

## **Trial Design & Planting**

BMS 12.0 Tutorials

# Summary

This tutorial describes how to design  $\epsilon$  field trial to evaluate a set of germplasm with 32entries for 6 phenotypic traits in a replicated field trial with three replications in 4 different locations. The experimental design is a resolvable incomplete block design, specifically an alpha lattice design.

Design Trial Trial Details & Settings Germplasm Environments Experimental Design Import Trial Design Measurements Create Planting Labels (Optional) Reserve & Withdraw Trial Germplasm: Optional

# **Design Trial**

## **Trial Details & Settings**

• From Manage Studies tool, select Start a New Study.



- Select Trial as the Study type and establish basic trial details.
  - Name: Performance Trial
  - Description: 2018
  - Objective: Preliminary yield trial
- Select Add in Study Settings to add management details. Select STUDY\_INSTITUTE and PI\_NAME\_TEXT from dropdown menu. Fill with your details. Select Save.

BREEDING ACTIVITIES	K 🔁 MAIZE TUTORIAL					Site Admin	My Programs	? ᆽ Gregor
Manage Germplasm Manage Studies Manage Samples • INFORMATION MANAGEMENT • STATISTICAL ANALYSIS • PROGRAM ADMINISTRATION	MANAGE STUDIES Create Study BAIC OUTAILS '* malacetes an mandatory field Study name * Description: * Study type: * Objective: Use a previously created study as a Settings Germplasm & Checks	Performance Trial 2018 Trial Preliminary yield trial template Environments Experimental Design Measu	v	Save in: * Created by * Creation date: * Completion date:	Gregor Mendel 2018-08-30 yyyy-mm-dd	82	Return to A	fanage Studies Change Folder
	STUDY SETTINGS 🕖		Add					Add
		Research Institute		Name	0	Description		
	Select All Remove	aregor menuer						

- Select the "+ icon". Enter 2018 as folder name. Select the green check icon after highlighting the Studies folder. The folder named 2018 is created within Studies.
- Select to complete saving the trial.



## Germplasm

• Under Germplasm Tab, Browse for a germplasm list.

EEDING ACTIVITIES	MAIZE TUTORIAL	-		
Manage Germplasm Manage Studies Manage Samples	MANAGE STUDIES Performance Trial BASIC DETAILS	Save		
INFORMATION MANAGEMENT	Settings Germplasm & Checks	Environments Experimental Design	Measurements	
STATISTICAL ANALYSIS	<ul> <li>Define Germplasm Details</li> </ul>			Add
PROGRAM ADMINISTRATION	GERMPLASM DESCRIPTORS	1		_
	Name	Description		_
	ENTRY TYPE	Entry type (test/check)- assigned (type	)	
	GID	Germplasm identifier - assigned (DBID	))	
	DESIGNATION	Germplasm identifier - assigned (DBC	V)	
	ENTRY_NO	Germplasm entry - enumerated (num	ber)	
	PLOT_ID	Field plot id - assigned (text)		
	🔁 Study List			
	Browse a list to work with.			

• Select the Trial Germplasm 2018 list.

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Manage Germplasm	ANAGE STUDIES @					
Manage Studies	Peri Browse For Lists				x	
Manage Samples	▶ BAS All Lists				C C C	
INFORMATION MANAGEMENT	ettings					
STATISTICAL ANALYSIS	NAME	OWNER	DESCRIPTION	TYPE	# OF ENTRIES	
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	Nam Trial Germplasm 2018	Admin Admin	example data	GERMPLASM LISTS	32	
	EXT GID DEs ENT PLCT EX Stu Affarouse a		Cancel Select			15

The 32 entry trial germplasm list is now loaded into the performance trial.

BREEDING ACTIVITIES	K 🔁 MAIZE TUTORIAL			Site Admin	My Programs 💡 喿 Gregor
Manage Germplasm Manage Studies Manage Samples INFORMATION MANAGEMENT	MANAGE STUDIES Performance Trial BASIC DETAILS	Save			Return to Manage Studies
STATISTICAL ANALYSIS     PROGRAM ADMINISTRATION	Define Germplasm Details     GERMPLASM DESCRIPTORS @	сполонителен скрептелен сезди теазителен	Add		
	Name	Description			
	ENTRY_TYPE	Entry type (test/check)- assigned (type)			
	GID	Germplasm identifier - assigned (DBID)			
	DESIGNATION	Germplasm identifier - assigned (DBCV)			
	ENTRY_NO	Germplasm entry - enumerated (number)			
	PLOT_ID	Field plot id - assigned (text)			
	Study List Browse a list to work with. Total Entries: 32 View Header				Actions
	ENTRY_TYPE	GID	DESIGNATION	ENTRY_NO	
	Test entry	8	AF12A-209-2/8	1	^
	Test entry	9	AF12A-209-3/8	2	
	Test entry	10	AF12A-210-1/4	3	
	Test entry	11	AF12A-210-1/5	4	
	Test entry	12	AF12A-210-14/17	5	
	Test entry	13	AF12A-210-15/23	6	
	Yess concer	4.4	AF434 340 3/40	7	

## Environments

• Under Environments Tab, specify four environments for the study and select **OK**. Four environments will now populate the screen below.

Manage Gamplasm Setting: Environments Environments   VironMatton MANAGENERT   • Define Environments   • STATISTICAL ANALYSIS   • PROGRAM ADMINISTRATION   • Specify Environment for this study:   • Specify Environment Details   • Original of the environment of this study:   • Original of the environment of the environment of this study:   • Original of the environment of the environment of this study:   • Original of the environment of this study:   • Original of the environment of the environme	BREEDING ACTIVITIES	< [	B MAIZE TUTORIA	L					Site Admin	My Programs	8 🗣	Gregor
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Preading locations (0) All locations types		•	4		Unspecified Loca	ition - (NOLOC)						Ŧ
					O Breeding locat	ions  All location	is types					

The four environments associated with the tutorial can be found by highlighting the box next to 'Show only favorite locations'.

The 4 environments correspond to the following location names:

- Environment 1: Agua Fria (AF)
- Environment 2: Sabana Del Medio (SDM)
- Environment 3: Jutiapa (JUT)
- Environment 4: Tlaltizapan (TLA)
- Select the correct location name from the favorite location drop down menu. The correct name should match the environment number of the example data.

BREEDING ACTIVITIES	< 🖪 MAIZE TUTORIAL			Site Admin	My Programs	<b>? </b>	Gregor
Manage Germplasm	ENVIRONMENT DETAILS 🚱	Add	STUDY CONDITIONS			Add	
Manage Studies	Name	Description	Name	Des	cription		
Manage Samples	LOCATION_NAME	Location - selected (DBID)					
INFORMATION MANAGEMENT							
STATISTICAL ANALYSIS	Specify the number of environments for this study:	4 <b>O</b> k					
PROGRAM ADMINISTRATION	Specify Environment Details						
	10 Y Showing 1 to 4 of 4 entries				Manage Lo	ations	
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		O Breeding locations  All locations types					
		Show only favorite locations					
	• 2	Sabana Del Medio - (SDM)					Ŧ
		Breeding locations     All locations types     Show only favorite locations					
	<b>a</b> 3						
	•	Jutiapa - (JUT)					*
		Show only favorite locations					
	• 4	Taltizapan - (TLA)					-
		Breeding locations      All locations types					
		Show only favorite locations					

## **Experimental Design**

### About the Experimental Design

The BMS supports the randomization of several types of experimental design. This experiment has a resolvable incomplete block design, where all entries are replicated 3 times at 4 locations containing 4 incomplete blocks. The advantage of this design over a randomized complete block design is the ability to control for environmental heterogeneity within a location. For this design, the number of germplasm entries must be evenly divisible by the size of the block (32 germplasm /4plots per block = 8 blocks per replicate).



### **Import Trial Design**

- Every study design generated by the BMS will have a different randomization. To use the tutorial example data, upload an experimental design file to match trial design to preformatted data import files.
   Experimental Design File: Trial Design (.csv)
- Export this Trial Design file and save it in your computer.
- Select import design from Design and planning options in the Actions Menu and browse to the saved Trial Design import file. Select Continue.



• Disregard the warning message. This experimental design is verified and compatible with BMS analysis tools. There are no unmapped variables. Select **Next**.

BREEDING ACTIVITIES	< 🖪 MAIZE TUTORIAL			Site Admin My Progra	ims ? ᆽ Gregor 🗸
Manage Germplasm Manage Studies Manage Samples	MANAGE STUDIES @			WARNING Please note that the ana generated outside the Bi	lysis results for designs MS may be unreliable, and
INFORMATION MANAGEMENT     STATISTICAL ANALYSIS	MAP COLUMN HEADERS TO VARIABLES Drag unmapped headers on the left into one of the three groups on the right needed.	. You will be prompted to match the header to an	existing variable in the ontology, and you will h	design types. ave the opportunity to create	new variables in
► PROGRAM ADMINISTRATION	Un-Mapped	Environmental Factors 🌱			1
		TRIAL_INSTANCE → TRIAL_INSTANCE Property: Trial instance	(Required) Scale: Number	Method: Enumerated	8 Remap
		Design Factors 🌱			3
		REP_NO → REP_NO Property: Replication factor	Scale: Number	Method: Enumerated	8 Re-map
		BLOCK_NO  BLOCK_NO Property: Blocking factor	Scale: Number	Method: Enumerated	Ø Re-map
		PLOT_NO → PLOT_NO (Required) Property: Field plot	Scale: Number	Method: Enumerated	@ Re-map
		Germplasm Factors 🎔			1
		ENTRY_NO → ENTRY_NO (Required) Property: Germplasm entry	Scale: Number	Method: Enumerated	& Re-map ∨
		Cancel Next			

- If you have previously generated a study design, select Yes to overwrite the previous design.
- Review design details and select **Finish** at the bottom of the pop-up window.

▼ BREEDING ACTIVITIES	MAIZE TUTORIAL									Site Admin	My Programs	? 契 Gregor	•
Manage Germplasm	MANAGE STUDIES 🛛									_			ľ
Manage Studies	👻 Performance Trial	Import Experim	ental Desig	n						×	Return t	o Manage Studies	l
Manage Samples	BASIC DETAILS	REVIEW DESIGN D	DETAILS									Actions	l
► INFORMATION MANAGEMENT	Settings Germplasm & Checks Environme	Type of design: Ex	ternally Gene	rated Design									l
STATISTICAL ANALYSIS	# Experimental Design	100 Y Show	ving 1 to 100 e	of 384 entries									l
PROGRAM ADMINISTRATION	CHOOSE & DESIGN TYPE	TRIAL_INSTANCE	ENTRY_NO	ENTRY_TYPE	GID	DESIGNATION P	PLOT_ID REI	P_NO PLOT_NO	BLOCK_NO				l
	Solort the design time you would like to use fo	1	4	Test entry	11	AF12A-210-1/5	1	1	1	î			l
	Or import an experimental design	1	7	Test entry	14	210-2/10	1	2	1				l
	SPECIFY PLOT NUMBERING	1	8	Test entry	15	AF12A- 210-2/12	1	3	1				l
	Specify the starting plot number: 1	1	16	Test entry	23	AF12A- 423-2/23	1	4	1				l
	SPECIFY DESIGN PARAMETERS	1	27	Test entry	34	AF12A- 423-6/20	1	5	2				l
	Number of replications: 3	1	20	Test entry	27	AF12A- 423-4/22	1	6	2				l
	Block size: 4	1	23	Test entry	30	AF12A- 423-5/20	1	7	2				l
	Show advanced options	1	5	Test entry	12	AF12A- 210-14/17	1	8	2				l
	Generate Design	1	22	Test entry	29	AF12A- 423-5/16	1	9	3				
		1	1	Test entry	8	AF12A-209-2/8	1	10	3				l
		1	28	Test entry	35	AF12A- 423-6/21	1	11	3				
		1	14	Test entry	21	AF12A- 423-2/16	1	12	3				
		1	9	Test entry	16	AF12A-210-2/6	1	13	4				
BMS 9.4		1	12	Tost optor	20	AF12A-	1	14	A				

• Save and select the measurements tab.

## **Measurements**

Once the trial design is saved, the measurements table is populated with independent variables and the dependent trait variables can be specified and added to the table.

This tutorial will collect and analyze data for six different traits.

• Add phenotypic traits by selecting Add associated with Traits.

BREEDING ACTIVITIES	< 🖪 MAIZE TUTORI	AL					Site Admin	My Programs	? 夬 Gregor 🛛
Manage Germplasm Manage Studies Manage Samples	MANAGE STUDIE Performance Trial BASIC DETAILS	5 😧	Save					Return to M	lanage Studies
INFORMATION MANAGEMENT	Settings Germplasm & Check	s Environme	nts Experimental Design	leasurements					
STATISTICAL ANALYSIS     PROGRAM ADMINISTRATION	<ul> <li>Define Measurement Deta</li> <li>TRAITS O</li> </ul>	ils			Add				
	Name		Description	Input Variable	IS				
	Deasurements								
	Select Environment: 1 - Agua F	ria * Recor	ds per page: 100 * Show	ing 1 to 96 of 96 entries				ihow Categorical Des	cription 🏢
	ENTRY_TYPE	GID	DESIGNATION	ENTRY_NO	REP_NO	PLOT_NO		BLOCK_NO	
	Test entry	11	AF12A-210-1/5	4	1	1		I	^
	Test entry	14	AF12A-210-2/10	7	1	2		1	
	Test entry	15	AF12A-210-2/12	8	1	3		1	
	Test onto:								
	rescentry	23	AF12A-423-2/23	16	1	4			
	Test entry	23 34	AF12A-423-2/23 AF12A-423-6/20	16 27	1	5	:	1 2	
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• Search for the six traits by typing details of the individual traits in the selection bar. For example typing the first few letters of 'Yield' reveals all of the related measurements associated with yield.

BREEDING ACTIVITIES	< 🖪 MAIZE TUTORIAL	Site Admin	My Programs	? 👤 Grego	r 🔻
Manage Germplasm	MANAGE STUDIES				
Manage Studies	Y Performance Trial	Add Traits	Return to Manag	ge Studies	
Manage Samples	► BASIC DETAILS			Actions	
► INFORMATION MANAGEMENT	Settings Germplasm & Checks Env	Select a trait			
STATISTICAL ANALYSIS	<ul> <li>Define Measurement Details</li> </ul>	Grain yield (Agronomic)			
PROGRAM ADMINISTRATION	VE TRAITS O	00 GY_Adj_kgha, GY_Adj_tha, GY_DW_gPlot, GY_DW_kgha, GY_DW_kgPlot, GY_DW_tha, GY_FW_kgha, GY_FW_kgPlot, GY_FW_tha, GY_Rank_number, GY_RelChk, pct			
		Relative grain yield (Agronomic)			
	Name	w or_nor_pr			
	1 Measurements				
	Select Environment: 1 - Agua Fria 💌		how Categorical Descript	ion 🏢	
	ENTRY_TYPE GID		BLOCK_NO		
	Test entry 11		1	^	
	Test entry 14	Close	1		

- Add the trait, GY\_FW\_kgPlot, (grain yield by fresh weight in Kg/plot) to the trial. Repeat by adding other traits indicated below.
  - Grain Yield Fresh Weight (GY\_FW\_kgPlot,): Grain yield fresh in kg/plot
  - Grain Moisture (GMoi\_NIRS\_pct): Grain moisture %
  - Plant Height (PH\_M\_cm): Plant height to the insertion of the first tassel branch
  - Ear Height (EH\_M\_cm): Ear height Measurement in Cm
  - Grain Yield Dry Weight (GY\_DW\_gPlot): Grain yield dry in g/plot
  - Anthesis Date (Ant\_DT\_day): number of days from sowing to when 50% of the plants begin to shed pollen.
- Save the trial.

Note the added traits in the table.

BREEDING ACTIVITIES Manage Germplasm			AL 5 <b>0</b>						Site	Admin My	Programs	? 👤 Greg
Manage Studies Manage Samples	Performation BASIC DET	ance Trial	Save								Return to I	Manage Studies
INFORMATION MANAGEMENT STATISTICAL ANALYSIS	Settings Ger	mplasm & Checks	Environments Experi	mental Design	Measurements			_				
PROGRAM ADMINISTRATION	Define Mean TRAITS O	asurement Detai	ls					Add				
	Name		Description				Input Variab	les				
	GY_FW_kg	Plot	Grain yield BY FW GY -	Measurement IN	Kg/plot							
		S_pct	Grain moisture BY NIR	S Moi - Measurer	nent IN %							
	PH_M_cm		Plant height BY PH - M	easurement IN ci	n							
	EH_M_cm		Ear height BY EH - Mea	asurement IN Cm								
	GY_DW_gF	Plot	Grain yield BY DW GY	Measurement IN	I G/plot							
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	Select All	Remove										
	👔 🗄 Measurem	ents										
	Select Environm	ient: 1 - Agua Fr	a Records per page:	100 * Sh	wing 1 to 96 of 96	entries				Show	Categorical De	scription
	ENTRY_TYPE	GID	DESIGNATION ENTRY_NO	REP_NO	PLOT_NO	BLOCK_NO	GY_FW_kgPlot	GMoi_NIRS_pct PH_M	l_cm EH_M_cm	GY_DW_	gPlot Ant	_DT_day
	Test entry	11	AF12A-210-1/5 4	1	1	1						^
	Test entry	14	AF12A-210-2/10 7	1	2	1						
	Test entry	15	AF12A-210-2/12 8	1	3	1						

# **Create Planting Labels (Optional)**

Trial design is complete when the measurements table is saved. Trial labels are available for seed packing and plot

### marking.

• Select Create Planting Labels under Design and Planning options in Actions menu.

EDING ACTIVITIES	< 🖪 MA	IZE TUTORIA	L						Site Admin	My Program:	🔹 ? 🗩 Gre		
anage Germplasm anage Studies anage Samples	MANAGE STUDIES Performance Trial BASIC DETAILS									Return to Manage Studies			
ORMATION MANAGEMENT	Settings Gerr Define Mea TRAITS @	nplasm & Checks asurement Details	Environments	Experimental Desig	n Measurement			Add	Export design templ Import Design Create planting labe	s Field m	and planning option of options > ap options > ollection options >		
	Name		Description				Input Variable	s		Plant le Advan	evel options >		
	GY_FW_kg	Plot	Grain yield BY	FW GY - Measuremer	t IN Kg/plot					Close s	tudy		
		5_pct	Grain moisture	Grain moisture BY NIRS Moi - Measurement IN %						Delete	study		
	PH_M_cm		Plant height Bi	PH - Measurement	N cm								
	EH_M_cm		Ear height BY EH - Measurement IN Cm										
	GY_DW_gF	lot	Grain yield BY	DW GY - Measureme	nt IN G/plot								
	Ant_DT_da	y	Anthesis time	BY Days to anthesis -	Computation IN Day								
	Select All	Remove ents ent; 1 - Agua Fria	* Records per	Darrer 100 *	Showing 1 to 06 of (	6 appriler							
	ENTRY_TYPE	GID D	ESIGNATION ENT	RY_NO REP_N	PLOT_NO	BLOCK_NO	GY_FW_kgPlot	GMoi_NIRS_pct PH_M_cm	EH_M_cm	how Categorical I GY_DW_gPlot	Ant_DT_day		
	Test entry	11 A	F12A-210-1/5 4	1	1	1							
	Test entry	14 A	F12A-210-2/10 7	1	2	1							
	Test entry	15 A	F12A-210-2/12 8	1	3	1							
	Test entry	23 A	F12A-423-2/23 16	1	4	1							

 Choose Excel as the output format. Excel format is a suitable input for a variety of label-making software options, including Bartender or Word (see <u>video</u> on using Word with BMS to create labels with barcodes).

BREEDING ACTIVITIES	MAIZE TUTORIAL				Site Admin	My Programs	? 🗩 Greg	
Manage Germplasm	LABEL PRINTING @							
Manage Studies Manage Samples	PRINT LABELS Create labels Selected study		Summary of labels need	ed				
STATISTICAL ANALYSIS	Title: 2018		Environment	# of Entries	# of Reps	Labels Needed		
PROGRAM ADMINISTRATION	Objective:		1	32	3	96		
	Number of Environments: 4		2	32	3	96		
			3	32	3	96		
			4	32	3	96		
	Choose label fields							
	Drag fields from the Study Details and Study List Detail file.	No 's into Selected Fields to add them to your export						
	Drag fields from the Study Details and Study List Detail file. Study Details	No Is into Selected Fields to add them to your export Study List Details	Selecter	d Fields				
	Drag fields from the Study Details and Study List Detail file. Study Details Study Name	No is into Selected Fields to add them to your export Study List Details REP_NO	Selecter	d Fields				
	Drag fields from the Study Details and Study List Detail file. Study Details Study Details PL_NAME_TEXT	No Si Into Selected Fields to add them to your export Study List Details REP_NO ENTRY_TYPE	Selecter	d Fields				
	Drag fields from the Study Details and Study List Detail file Study Details Study Name PL_NAME_TEXT STUDY_INSTITUTE	No Suinto Selected Fields to add them to your export Study List Details REP_NO ENTRY_TYPE GID	Selecter	d Fields				
	Drag fields from the Study Details and Study List Detail file.  Study Details  Study Name  PL,NAME,TEXT  STUDY_INSTITUTE  EXPT_DESIGN_SOURCE	No Sis Into Selected Fields to add them to your export Study List Details REP_NO ENTRY_TYPE GID DESIGNATION	Selecter	d Fields				

• Choose details to include on label text by dragging and dropping fields on Selected Fields.

BREEDING ACTIVITIES	< 🖪 MAIZE TUTORIAL			Site Admin	My Programs	? 契 Gregor
Manage Germplasm	Choose label type		Choose label output Choose the format you woul	d like to use for your labels:		
Manage Studies	Load saved settings:		Output format	Excel Data		*
INFORMATION MANAGEMENT     STATISTICAL ANALYSIS     PROGRAM ADMINISTRATION	Choose label fields Include column headings in XLS export? () Yes Drag fields from the Study Details and Study List De file.	No tails into Selected Fields to add them to your export				
	Study Details	Study List Details	Selected	Fields		
	Study Name	ENTRY_TYPE	Plot No.			
	PI_NAME_TEXT	GID	REP_NO			
	STUDY_INSTITUTE	ENTRY_NO	LOCATIO	N_NAME		
	EXPT_DESIGN_SOURCE	Parentage	DESIGNA	TION		
	TRIAL_INSTANCE					
	BLOCK_NO					
	Year					
	Season					
	GY_FW_kgPlot					
	GMoi_NIRS_pct					
	PH_M_cm					
	EH_M_cm					
	GY_DW_gPlot					

- Select Yes in the Barcode options
- Barcode your labels with unique plot id. Select Export label.

BREEDING ACTIVITIES	<	B MAIZE TUTORIAL						Site Admin	My Programs	0 R	Gregor	•
Manage Germplasm		STUDY_INSTITUTE		ENTRY_NO			LOCATION_NAME					
Manage Studies		EXPT_DESIGN_SOURCE		Parentage			DESIGNATION					
Manage Samples		TRIAL_INSTANCE										
INFORMATION MANAGEMENT		BLOCK_NO										
<ul> <li>STATISTICAL ANALYSIS</li> </ul>		Year										
<ul> <li>PROGRAM ADMINISTRATION</li> </ul>		Season										
		GY_FW_kgPlot										
		GMoi_NIRS_pct										
		PH_M_cm										
		EH_M_cm										
		GY_DW_gPlot										
		Ant_DT_day										
	Ba Do Do Sp File	rcode options you need baccodes on your labels? (*) Ves ( you want to use automatically generated uniq ecify the name of the label file ename:* [Labels-for-Performance Trial-4.201808	) No jue b 31	arcodes? 🗑 Yes 🔿 No		Save label settin You can save thes Preset name	<b>rgs</b> se label settings as a preset to use agai ettings Name	n by entering a na	ime below.			
				Cancel	iave Preset	Export Label						

• Proceed without saving the label settings.

BREEDING ACTIVITIES	<	B MAIZE TUTORIAL					Site Admin	My Programs	? 👤 Gregor
Manage Germplasm		STUDY_INSTITUTE	ENT	RY_NO		LOCATION_NAME			
Manage Studies		EXPT_DESIGN_SOURCE	Pare	Confirmation		×			
Manage Samples		TRIAL_INSTANCE		Proceed export labe	l without saving label printing se	tting?			
INFORMATION MANAGEMENT		BLOCK_NO							
<ul> <li>STATISTICAL ANALYSIS</li> </ul>		Year			Yes No				
PROGRAM ADMINISTRATION		Season							
		GY_FW_kgPlot							
		GMoi_NIRS_pct							
		PH_M_cm							
		EH_M_cm							
		GY_DW_gPlot							
		Ant_DT_day							
	Bar	code options							

• Review the .xls file. The barcode is a unique PLOT\_ID, which matches plot to seed inventory and phenotypic observations.

	А	В	С	D	E
1	Plot No.	REP_NO	LOCATION_NAME	DESIGNATION	Barcode
2	1	1	Agua Fria	AF12A-210-1/5	90VNP0heccE1y
3	2	1	Agua Fria	AF12A-210-2/10	90VNPxvx66G9F
4	3	1	Agua Fria	AF12A-210-2/12	90VNPJU5dCKRT
5	4	1	Agua Fria	AF12A-423-2/23	90VNP2izqIJDj
6	5	1	Agua Fria	AF12A-423-6/20	90VNPL9YjhrC2
7	6	1	Agua Fria	AF12A-423-4/22	90VNPRPcReGQN
8	7	1	Agua Fria	AF12A-423-5/20	90VNPUnICOonZ
9	8	1	Agua Fria	AF12A-210-14/17	90VNPU7VolpAh
10	9	1	Agua Fria	AF12A-423-5/16	90VNPnH09J7aG
11	10	1	Agua Fria	AF12A-209-2/8	90VNPW7jRpTlk
12	11	1	Agua Fria	AF12A-423-6/21	90VNPScDpW0rl
13	12	1	Agua Fria	AF12A-423-2/16	90VNPMw2aJHGI
14	13	1	Agua Fria	AF12A-210-2/6	90VNPScrcZkg0
15	14	1	Agua Fria	AF12A-423-2/14	90VNPVRjG3QqP
16	15	1	Agua Fria	Commercial Check 2	90VNPHRo3ghWp
17	16	1	Agua Fria	AF12A-210-1/4	90VNPJLRXuLbz
18	17	1	Agua Fria	AF12A-210-2/7	90VNPWfaeykSr
19	18	1	Agua Fria	AF12A-423-4/20	90VNP4L8ggnNX
20	19	1	Agua Fria	AF12A-210-15/23	90VNP6nCb5fDD
21	20	1	Agua Fria	AF12A-423-6/22	90VNPKrfXUpWk
22	21	1	Agua Fria	AF12A-210-2/8	90VNPa7G7st0T
23	22	1	Agua Fria	AF12A-209-3/8	90VNP3JtBhWpf
24	23	1	Agua Fria	AF12A-423-4/23	90VNP8laFkgxL
25	24	1	Agua Fria	AF12A-423-2/21	90VNPlxgNZTCx
26	25	1	Agua Fria	AF12A-423-4/21	90VNPIYvC8t1u
27	26	1	Agua Fria	Commercial Check 1	90VNP0fv0F8cU
28	27	1	Agua Fria	AF12A-210-2/9	90VNPIlljwF1e
29	28	1	Agua Fria	AF12A-423-4/16	90VNPxFgVrNrq
30	29	1	Agua Fria	Local Check 1	90VNP3XvHgWYy
31	30	1	Agua Fria	AF12A-423-5/23	90VNPmDDn9CSL
32	31	1	Agua Fria	AF12A-423-5/22	90VNPPHH10xnJ
33	32	1	Agua Fria	AF12A-423-6/16	90VNPuprPza2Q
3/	23	2	Δαμα Fria	ΔΕ12Δ_//23_2/1/	QOV/NPv2iMn5vr

• Create labels with your label making software. The set of trial labels can be printed twice to label: the seed destined for the trial and (2) the trial plots in the field.



3BCMP5zyRihPm REP\_NO:1 Plot No.:1 DESIGNATION:AF12A -210-1/5 LOCATION\_NAME: Agua Fria - (AF)





# **Reserve & Withdraw Trial Germplasm: Optional**

If 40g of seed are needed per trial plot, and each trial germplasm is replicated 3 times over 4 environments - each trial germplasm entry requires a reservation and withdrawal of 480g of seed. Trial labels can be used to track and match packaged seed to appropriate plots.

• From Manage germplasm tool, browse and select the Trial Germplasm list. Close browse list popup window.

BREEDING ACTIVITIES	< 🖪	MAIZ	E TUTORIAL					Site Admin	My Programs	? ᆽ Gregor
Manage Germplasm	MAN	IAGE	GERMPLAS	M 0						
Manage Studies	View I	icte	View Germalasm							
Manage Samples			their derinplasm							
INFORMATION MANAGEMENT	Erowse 0	t Detail	s or a list to work with.							Show List Builder
STATISTICAL ANALYSIS	Trial O	Sermplas	m 2018 ×	Browse for Lists				×		
PROGRAM ADMINISTRATION		ist entr	ies	📜 All Lists				Ð 🛛 🗘		
	Total I	Entries: 32	Selected: 0	NAME	OWNER	DESCRIPTION	TYPE	# OF ENTRIES		0 /
	1		DESIGNATION	Crop lists					SEED_SOURCE	
		1	AF12A-209-2/8	Program lists						^
			AF12A-209-3/8	Commercial Checks 201	Admin Admin	example germplasm	GERMPLASM LISTS	7		
		3	AF12A-210-1/4	Parental List 2018	Admin Admin	example germplasm	GERMPLASM LISTS	50		
		4		Trial Germplasm 2018	Admin Admin	example data	GERMPLASM LISTS	32		
		5	AF12A-210-14/17							
		6								
		8								
		9								
		13								
		14								
		15			100000.0 a	16	22	SID2 16		
		10				10		51DZ-10		

• Open the list in Inventory View.

BREEDING ACTIVITIES	< 🖪	MA	IZE TUTORIAL						Site Admin	My Programs ? 🗩 Gregor 👻
Manage Germplasm Manage Studies	MAN View L	IAG ists	E GERMPLAS	M Ø						
Manage Samples  INFORMATION MANAGEMENT  STATISTICAL ANALYSIS	Erowse of Trial G	t Deta r search	nils for a list to work with.							C Show List Builder
PROGRAM ADMINISTRATION	Total L	ots: 32	ory Selected: 0							ACTIONS     Return to List entries view
	1	#	DESIGNATION	LOCATION	AVAILABLE	RESERVATION	TOTAL WITHDRAWALS	COMMENT	STOCKID SE	List editing options
		1	AF12A-209-2/8	Default Seed Store	100000.0g	0.0g	0.0g	From List Import	SID2-1	Export Seed propagation list
		2	AF12A-209-3/8	Default Seed Store	100000.0g	0.0g	0.0g	From List Import	SID2-2	Import Seed preparation list
		3	AF12A-210-1/4	Default Seed Store	100000.0g	0.0g	0.0g	From List Import	SID2-3	Print Labels
		4	AF12A-210-1/5	Default Seed Store	100000.0g	0.0g	0.0g	From List Import	SID2-4	19
		5	AF12A-210-14/17	Default Seed Store	100000.0g	0.0g	0.0g	From List Import	SID2-5	20
		6	AF12A-210-15/23	Default Seed Store	100000.0g	0.0g	0.0g	From List Import	SID2-6	21
		7	AF12A-210-2/10	Default Seed Store	100000.0g	0.0g	0.0g	From List Import	SID2-7	22
		8	AF12A-210-2/12	Default Seed Store	100000.0g	0.0g	0.0g	From List Import	SID2-8	23
		9	AF12A-210-2/6	Default Seed Store	100000.0g	0.0g	0.0g	From List Import	SID2-9	25
		10	AF12A.210.2/7	Default Seed Store	100000 0g	0.00	0.0e	From List Import	SID2-10	24

• Select all 32 entries and select Reserve Inventory.

BREEDING ACTIVITIES	< 🗈	MA	IZE TUTORIAL					Site A	idmin 🛛 My Programs ? ᆽ Gregor 👻
Manage Germplasm Manage Studies Manage Samples	MAN View L	IAG .ists	E GERMPLAS	M Ø					^
INFORMATION MANAGEMENT	Browse o	t Deta	ails for a list to work with.						✓ Show List Builder
<ul> <li>STATISTICAL ANALYSIS</li> </ul>	Trial	Sermpl	asm 2018 ×						
PROGRAM ADMINISTRATION	i i i	vent	orv						A ACTIONS
	Total	ots: 32	Selected: 32						Return to List entries view
									List editing options
	1		DESIGNATION	LOCATION	AVAILABLE	RESERVATION	TOTAL WITHDRAWALS	Reserve inventory	Inventory management options
		1	AF12A-209-2/8	Default Seed Store	100000.0g	0.0g	0.0g	Save changes	Export Seed preparation list
		2	AF12A-209-3/8	Default Seed Store	100000.0g	0.0g	0.0g	Cancel Reservations	Import Seed preparation list
		3	AF12A-210-1/4	Default Seed Store	100000.0g	0.0g	0.0g	Close lots	Print Labels
		4	AF12A-210-1/5	Default Seed Store	100000.0g	0.0g	0.0g	From List Import SID2-4	19
	$\checkmark$	5	AF12A-210-14/17	Default Seed Store	100000.0g	0.0g	0.0g	From List Import SID2-5	20
		6	AF12A-210-15/23	Default Seed Store	100000.0g	0.0g	0.0g	From List Import SID2-6	21
		7	AF12A-210-2/10	Default Seed Store	100000.0g	0.0g	0.0g	From List Import SID2-7	22
		8	AF12A-210-2/12	Default Seed Store	100000.0g	0.0g	0.0g	From List Import SID2-8	23
		9	AF12A-210-2/6	Default Seed Store	100000.0g	0.0g	0.0g	From List Import SID2-9	25
		10	AF12A-210-2/7	Default Seed Store	100000.0g	0.0g	0.0g	From List Import SID2-10	24
		11	AF12A-210-2/8	Default Seed Store	100000.0g	0.0g	0.0g	From List Import SID2-11	27
		12	AE124 210 2/0	Default Coard Store	100000 04	0.07	0.04	From List Import SID2 12	26

• Enter 480g for seed amount. Select **Commit seed withdrawal** on saving to complete the reservation/withdrawal in one step. Select **Finish**.

BREEDING ACTIVITIES	< 🖪 MAIZE TU	UTORIAL					Site Admin	My Program:	• • •	🔰 Grego
Manage Germplasm Manage Studies	View Lists View	Germplasm								
Manage Samples										
INFORMATION MANAGEMENT	Ex List Details Browse or search for a lis	st to work with.							< Show	List Builder
STATISTICAL ANALYSIS	Trial Germplasm 201	18 ×								
PROGRAM ADMINISTRATION										-
	Total Lots: 32	Selected: 32	Seed Prepara	tion		×			Q ACTI	ONS
	√ # DESIG	SNATION LOCATION					STOCKID SEE	D SOURCE	LOT ID	
			Specify the an	nount of seed you wo	Id like to prepare for each sel	ected lot. (32 selected)	SID2-1			^
		A-209-3/8 Default Seed Sto	Amount to Re	eserve   Specify an	ount in SEED_AMOUI	√T_g 480	SID2-2			
			re	O Prepare al	available seed		SID2-3			
	🔽 4 AF12/	A-210-1/5 Default Seed Sto	Notes	For Preliminary Yie	d trial		SID2-4			
			re				SID2-5			
	✓ 6 AF12/	A-210-15/23 Default Seed Sto	re			0	SID2-6			
			re	Commit seed v	ithdrawal on saving	<b>e</b>	SID2-7			
	✓ 8 AF12/		re				SID2-8			
	9 AF12/		re				SID2-9			
			re				SID2-10			
			re		Finish		SID2-11			
			de la companya de la				SID2-12			
	✓ 14 AF12/		re 100000.0g	0.0g	0.0g		SID2-14			
			re 100000.0g	0.0g	0.0g					

#### • Save changes.

BREEDING ACTIVITIES	< 🗈	MAI	ZE TUTORIAL						Site Admin	My Programs 🥐 喿 Gregor
Manage Germplasm Manage Studies Manage Samples	MAN View L	IAGE .ists	GERMPLAS	M						
INFORMATION MANAGEMENT	Erowse o Trial C	t Deta r search Sermpla	ils for a list to work with. sm 2018 ×							C Show List Builder
PROGRAM ADMINISTRATION	Total I	lots: 32	Selected: 32						[	ACTIONS ACTIONS
	1		DESIGNATION	LOCATION	AVAILABLE	RESERVATION	TOTAL WITHDRAWALS	Reserve inventory		Inventory management options
		1	AF12A-209-2/8	Default Seed Store	99520.0g	0.0g	0.0g	Save changes		Export Seed preparation list
		2	AF12A-209-3/8	Default Seed Store	99520.0g	0.0g	0.0g	Cancel Reservations		Import Seed preparation list
		3	AF12A-210-1/4	Default Seed Store	99520.0g	0.0g	0.0g	Close lots		Print Labels
		4	AF12A-210-1/5	Default Seed Store	99520.0g	0.0g	0.0g	From List Import	SID2-4	19
		5	AF12A-210-14/17	Default Seed Store	99520.0g	0.0g	0.0g	From List Import	SID2-5	20
		6	AF12A-210-15/23	Default Seed Store	99520.0g	0.0g	0.0g	From List Import	SID2-6	21
		7	AF12A-210-2/10	Default Seed Store	99520.0g	0.0g	0.0g	From List Import	SID2-7	22
		8	AF12A-210-2/12	Default Seed Store	99520.0g	0.0g	0.0g	From List Import	SID2-8	23
		9	AF12A-210-2/6	Default Seed Store	99520.0g	0.0g	0.0g	From List Import	SID2-9	25
		10	AF12A-210-2/7	Default Seed Store	99520.0g	0.0g	0.0g	From List Import	SID2-10	24
		11	AF12A-210-2/8	Default Seed Store	99520.0g	0.0g	0.0g	From List Import	SID2-11	27
		12	AF12A-210-2/9	Default Seed Store	99520.0g	0.0g	0.0g	From List Import	SID2-12	26
		13	AF12A-423-2/14	Default Seed Store	99520.0g	0.0g	0.0g	From List Import	SID2-13	29

If you are working alone, TOTAL WITHDRAWALS will reflect your 480g withdrawal for each entry. If you are in a workshop with concurrent users, the total withdrawn by everyone will be reflected. When all the seed is used up or reserved, you will no longer be able to make reservations and withdrawals.

BREEDING ACTIVITIES	< 🗈	MA	IZE TUTORIAL						Site Admir	My Program:	0	Gregor
Manage Germplasm Manage Studies	MAN View L	IAG .ists	E GERMPLAS View Germplasm	MØ								
INFORMATION MANAGEMENT      STATISTICAL ANALYSIS	Browse G	t Deta	ails h for a list to work with.								< Show	r List Builder
PROGRAM ADMINISTRATION	Total	nvent	ory Selected: 0								Ø ACT	
	1		DESIGNATION	LOCATION	AVAILABLE	RESERVATION	TOTAL WITHDRAWALS	COMMENT	STOCKID S	EED_SOURCE	LOT_ID	
		1	AF12A-209-2/8	Default Seed Store	99520.0g	0.0g	480.0g	From List Import	SID2-1		16	^
		2	AF12A-209-3/8	Default Seed Store	99520.0g	0.0g	480.0g	From List Import	SID2-2		17	
		3	AF12A-210-1/4	Default Seed Store	99520.0g	0.0g	480.0g	From List Import	SID2-3		18	
		4	AF12A-210-1/5	Default Seed Store	99520.0g	0.0g	480.0g	From List Import	SID2-4		19	
		5	AF12A-210-14/17	Default Seed Store	99520.0g	0.0g	480.0g	From List Import	SID2-5		20	
		6	AF12A-210-15/23	Default Seed Store	99520.0g	0.0g	480.0g	From List Import	SID2-6		21	
		7	AF12A-210-2/10	Default Seed Store	99520.0g	0.0g	480.0g	From List Import	SID2-7		22	
		8	AF12A-210-2/12	Default Seed Store	99520.0g	0.0g	480.0g	From List Import	SID2-8		23	
		9	AF12A-210-2/6	Default Seed Store	99520.0g	0.0g	480.0g	From List Import	SID2-9		25	
		10	AF12A-210-2/7	Default Seed Store	99520.0g	0.0g	480.0g	From List Import	SID2-10		24	
		11	AF12A-210-2/8	Default Seed Store	99520.0g	0.0g	480.0g	From List Import	SID2-11		27	

### **Funding & Acknowledgements**

The Integrated Breeding Platform (IBP) is jointly funded by: the Bill and Melinda Gates Foundation, the European Commission, United Kingdom's Department for International Development, CGIAR, the Swiss Agency for Development and Cooperation, and the CGIAR Fund Council. Coordinated by the Generation Challenge Program the Integrated Breeding Platform represents a diverse group of partners; including CGIAR Centers, national agricultural research institutes, and universities.

Maize ?demonstration data was provided by Mike Olsen at CIMMYT International Maize and Wheat Improvement Center. These data have been adapted for training purposes. Any misrepresentation of the raw breeding data is the solely the responsibility of the IBP.

