

Advancement

BMS 13.0-14.0 Manual

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Introduction

Advancement and crossing are ways to create new germplasm (GIDs) using the BMS pedigree management (see more [Germplasm & Genealogy](#)). Germplasm must reside within a study to be advanced or crossed. Advancement is generally through maintenance or derivative breeding methods, and is expected to result in offspring less than or equal to the parent(s) in terms of genetic diversity. Crossing is generally performed through generative methods, and the offspring are expected to be more genetically diverse than the individual parent(s).

Advance

Advances can be made two ways, by plot or within plot selections. A breeder will choose to advance germplasm for a variety of reasons. Examples include:

- Advance F1 generation to create GIDs for F2 offspring
- Advance plants of interest to create GIDs for the offspring or clones
- Advance inbred lines to create GIDs for bulked seeds
- Advance a bag of seed to create GIDs for individual seeds/seedlings

Advance by Plot

The following example every plot will be advanced, such as for a seed bulk.

- Open a study measurements tab. Select Advance Study from the Actions button dropdown menu.

The screenshot shows the 'MANAGE STUDIES' interface for 'Example1'. The 'Measurements' tab is selected, displaying a table of study instances. The table has the following data:

ENTRY_TYPE	GID	DESIGNATION	ENTRY_NO	PLOT_NO
Test entry	5017	BMS-1	1	1
Test entry	5018	BMS-2	2	2
Test entry	5019	BMS-3	3	3
Test entry	5020	BMS-4	4	4
Test entry	5021	BMS-5	5	5

- Select which of the study instances (locations in this case) to advance. Continue.

Advance study

* indicates a mandatory field

10

Search:

LOCATION_NAME
Antarctica - (ATA)
Marshall Islands Territory - (US68)

Showing 1 to 2 of 2 entries

< 1 >

☒ Select All

Cancel Continue

- Choose a breeding method and Finish. Derivative and maintenance breeding methods are filtered by default since these are the most common for advancements. All plots are selected by default.

Advance study

* indicates a mandatory field

METHODS

☒ Breeding Method is the same for each advance

Seed increase bulk - NBK

☒ Derivative and Maintenance methods

☐ All methods

☐ Show only favorite methods [Manage Methods](#)

BULKS

☒ All plots are selected

LOCATION DETAILS

LOCATION_NAME
Antarctica - (ATA)
Marshall Islands Territory - (US68)

Back Finish

- Review the advanced lines and select Finish.

Advance study

REVIEW ADVANCED LINES

Advance List Entries

Total Entries: 50 Selected: 0

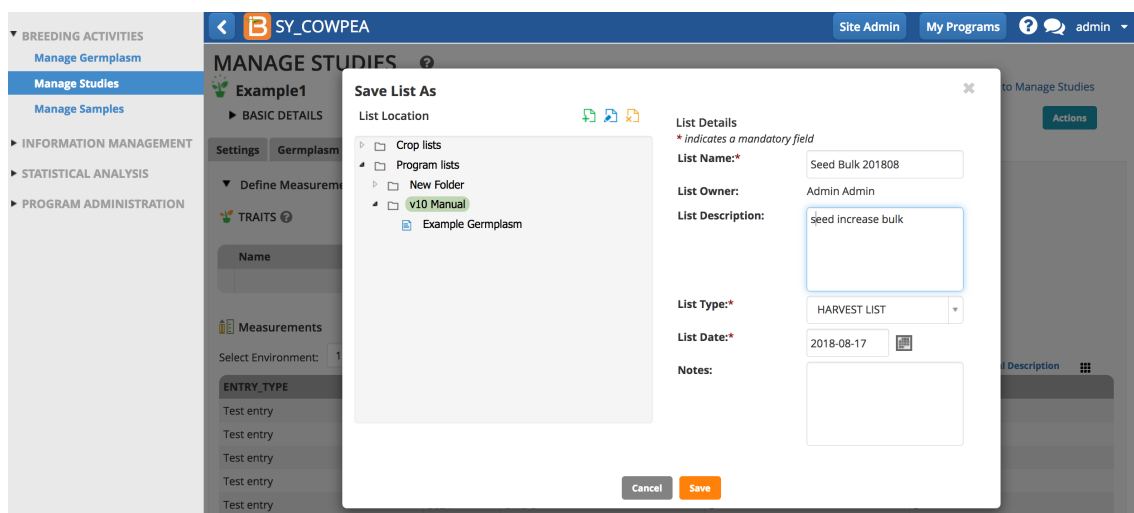
ENTRY_NO	DESIGNATION	CROSS	GID	SEED_SOURCE	TRIAL_INSTANCE	RE
<input checked="" type="checkbox"/> 1	BMS-1-201808	Pending	Example1:Antarctica:201808:1	1		
<input checked="" type="checkbox"/> 2	BMS-2-201808	Pending	Example1:Antarctica:201808:2	1		
<input checked="" type="checkbox"/> 3	BMS-3-201808	Pending	Example1:Antarctica:201808:3	1		
<input checked="" type="checkbox"/> 4	BMS-4-201808	Pending	Example1:Antarctica:201808:4	1		
<input checked="" type="checkbox"/> 5	BMS-5-201808	Pending	Example1:Antarctica:201808:5	1		
<input checked="" type="checkbox"/> 6	BMS-6-201808	Pending	Example1:Antarctica:201808:6	1		
<input checked="" type="checkbox"/> 7	BMS-7-201808	Pending	Example1:Antarctica:201808:7	1		
<input checked="" type="checkbox"/> 8	BMS-8-201808	Pending	Example1:Antarctica:201808:8	1		
<input checked="" type="checkbox"/> 9	BMS-9-201808	Pending	Example1:Antarctica:201808:9	1		
<input checked="" type="checkbox"/> 10	BMS-10-201808	Pending	Example1:Antarctica:201808:10	1		
<input checked="" type="checkbox"/> 11	BMS-11-201808	Pending	Example1:Antarctica:201808:11	1		
<input checked="" type="checkbox"/> 12	BMS-12-201808	Pending	Example1:Antarctica:201808:12	1		
<input checked="" type="checkbox"/> 13	BMS-13-201808	Pending	Example1:Antarctica:201808:13	1		
<input checked="" type="checkbox"/> 14	BMS-14-201808	Pending	Example1:Antarctica:201808:14	1		
<input checked="" type="checkbox"/> 15	BMS-15-201808	Pending	Example1:Antarctica:201808:15	1		
<input checked="" type="checkbox"/> 16	BMS-16-201808	Pending	Example1:Antarctica:201808:16	1		

☐ Select All

Back Finish

Notice that the pending lines have been automatically named. For example the designation, BMS-1-201808, is a concatenation of the parent line, BMS-1, and the year and month of creation. This is the default naming convention associated with the breeding method, Seed increase bulk. See your system administrator if you would like to change the default naming conventions.

- Specify the folder where the list will be saved. Name the list and add optional information. Save.



Within Plot Selections

Within plots selections are made based on phenotypic or genotypic criteria. To make within plot selections, the study needs a [Selection Variate](#) with [selections recorded](#).

No Plant ID

Selection and advance anonymous plants within a plot.

- From the Actions menu choose Advance Study. In this example, number of plants selected (NPSEL) is a selection variate. A single plant from each plot with disease resistance (zero or one scores for mosaic virus severity) have been selected for advancement.

TRIAL_INSTANCE	ENTRY_TYPE	GID	DESIGNATION	ENTRY_NO	PLOT_NO	BECMVSev_Est_0to4	NPSEL
1	T	5042	BMS-1:201808	1	1	1	1
1	T	5043	BMS-2:201808	2	2	2	
1	T	5044	BMS-3:201808	3	3	2	
1	T	5045	BMS-4:201808	4	4	1	1
1	T	5046	BMS-5:201808	5	5	2	
1	T	5047	BMS-6:201808	6	6	2	
1	T	5048	BMS-7:201808	7	7	1	1
1	T	5049	BMS-8:201808	8	8	3	
1	T	5050	BMS-9:201808	9	9	4	
1	T	5051	BMS-10:201808	10	10	4	
1	T	5052	BMS-11:201808	11	11	0	1

- Select which of the study instances (location in this case) to advance. Continue.

LOCATION_NAME
<input checked="" type="checkbox"/> Shetland Islands - (UKW3)

- Choose a breeding method. Derivative and maintenance breeding methods are filtered by default since these are the

most common for advancements. Deselect 'All plots are selected'. Choose the selection variate that defines the number of lines advanced from each plot. Finish.

- Review the advanced lines and select Finish.

ENTRY_NO	DESIGNATION	CROSS	GID	SEED_SOURCE	TRIAL_INSTANCE	REP_NO
1	BMS-1-201808-1	Pending	Example 2:Shetland Islands:201808:1	1		
2	BMS-4-201808-1	Pending	Example 2:Shetland Islands:201808:4	1		
3	BMS-7-201808-1	Pending	Example 2:Shetland Islands:201808:7	1		
4	BMS-11-201808-1	Pending	Example 2:Shetland Islands:201808:11	1		
5	BMS-12-201808-1	Pending	Example 2:Shetland Islands:201808:12	1		
6	BMS-13-201808-1	Pending	Example 2:Shetland Islands:201808:13	1		
7	BMS-15-201808-1	Pending	Example 2:Shetland Islands:201808:15	1		
8	BMS-16-201808-1	Pending	Example 2:Shetland Islands:201808:16	1		
9	BMS-19-201808-1	Pending	Example 2:Shetland Islands:201808:19	1		
10	BMS-24-201808-1	Pending	Example 2:Shetland Islands:201808:24	1		
11	BMS-6-201808-1	Pending	Example 2:Shetland Islands:201808:31	1		
12	BMS-11-201808-1	Pending	Example 2:Shetland Islands:201808:36	1		
13	BMS-12-201808-1	Pending	Example 2:Shetland Islands:201808:37	1		
14	BMS-16-201808-1	Pending	Example 2:Shetland Islands:201808:41	1		
15	BMS-17-201808-1	Pending	Example 2:Shetland Islands:201808:42	1		
16	BMS-19-201808-1	Pending	Example 2:Shetland Islands:201808:44	1		

Notice that the pending lines have been automatically named. For example the designation, BMS-1-201808-1, is a concatenation of the parent line, BMS-1-201808, and the plant sequence number, 1). This is the default naming convention associated with the breeding method, single plant selection. See your system administrator if you would like to change the default naming conventions.

- Specify the folder where the list will be saved. Name the list and add optional information. Save.

The advance list can now be viewed in the associated nursery. The stock list can now be generated to record the harvest. (See [Add Inventory After Crossing & Advancement](#)).

BREEDING ACTIVITIES

Manage Germplasm

Manage Studies

Manage Samples

INFORMATION MANAGEMENT

STATISTICAL ANALYSIS

PROGRAM ADMINISTRATION

SY_COWPEA

Site AdminMy Programs?admin

MANAGE STUDIES

Example 2

Save

Return to Manage Studies

Actions

BASIC DETAILS

SettingsGermplasm & ChecksEnvironmentsExperimental DesignMeasurementsImported Crosses: [2018 F1s]

Cross List: 2018 F1sNotes:

Total Entries: 6Selected: 0

View List DetailsCross List Actions

Generate Stock ListSave Parent List

ENTRY_NO	DESIGNATION	CROSS	FEMALE PARENT	FGID	MALE PARENT	MGID	GID	SEED_SOURCE	DUPLICATE
1	IB1	BMS-1:201808/BMS-9	BMS-1:201808	5042	BMS-9	5025	5092	Example 2:Shetland Islands:201808:1/Example1:Antarctica:201808:9:	-
2	IB2	BMS-1:201808/BMS-11:201808	BMS-1:201808	5042	BMS-11:201808	5052	5093	Example 2:Shetland Islands:201808:1/Example 2:Shetland Islands:201808:11:	-
3	IB3	BMS-2:201808/BMS-12:201808	BMS-2:201808	5043	BMS-12:201808	5053	5094	Example 2:Shetland Islands:201808:2/Example 2:Shetland Islands:201808:12:	-
4	IB4	BMS-3:201808/BMS-12:201808	BMS-3:201808	5044	BMS-12:201808	5053	5095	Example 2:Shetland Islands:201808:3/Example 2:Shetland Islands:201808:12:	-
5	IB5	BMS-4:201808/BMS-14:201808	BMS-4:201808	5045	BMS-14:201808	5055	5096	Example 2:Shetland Islands:201808:4/Example 2:Shetland Islands:201808:14:	-
6	IB6	BMS-5:201808/BMS-15:201808	BMS-5:201808	5046	BMS-15:201808	5056	5097	Example 2:Shetland Islands:201808:5/Example 2:Shetland Islands:201808:15:	-

With Plant ID

Select and advance plants with their own observation number from a plot.

- After creating a plant sub-observation dataset,

Related

- [Germplasm & Geneaology](#)
- [Manage Inventory](#)
- [Crossing](#)