

Design F2 Nursery, Advance, & Harvest F3 Seed

BMS 12.0 Tutorials

Summary

This tutorial describes how to design an F2 nursery with checks.

Start a New Nursery
Nursery Details
Add Selection Unit & Traits
Germplasm & Checks
Collect Trait Data & Make Selections
Export Nursery Book
Import Measurements
Advance by Single Plant Selection to F3
Harvest F3 Seed
Review Germplasm Details

Start a New Nursery

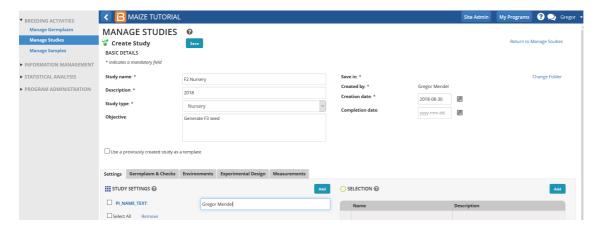
· From Manage Studies tool, select Start a New Study.



Nursery Details

- Name and describe the F2 Nursery.
- Add the name of the investigator using the Add function in the STUDY SETTINGS.

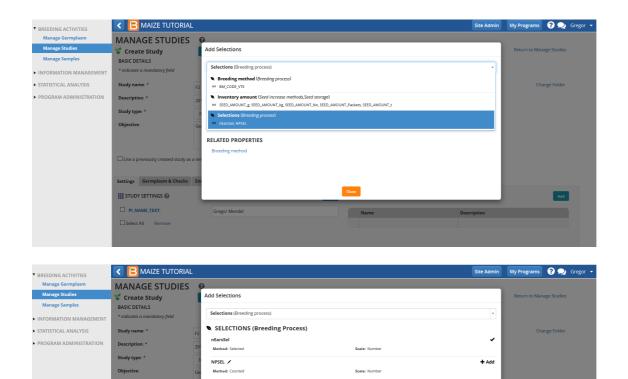
Nursery details can also be configured by choosing a previously saved nursery template if necessary.



Add Selection Unit & Traits

The F2 Nursery will be advanced by selection of entries based on disease resistance ratings. Unit of selection should be added to the nursery settings.

- Add the units of selection (number of ears selected) using the Add function associated with SELECTION. Several Selection criteria are available.
- Selection: Identify Number of ears Selected (nEarSel)



Save the Nursery.

Germplasm & Checks

Settings Germplasm & Checks E

STUDY SETTINGS @

PI_NAME_TEXT.

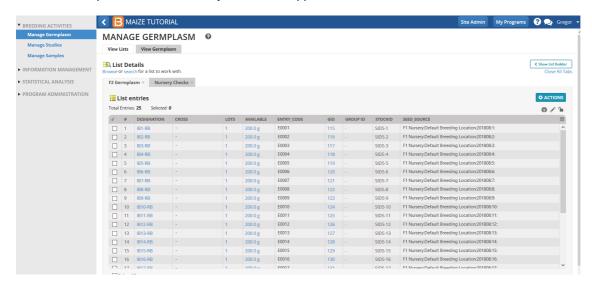
The F2 nursery will have check entries in addition to the entries of F2 germplasm. We will prepare a new germplasm list combining the F2 entry list and the nursery check entry list.

• From Manage Germplasm, browse for the F2 germplasm list.

RELATED PROPERTIES

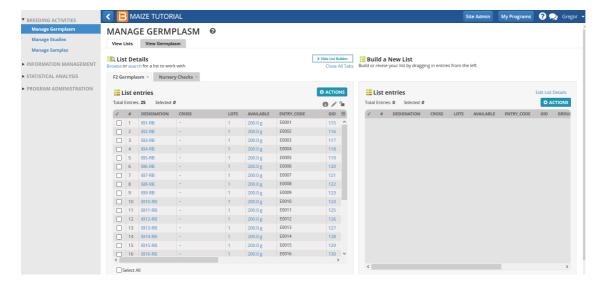
- Select the F2 Germplasm list.
- Browse for the Nursery checks list and select.

Both F2 Germplasm list and Nursery checks list appear in two different tabs.



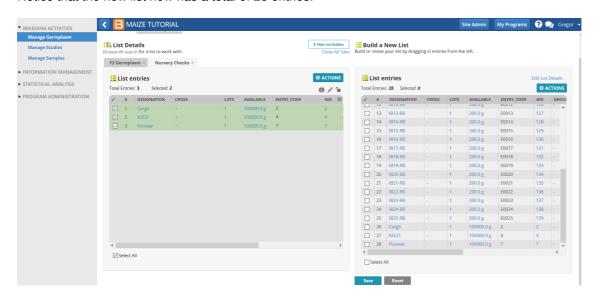
• Select the Show List Builder icon.

A blank Entry list is generated by the List Builder tool.

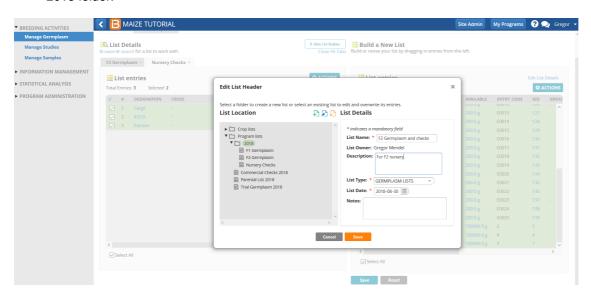


- Select all 25 F2 Germplasm entries and drag and drop them to the new list.
- From the Nursery Checks tab, select the three check entries and drag and drop to the new list.

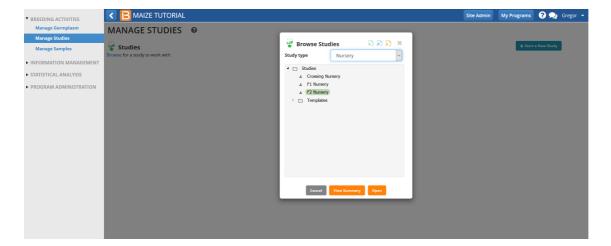
Notice that the new list now has a total of 28 entries.



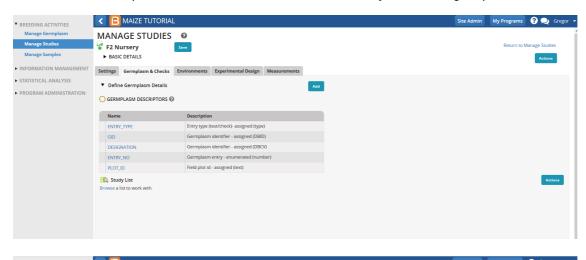
 Describe the list details and save the new germplasm list that contains F2 germplasm entries and check entries in the 2018 folder.

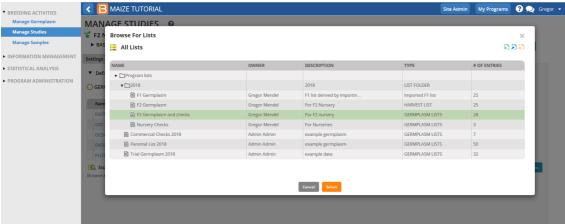


• From the Manage Studies tool, Browse for the saved F2 nursery and Open

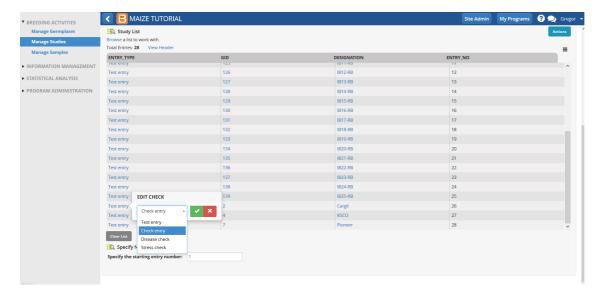


• From the Germplasm and Checks tab, browse for the newly created F2 germplasm and checks list and Select.

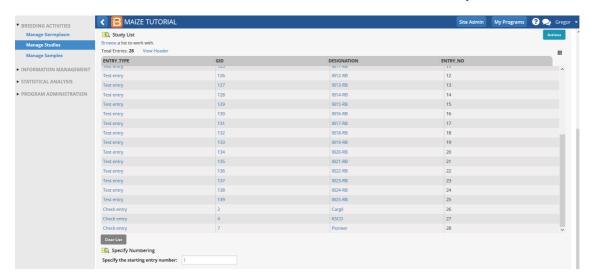




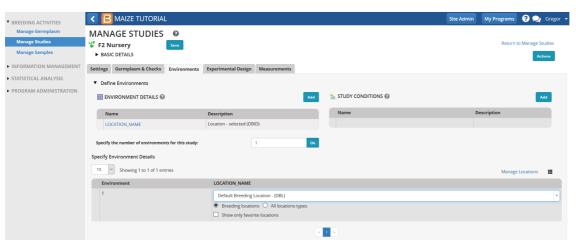
- . Scroll to the last three entries that were selected from the nursery check list
- In the Entry Type column, click on the Test Entry and change each of the three entries from Test entry to Check entry.



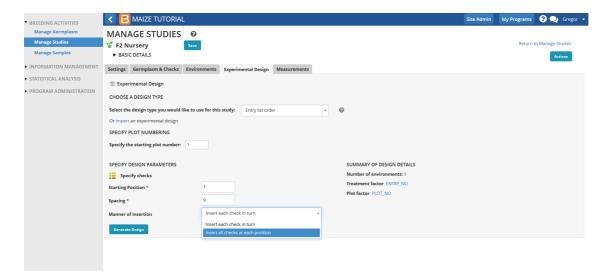
Confirm that the three check entries are listed as Check entries in the F2 nursery list.



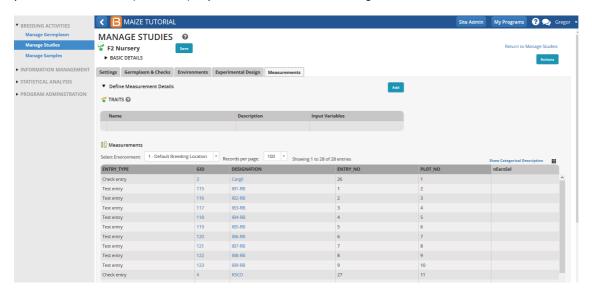
From the Environment tab, select the location name as Default breeding location.



- From the Experimental Design tab, select Entry list order as the design type.
- Specify the Design Parameters for Checks.
 - Starting position of checks 1
 - Spacing 9 entries between checks
 - Manner of insertion Select Insert each check in turn.
- Select Generate Design and Save.



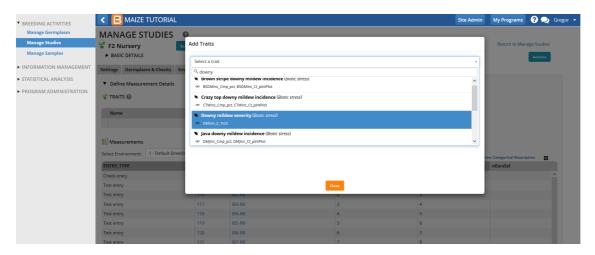
The Measurement tab is now populated. The Entry Type column identifies the Check and Test entries and the the selection parameter identified (nEarsSel) is present as a column heading.



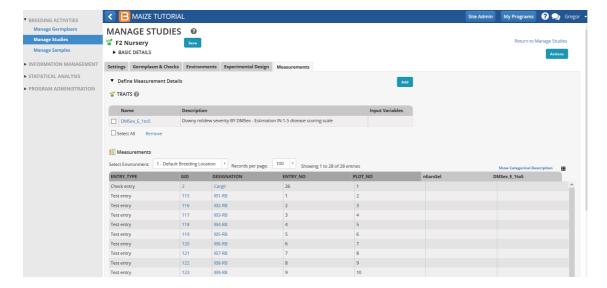
The F2 Nursery entries would be evaluated for resistance to Downy mildew. Notice that **TRAITS** selection tool is available to select Downy mildew severity.

 Select Add associated with TRAITS and type downy to select Downy mildew severity (DMSev_E_1to5) from the drop down.

Downy Mildew severity will be measured on a 1 to 5 scale.



The Measurement tab now has an added column for data collection with the heading DMSev_E_1to5 for downy mildew severity.



· Save the nursery.

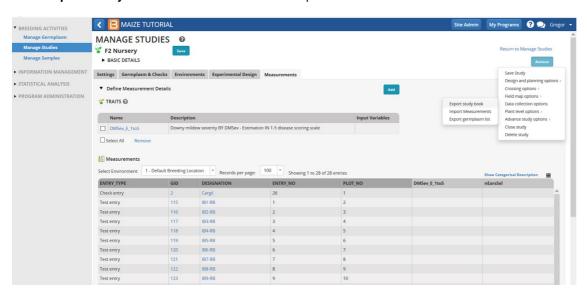
The F2 nursery is now available for the following activities. (For brevity this tutorial skips activities 1-3, which were covered in previous tutorials).

- 1. Make labels for nursery plots
- 2. Make labels for seed withdrawal
- 3. Field mapping
- 4. Export of nursery book for data collection

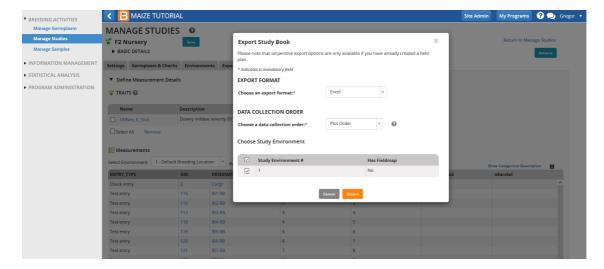
Collect Trait Data & Make Selections

Export Nursery Book

• Export Study book from the Data collection options of the Actions menu.



• Choose Excel (.xls) as the export format with data collected in plot order. Export the .xls file to your computer.

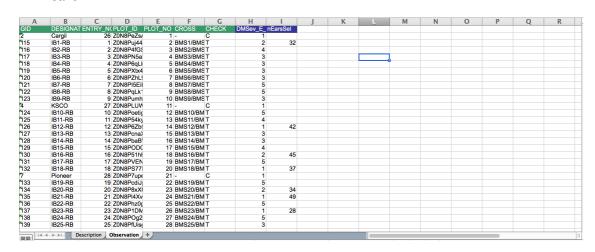


• Open the Excel file and review. The observation sheet has two empty columns for data collection for Downy mildew severity and the number of ears selected for each entry. The Checks are identified as C and the Test entries as T in the Entry type colum.

1	А	В	С	D	Е	F	G	Н
1	ENTRY_TYPE,	GID	DESIGNA	ENTRY_N	PLOT_ID	PLOT_NO	DMSev_E	nEarsSel
2	С	2	Cargil	26	J11RP3PF	1		
3	T	115	IB1-RB	1	J11RPMV	2		
4	T	116	IB2-RB	2	J11RPTITv	3		
5	T	117	IB3-RB	3	J11RPrGy			
6	T	118	IB4-RB	4	J11RPR2F	5		
7	T	119	IB5-RB	5	J11RPpOJ	6		
8	T	120	IB6-RB	6	J11RPuGg	7		
9	T	121	IB7-RB	7	J11RPmk3	8		
10	T	122	IB8-RB	8	J11RPyhA	9		
11	T	123	IB9-RB	9	J11RPY28	10		
12	С	4	KSC0	27	J11RPBrF	11		
13	T	124	IB10-RB	10	J11RPT8q	12		
14	T	125	IB11-RB	11	J11RPoUe	13		
15	T	126	IB12-RB	12	J11RPMklt	14		
16	T	127	IB13-RB	13	J11RPJQJ	15		
17	T	128	IB14-RB	14	J11RPzA0	16		
18	T	129	IB15-RB	15	J11RPL2C	17		
19	T	130	IB16-RB	16	J11RPnNo	18		
20	T	131	IB17-RB	17	J11RPJIY	19		
21	T	132	IB18-RB	18	J11RPVSE	20		
22	С	7	Pioneer	28	J11RP54d	21		
23	T	133	IB19-RB	19	J11RPmqa	22		
24	T	134	IB20-RB	20	J11RPWa	23		
25	T	135	IB21-RB	21	J11RPZ6e	24		
26	T	136	IB22-RB	22	J11RPPug	25		
27	Т	137	IB23-RB	23	J11RPek3	26		
28	Т	138	IB24-RB	24	J11RPjTKF	27		
29	Т	139	IB25-RB	25	J11RPsxp	28		
30					·			

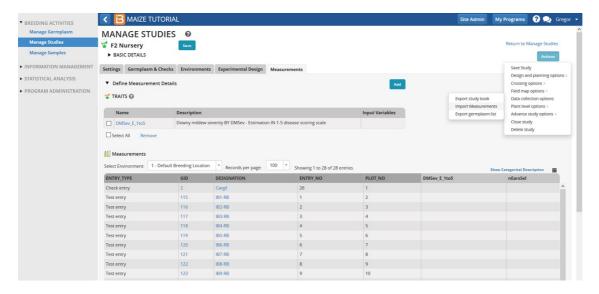
The file below has hypothetical data collected for Downy mildew severity and the number of ears selected from entries preferred by the breeder after making observations during the season.

 Copy the data present in the last two columns in the file below into the Excel file that was saved on your computer and save.

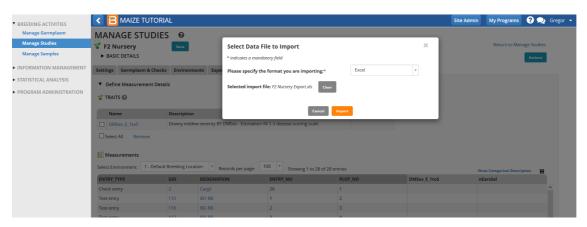


Import Measurements

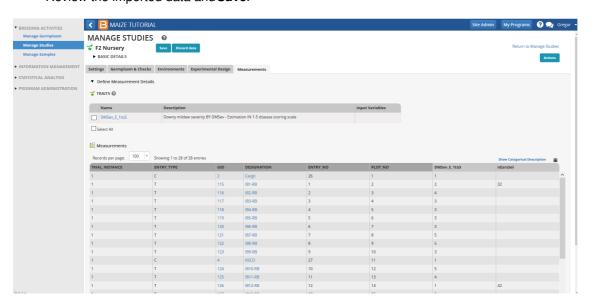
• Select Import Measurements from the Data collection options of the Actions menu.



• Browse for the saved Excel file with data and import.



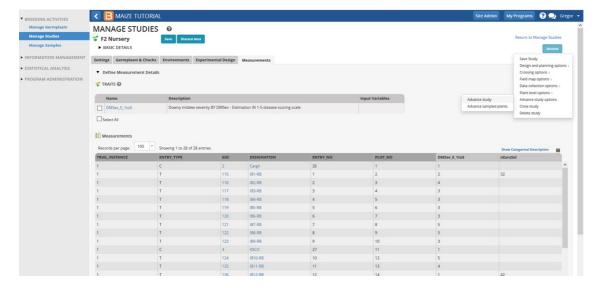
• Review the imported data and Save.



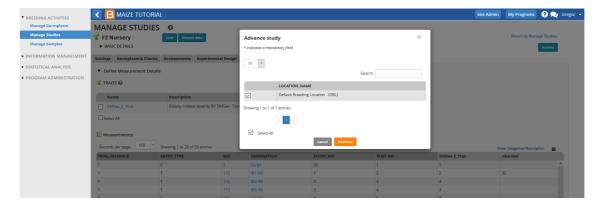
Advance by Single Plant Selection to F3

These Selections that were made on individual F2 populations will be advanced to F3s.

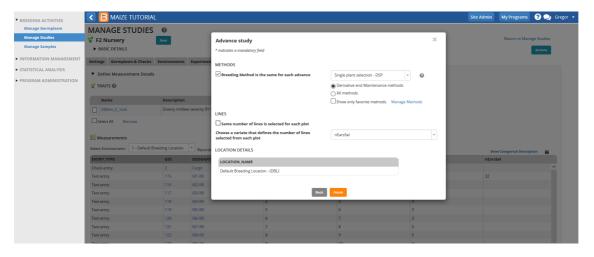
• Select **Advance Study** from the Advance study option from the Actions menu.



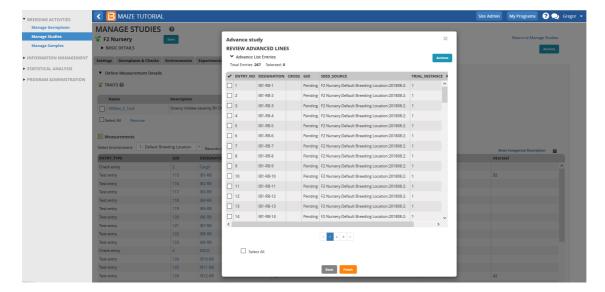
• Select Continue



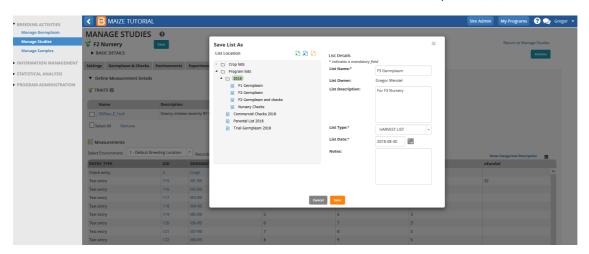
• Ears selected correspond to individual F2 plants. Choose the single plant selection breeding method. Since different numbers of lines are selected from each F2 population plots, deselect the box specifying Same number of lines selected for each plot and choose the selection unit, nEarSel. Identify the Harvest Location.



• Select Finish and review the pending F3 lines.

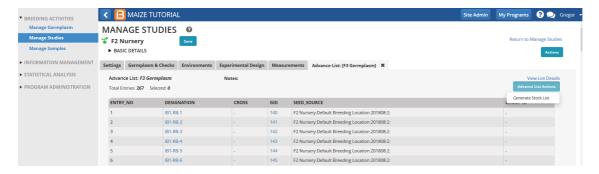


• Select Finish after review and name, describe, and save the F3 Germplasm list.

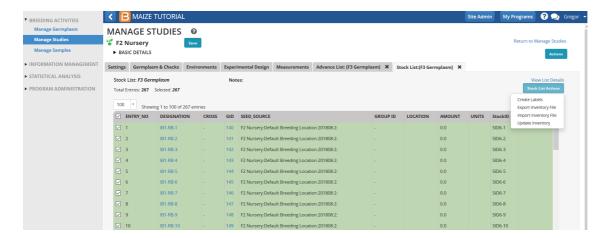


Harvest F3 Seed

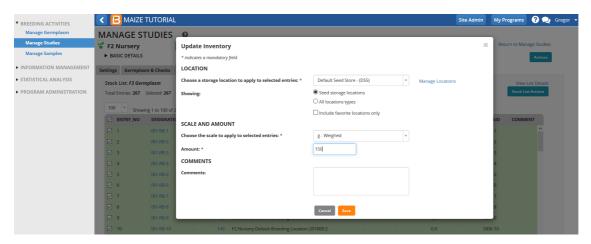
• Select Generate Stock List from Advanced List Actions to record the amount of seed harvested.



• Select the check box at the top of the table to highlight all entries. Selec**Update Inventory** from the Stock List Actions.

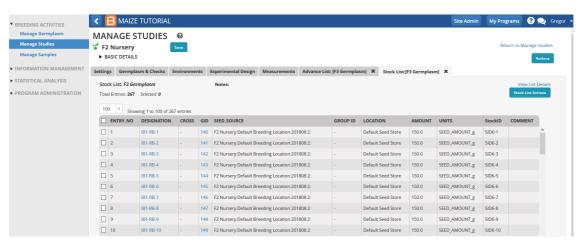


Specify storage location, g -weighed, and amount of 150 for all entries. Save the nursery.



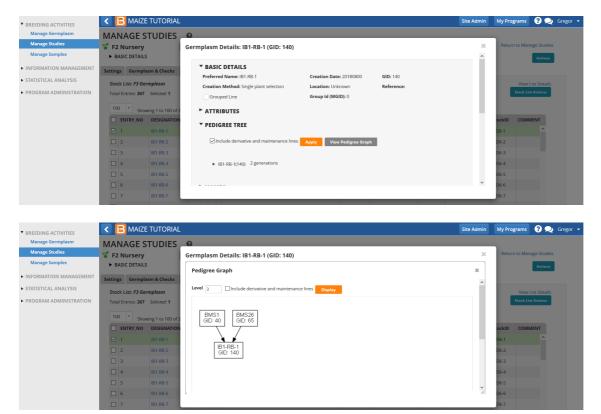
Review Germplasm Details

150 grams of seed has now been applied to all 267 F3 germplasm entries.



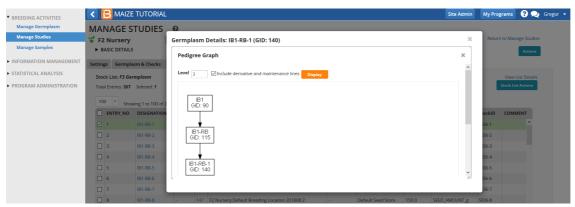
Harvesting the exact same amount of seed from each cross may not be realistic. To record individual amounts, you have the option to exporting the stock list (.xls), enter individual values per entry and import the stock list.

- Select 1B1-RB-1 to review germplasm details.
- Notice that the correct breeding method, Single plant selection, was applied in the creation of this germplasm.
- Select the box next to 'Include derivative and maintenance lines' and select View Pedigree Graph from Pedigree Tree.



Pedigree graph of generative methods connects the F3 germplasm to the original crosses.

• Select the box - Include derivative and maintenance lines and select Display.



Pedigree graph of derivative and maintenance lines connects the F3 germplasm to the F2 and F1 lines.