	1	000074 BM	15-3	5	6		1	
	Check entry	1	000098 СК-	-2	2	7		1	
	Test entry	1	000089 BM	15-18	20	8		2	
	Check entry	1	000098 CK-	-2	2	9		2	
BMS 10.4.2	Test entry	1	000085 BM	IS-14	16	10		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.

BREEDING ACTIVITIES	< 🔁 VIGNA	VIVA			Site Admin	My Programs	? 契 Shawn
Manage Germplasm							
Manage Studies							
Manage Samples	Dbservations						
► INFORMATION MANAGEMENT	Select Environment:	2 - INT CROPS RES INST	FOR THE SEMI-ARID TROP	PICS Records per page: 100	* Showing 1 to 35 of 35 entri	es	
STATISTICAL ANALYSIS	ENTRY_TYPE	GID	DESIGNATION	ENTRY_NO	PLOT_NO	BLOCK_	TRIAL_INSTANCE
PROGRAM ADMINISTRATION	Test entry	1000083	BMS-12	14	16	3	ENTRY_TYPE
	Check entry		CK-1	1	17	3	GID
	Test entry	1000076	BMS-5	7	18	3	DESIGNATION
	Check entry	1000098	CK-2	2	19	3	DESIGNATION
	Test entry		BMS-20	22	20	3	ENTRY_NO
	Test entry	1000084	BMS-13	15	21	3	OBS_UNIT_ID
	Test entry	1000072	BMS-1	3	22	4	PLOT_NO
	Test entry	1000082	BMS-11	13	23	4	BLOCK_NO
	Check entry		СК-1	1	24	4	
	Test entry	1000094	BMS-23	25	25	4	

OBS\_UNIT\_ID is be revealed in the user interface after the selection.

BREEDING ACTIVITIES     Manage Germplasm	< 🔁 VIGNA V	IVA				Site Admin	My Programs ? ᆽ Shawn
Manage Studies Manage Samples INFORMATION MANAGEMENT	<b>Dbservations</b>	2 - INT CROPS RES	INST FOR THE SEMI-ARIE	TROPICS * Records	per page: 100 * Showing 1	to 35 of 35 enti	ries 👪
STATISTICAL ANALYSIS	ENTRY_TYPE	GID	DESIGNATION	ENTRY_NO	OBS_UNIT_ID	PLOT_NO	BLOCK_NO
PROGRAM ADMINISTRATION	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	СК-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- db6b423bd969	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 <u>Manage Ontology</u> 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.

BREEDING ACTIVITIES	< 🖪 TUTORIAL					Site Admin	My Programs	🕜 喿 Shawn 🝷
Manage Germplasm	MANAGE TRIALS	0						
Manage Nurseries	👻 Trial : import 4.4.1	Add Traits					Return	to Manage Trials
Manage Trials	BASIC DETAILS							Actions
► INFORMATION MANAGEMENT	Settings Germplasm Enviro	Select a trait						
STATISTICAL ANALYSIS	<ul> <li>Define Measurement Deta</li> </ul>	n Fastanak (Mark	-110				_	
PROGRAM ADMINISTRATION	🖞 TRAITS 🔞	ELng_M_cm	ologican					
	Name	<ul> <li>Ear number (Agror</li> <li>EN_Ct_earpInt</li> </ul>	nomic)					
		Ear position (Agron	nomic)					
	Select All Remove	Ear rot incidence	E_1103 (Biotic stress)					
	Please save the study to be able to						_	
	Records per page: 100 *							
	TRIAL_INSTANCE						BLO	CK_NO
	1			Close			1	
	1	_		_	-		1	
	1	13	Test entry		BMS13:201704	1 3	1	

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.

BREEDING ACTIVITIES	< 🖪	VIGNA VIVA						Site Admin	My Programs	🕜 契 Sha
Manage Germplasm	Settings	Germplasm & Check	5 Treatment Facto	ors Environment	s Experimental	Design O	bservations			
Manage Studies	0	•				U	_			
Manage Samples	<ul> <li>Define</li> </ul>	Observation Details					Add			
INFORMATION MANAGEMENT	¥ TRAITS	0								
STATISTICAL ANALYSIS	Name	e D	escription			Input Vari	ables			
PROGRAM ADMINISTRATION	D Plt_Da	ate P	lanting date							
	FlwT_	Date d	date of first flower							
	ElwT_	Day F	owering time -BY- Da	ys to first flower - M	ethod -IN- days	FlwT_Date	Plt_Date			
		YLDPLOT Grain yield per plot -BY- Grain yieldper plot - Method -IN- g								
	Select A	dl Remove								
	n Chase									
	C Dserv	Autoris	tute of Tropical Agricu	ulture T	100	¥				
	Select Envir	ronment: 1 - Int Inst	tute of fropical Agrico	Record	s per page:	Show	ing 1 to 35 of 35	entries	Show Categorical	Description
	ENTRY_TY	PE GID	DESIGNATION	ENTRY_NO PI	.OT_NO BL	OCK_NO	Plt_Date	FlwT_Date	FlwT_Day	YLDPLOT
	Test entry	1000085	BMS-14 1	16 1	1					
	Check entr	ry 1000098	СК-2 2	2 2	1					
	Test entry	1000075	BMS-4 6	5 3	1					
	Test entry	1000096	BMS-25	27 4	1					
	Check entr	v 1000097	CK-1 1	1 5	1					

# **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.

BREEDING ACTIVITIES	< 🖪	VIGNA VIVA	Site Admin	My Programs	? 喿 Shawn 👻							
Manage Germplasm Manage Studies Manage Samples	MANA V12 P	GE STUDIES erformance Trial DETAILS		Return to Manage Studies								
<ul> <li>INFORMATION MANAGEMENT</li> </ul>	Settings	Germplasm & Checks	Treatment Factors	Environments	Experimental D	esign Observation	IS	Save Study				
<ul> <li>STATISTICAL ANALYSIS</li> </ul>	▼ Define	Cross	Crossing options >									
PROGRAM ADMINISTRATION	🝟 TRAITS	Ø	Create sub-observati	Create sub-observation units Observation u Field map opt Data collectio								
	Nam	e De	scription			Input Variables		Execu	te calculated variable			
	D Plt_D	ate pla	nting date					Creat	e genotyping samples			
	🗆 FlwT_	Date dat	e of first flower					Advar Close	ce study options >			
	E FlwT_	Day Flo	wering time -BY- Days to	o first flower - Meth	od -IN- days	FlwT_Date , Plt_Date	lwT_Date , Plt_Date		e study			
	□ YLDP	LOT Gra	ain yield per plot -BY- Gr	ain yieldper plot - N	1ethod -IN- g			Lock 5	itudy			
	Remove	vations ronment: 1 - Int Institu	ite of Tropical Agricultur	e * Records p	er page: 100	Showing 1 to 10	0 of 156 entries	Description				
	ENTRY_TY	PE GID	DESIGNATION	ENTRY_NO	PLOT_NO	BLOCK_NO	Plt_Date FlwT_Da	te FlwT_Day	YLDPLOT			
	Test entry	1000130	DF32	42	1	1						
	Check entr	ry 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.

BREEDING ACTIVITIES	< 🖪	VIGNA VIVA			Site Admin	My Programs	? 🔍	Shawn 👻	
Manage Germplasm	MAN	AGE STUDII	S	0					
Manage Studies	👻 v12	Performance Tr	ial	Subdivide Observations	×	Return to Manage Studies			
Manage Samples	► BASI	C DETAILS		* indicates a mandatory field		Actions			
INFORMATION MANAGEMENT	Settings	Germplasm & Chec	ks	How would you like to define the number of sub-observations per parent unit?*					
STATISTICAL ANALYSIS				• Plants					
PROGRAM ADMINISTRATION	<ul> <li>Defin</li> </ul>	e Observation Deta	IS	○ Quadrats					
	🚏 TRAITS 🕢			<ul> <li>Time Series</li> <li>Custom</li> </ul>					
	Name Description		Desc	ri					
	Plt_	Date	plant	in Cancel Continue					
	D Flw	T_Date	date	of					
	Elw	T_Day	Flowe	ring time -BY- Days to first flower - Method -IN- days FlwT_Date , Plt_Date					
		PLOT	Grain	yield per plot -BY- Grain yieldper plot - Method -IN- g					
	Remov	re							

• 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.

$\leftarrow$ $\rightarrow$ C $\textcircled{a}$	( <sup>®</sup> 52.6	.161.132:48080/ibp	vorkbench/main	90%	··· ☆	全 🛓	II\ ⊡ 😐 =	
<ul> <li>BREEDING ACTIVITIES</li> <li>Manage Germplasm</li> </ul>	< B v	'IGNA VIVA	0			Site Admin	My Programs	? 夬 Shawn 🗸
Manage Studies Manage Samples	VIANAQ	JE SIUDIES	Specify Plants		×	Return to	Manage Studies	
► INFORMATION MANAGEMENT	► BASIC D	iermplasm & Checks	* indicates a mandatory	field Iset: *	19			Actions
<ul> <li>STATISTICAL ANALYSIS</li> <li>PROGRAM ADMINISTRATION</li> </ul>	Define 0     TRAITS 0	Observation Details	Specify a maximum r	umber of plants for each	parent unit (up to 25): *	4 3		
	Name	De: e pla	cri PLANT_NO	number the plants: * 🤅				
	FlwT_D	ate dat ay Flo	e of Select the environme	nts for which you would l				
	Remove	OT Gra		LOCATION_NAME	Search.			
	👔 🗄 Observa	itions	<ul><li>☑ 1</li><li>☑ 2</li></ul>	Int Institute of Tropical A	griculture - (IITA) THE SEMI-ARID TROPICS - (ICRIS	AT)		
	Select Enviro	nment: 1 - Int Institu E GID	DES Showing 1 to 3 of 3 en	INT CENTER FOR AGRICU	ILTURAL RES IN THE DRY AREAS -	(ICARDA)	Show Categorical FlwT_Day	VLDPLOT
	Test entry     1000130     DF3       Check entry     1000077     BM5		DF3 BMS	<				
BMS 11.4.2	Check entry Test entry	1000075	DF4	Back	Save			

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

BREEDING ACTIVITIES	< 🖪 v	IGNA VIVA							Site Admin	My Programs	? 👤 Shawn
Manage Germplasm Manage Studies Manage Samples	WANAGE STUDIES     Image: Comparison of the state of the									Return t	o Manage Studies
INFORMATION MANAGEMENT	Settings G	iermplasm & Checks	Treatm	ent Factors	Environments	Experimen	tal Design	Observations	Plants: 19		
STATISTICAL ANALYSIS     PROGRAM ADMINISTRATION	∰ Plants: 19 ▼ Define	19 e Observation Detai	s								
	🖞 TRAITS 🖗					Add	O SELECT	IONS 🚱			Add
	Nam	10	De	escription	Input Variable	es	Name			Description	
	Select En	ervations vironment: 1 - Int I ch Actions	nstitute of	Tropical Agric	ulture * Filte	r by status:	All	•		ACCEPTED Show Categorical D	PENDING
	ENTRY_	TYPE 🔶 GII	¢ (	DESIGNATIO	on 🔶	ENTRY_NO	¢ P	LOT_NO	BLOCK_NO	PLANT_NO	\$
	Test entr	ry 10	00130	DF32		42	1		1	1	
	Test entr	ry 10	00130	DF32		42	1		1	2	
	Tester		0120	0522		40				2	

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 subsampled per plot.

BREEDING ACTIVITIES	< 🖪 VIGNA VIVA					Site Admin	My Programs	🕐 夬 Shav
Manage Germplasm Manage Studies Manage Samples	MANAGE STUDI	ES 🕑 rial Sav	Return to Manage S					
INFORMATION MANAGEMENT	Settings Germplasm & Che	cks Treatment Factors	Environments	Experimental Design	Observations	Plants: 19		
TATISTICAL ANALYSIS	Plants: 19							
ROGRAM ADMINISTRATION	19							
	Define Observation D	taile						
		i cons						
	TRAITS 🚱			Add	CTIONS Ø			Add
	Name	Description	Input Variab	les Na	me	Description		
	PIntHt_cm	Plant height		NP:	SEL	Number of plants :	selected - counted (	number)
	NodWt_Frsh_g	Nodule weight (g	)	Remov	/e			
	Remove						_	
	Deservations						ACCEPTED	PENDING
	Select Environment: 1 -	nt Institute of Tropical Agric	ulture * Filter	by status: All	-		Show Categorical	Description
	Batch Actions							
	ENTRY_TYPE 🔶 GID		TRY_NO 🔶 PLOT_	NO BLOCK_NO	PLANT_NO	PintHt_cm 🔻 Nod	lWt_Frsh_g ▼ N	PSEL T
	Test entry 100013	D DF32 42	1	1	1			
	Test entry 100013	D DF32 42	1	1	2			
	Test entry 100013	DF32 42	1	1	3			
1.4.2	Test entry 100013	D 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 may 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.

BREEDING ACTIVITIES	< 🖪 SY MAIZE		Site Admin	My Programs ? ᆽ Shawn 👻
Manage Germplasm	MANAGE STUD	IES @		_
Manage Studies	👻 SS2 🗾	Subdivide Observations	ж	Return to Manage Studies
Manage Samples	► BASIC DETAILS	* indicates a mandatory field		Actions
► INFORMATION MANAGEMENT	Settings Germplasm & C	ecks T How would you like to define the number of sub-observations per parent unit?*		
STATISTICAL ANALYSIS	Define Observation D	) Plants		
► PROGRAM ADMINISTRATION	Define Observation De	Quadrats		
	TRAITS 🕑	• Custom		
	Name	Descri		
	Plt_Date	plantin Cancel Continue		
	Mat_Date	date o	_	
	Mat_DT_day	Maturity time BY Days to maturity - Computation IN Day Plt_Date , Mat_Date		
	Select All Remove			

• 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.

BREEDING ACTIVITIES	< 🖪 SY M	AIZE	Site Admin	My Programs	? 喿 Shawn 👻			
Manage Germplasm	MANAGE	STUDIES	0				_	
Manage Studies	👻 SS2	Save	Spe	cify Sub-Observation Un	its	×	Return t	o Manage Studies
Manage Samples	BASIC DETAIL	_S	* indi	licates a mandatory field				Actions
INFORMATION MANAGEMENT     STATISTICAL ANALYSIS	Settings Germp	lasm & Checks	n Nam	ne for sub-observation units dat	aset: * Ears19A			
<ul> <li>PROGRAM ADMINISTRATION</li> </ul>	<ul> <li>Define Obser</li> <li>TRAITS Ø</li> </ul>	vation Details	Speci (up t	cify a maximum number of sub-o to 25): *	observation units for each parent unit	7 ©		
	Name	De	cri Choo	ose a variable to number the su	b-observation units: * 🕜			
	Plt_Date	pla	ntir Ob	os_NO *				
	Mat_Date	dat	e o:					
	Mat_DT_day     Matur			ct the environments for which y	units: *			
	🗆 Select All 🛛 🖡	lemove	10	•	Search:			
	Dbservations			TRIAL_INSTANCE	LOCATION_NAME			
	Select Environmen	t: 1 - Ibadan		2	Winters - (Wint)		Show Categorical	Description III
	ENTRY_TYPE GID I		Show	wing 1 to 2 of 2 entries	times (time)		Mat_DT_da	ay nEarsSel
	Test entry							
	Test entry	351061						
BMS 10.4.2	Test entry	351046			Back			

#### **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 <u>Manage Ontologies</u>.

BREEDING ACTIVITIES	< 📔 SY MAIZ	ΖE			Site Admin	My Programs	I 🕄 ج	Shawn 👻
Manage Germplasm	Name	Property						× Close
Manage Studies	DATE_NO	Observation Date						
Manage Samples	DAY_OBS	Observation time	Name	Obs_NO				
▼ INFORMATION MANAGEMENT	DTS_daysobs	Days to silking	Description	observation number				
Manage Genotyping Data	MONTH_OBS	Observation time	Property	Observation				
Browse Studies	NDVI1	Normalized difference vegetation index	Method	Enumerated				
Head to Head Query	NDVI2	Normalized difference vegetation index	Wiethod	Lindimenated				
Manage Ontologies	NDVI3	Normalized difference vegetation index	Scale	Number				
Import Datasets	Notes_1	Comment	Variable Type	Observation Unit				
Weighted Multi-trait Query	Notes_2	Comment	Expected Range	All values allowed				
STATISTICAL ANALYSIS	Notes_3	Comment		_				
► PROGRAM ADMINISTRATION	Obs_NO	Observation		Edit				
	Spad1	Chlorophyll content	Metadata					
	Spad2	Chlorophyll content						
	YEAR_OBS	Observation time						

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

BREEDING ACTIVITIES	< 🖪 SY	MAIZE									Site Admir	My Pro	ograms	? 🤊
Manage Germplasm														
Manage Studies	TRAITS 1	9							Add					
Manage Samples	Name		Descript	ion					Input Variable	s				
	EDmg_E	_1to5	Ear dama	age BY EDmg	- Estimatio	on IN 1-5 dan	mage scoring	scale						
NFORMATION MANAGEMENT	EDia_M_	.cm	Ear diam	eter BY EDia -	- Measure	ment IN Cm								
TATISTICAL ANALYSIS	C ELW_M_	g	Ear leaf v	veight BY ELV	V - Measur	ement IN G								
ROGRAM ADMINISTRATION	ELng_M	_cm	Ear lengt	h BY ELng - N	leasureme	ent IN Cm								
	EndoCol	_E_1to6	Endosper scale	rm color BY E	ndoCol - E	stimation IN	1-6 Endospe	erm color						
				Pericarpcolor BY PericCol - Estimation IN 1-5 Pericarp color scale										
	PericCol	_E_1to5	Pericarpo	olor BY Peric	Col - Estin	nation IN 1-5	Pericarp col	or scale						
	Select Environ	_E_1to5 Remo	Pericarpo	olor BY Peric	Col - Estin	50 • Sr	Pericarp col	or scale	entries			Show Categor	ical Descrip	tion 🚦
	PericCol Select All Select Environ ENTRY_TYPE	_E_1to5 Remo ment:	Pericarpo ove 1 - Ibadan T DESIGNATION	Records per Records per	r page:	50 • Sr BLOCK_NG	Pericarp col-	or scale 0 of 2,800 <b>Obs_NO</b>	entries EDmg_E_1to5	EDia_M_cm	ELW_M_g	Show Categor	ical Descrip EndoCol_	tion
	PericCol Select All Select Environ ENTRY_TYPE Test entry	_E_1to5 Remo ment: GID 351021	Pericarpo ove 1 - Ibadan * DESIGNATION IB49-1-1-1	Records per Records per ENTRY_NO 49	r page:	50 • Sr BLOCK_NO	Pericarp colors	or scale 0 of 2,800 <b>Obs_NO</b> 2	entries EDmg_E_1to5	EDia_M_cm	ELW_M_g	Show Categor ELng_M_cm	ical Descrip EndoCol_	E_1to6
	PericCol Select All Select Environ ENTRY_TYPE Test entry Test entry	_E_1to5 Remo ment:	Pericarpo ove	Records per ENTRY_NO 49 49	r page:	50 ▼ SF BLOCK_NO 1	Pericarp col- nowing 1 to 5 PLOT_NO 1	or scale 0 of 2,800 <b>Obs_NO</b> 2 3	entries EDmg_E_1to5	EDia_M_cm	ELW_M_g	Show Categor ELng_M_cm	ical Descrip EndoCol_	E_1to6
	PericCol Select All Select Environ ENTRY_TYPE Test entry Test entry Test entry	_E_1to5 Remo ment:	Pericarpo	Records per ENTRY_NO 49 49	Col - Estim page: s REP_NO 1 1 1	50 • Sř BLOCK_NC 1 1	Pericarp col- nowing 1 to 5 PLOT_NO 1 1 1	0 of 2,800 0 <b>obs_NO</b> 2 3 4	entries EDmg_E_1to5	EDia_M_cm	ELW_M_g	Show Categor	ical Descrip EndoCol_	tion
	PericCol Select All Select Environ ENTRY_TYPE Test entry Test entry Test entry Test entry Test entry	_E_1to5 Remo ment: [ 351021 351021 351021 351021	Pericarpo Designation IB49-1-1-1 IB49-1-1-1 IB49-1-1-1 IB49-1-1-1	Records per ENTRY_NO 49 49 49 49 49	Col - Estim r page: : REP_NO 1 1 1 1 1	50 • Sr BLOCK_NG 1 1 1	Pericarp col-	0 of 2,800 <b>Obs_NO</b> 2 3 4 5	entries EDmg_E_1to5	EDia_M_cm	ELW_M_g	Show Categor	ical Descrip EndoCol_	tion
	PericCol Select All Select Environ ENTRY_TYPE Test entry Test ent	_E_1to5 Remo ment: GID 351021 351021 351021 351021 351021	Pericarpo Designation * IB49-1-1-1 IB49-1-1-1 IB49-1-1-1 IB49-1-1-1 IB49-1-1-1 IB49-1-1-1	Records per ENTRY_NO 49 49 49 49 49 49 49	Col - Estim r page: <b>REP_NO</b> 1 1 1 1 1 1 1	50 ▼ Sr BLOCK_NO 1 1 1 1 1	Pericarp col-	0 of 2,800 0 <b>obs_NO</b> 2 3 4 5 6	entries EDmg_E_1to5	EDia_M_cm	ELW_M_g	Show Categor	ical Descrip EndoCol_	E_1to6
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# **Related Materials**

- <u>Manage Studies</u>
- <u>Settings</u>
- <u>Germplasm</u>
- Environments
- <u>Treatment Factors</u>
- Study Design
- Data Collection