

Observations and Descriptors: CROP Dataviews



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In GRIN-Global (GG), observations can be recorded for a crop's traits, but to do so means that the crop, its trait, and if the trait uses a scale, its codes must have been created first. This document describes several inter-related dataviews used for managing crops, their traits and codes, and ultimately the descriptor data ("observations") are created in the Curator Tool. You also see how traits can be reviewed in the Public Website.

In most organizations using GG, only a few users (or perhaps a database administrator or documentation manager) will define the crop, trait descriptors and their related code records, whereas many genebank staff will use the Curator Tool to enter observation data.

[Change notes](#) pertaining to this document are also summarized in the appendix. Review the [Table of Contents](#) which contains links to the document's sections.

Comments/Suggestions:

Please contact <mailto:marty.reisinger@usda.gov> or mar@rrginc.com with any suggestions or questions related to this document. This and other GRIN-Global –related documentation can be downloaded from the GRIN-Global [Training page](#).

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Overview

Observations on the Public Website

“Characterization of germplasm is essential to provide information on the traits of accessions assuring the maximum utilization of the germplasm collection to the final users. “ [Read more...](#) from the CGIAR Crop Genebank KnowledgeBase.

The Public Website (PW) can display characteristic/evaluation data for any accession whose observations have been recorded.



A crop’s trait only displays on the Public Website when at least one observation has been recorded and is public (not “archived”).

In GRIN-Global, observations are organized by crops. In GG, a “crop” can be loosely defined as a set of species determined by the curator to comprise the crop. GG has the capability to have overlapping crops, meaning that two (or more) “crops” may have the same species. This will be [explained in detail](#) later.

To review observations for a species, the PW user accesses the **Descriptors** menu option. The user then selects a crop; *if that crop has observation data* in the database, the crop’s descriptors (traits) will be listed. At that point the user can refine the search by selecting the various descriptors and by specifying values for the criteria.

The screenshot displays the U.S. National Plant Germplasm System website. The top navigation bar includes links for Accessions, Descriptors, Reports, GRIN Taxonomy, GRIN, Help, Contact Us, and Your Profile. The 'Descriptors' link is highlighted with a yellow circle. Below the navigation bar, there is a 'Search descriptors' section with three steps: 1. Select crop from dropdown list, 2. Select traits, then click "Select values" button, and 3. Choose values for traits, additional criteria (optional), then click "Search" button. A 'Search criteria' button is highlighted in green. Below this, there is a 'Step 1 - Choose Crop' section with a 'New Search' button. Two search filters are shown: 'Filter dropdown' with a search box containing 'Search by crop' and a 'Find Crop' button, and 'Filter dropdown by genus, species or part of a taxon.' with a search box containing 'eg., Medicago sat' and a 'Find Crop' button. A dropdown menu is open showing 'ACEROLA' and 'AEGILOPS'. A 'Reset Crops' button is also visible.

What is needed to record an Observation in GRIN-Global?

Several steps must be taken with the GG database before you can record an observation. Many of these steps are done only once.



Since all observations are connected to inventory, the Inventory record must be in the database. (Of course each Inventory record is linked to an accession record.)

The following illustrates the general flow in inputting the data in the crop-related dataviews – this flow should be followed in establishing any new crop trait:

Step	Input Data for the...	Dataview to use
1	Crop	Crop
2	Mapping of crop to species	Taxonomy Crop Map
3	Trait	Crop Trait Crop Trait Lang
4	Codes	Crop Trait Code Crop Trait Code Lang

Then, to record observations, in addition to the above steps, then...

5	Method	Method
4	Observation(s)	Crop Trait Observation

If you don't have the crop defined in the Crop dataview, you cannot input any of the traits related to the crop. Similarly, before you can create the codes for a trait, you must define the traits first.

Conversely, you cannot delete a crop from the **Crop** table if it has traits associated to it. Similarly, traits cannot be removed from the **Crop Trait** dataview unless all of the dependent data in the children dataviews has been removed first.

Generally a curator identifies specific traits to be measured / observed and establishes respective trait records. The curator decides how these observations will be presented to the public. Will they have a *text* value, a *numeric* value, or a *coded* value? (Coded values are used when a scale is involved. For example, a scale from 1 to 9 is used to represent relative heights across a range.)

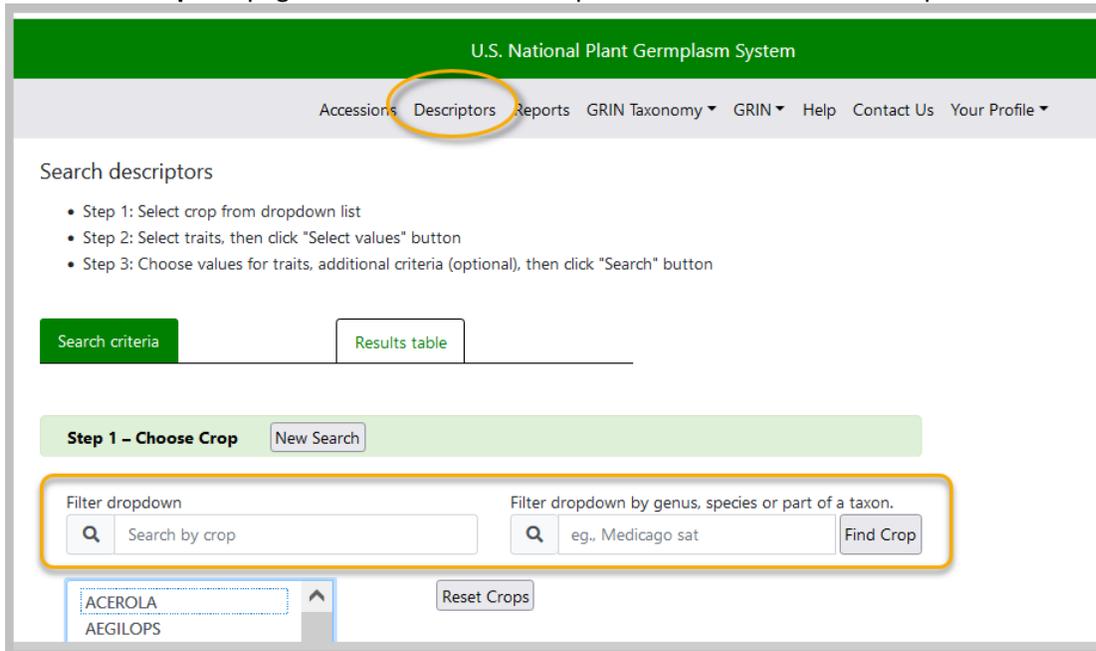
In summary, the essential steps for recording observations are:

- Define a **Crop** record
- Map the crop to species, using the **Taxonomy Crop Map** table

- The curator plans what observations will be made and usually creates a specific **Method** record that details how the observations will be made and eventually records the growing and any other conditions that will have affected the outcome.
- Define the **Crop Trait** record(s)
- Define the **Crop Trait Code** records when any of the traits are coded (that is, they use a scale)
- In GG, because of languages, two related “language” tables are involved: **Crop Trait Lang** and **Crop Trait Code Lang**. These are used to define the titles and descriptions for the traits and codes.
- Record observations in the GG **Crop Trait Observation** table

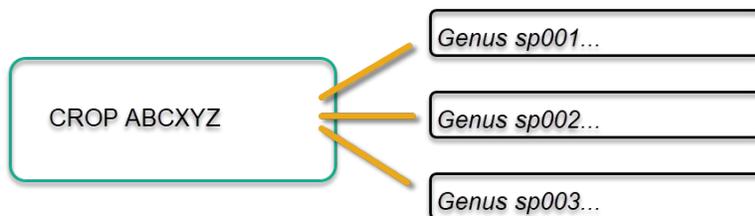
Where do you find Crop / Observations data in the Public Website?

Use the **Descriptors** page. You can also enter a species to determine what crop it is under.



Mapping Species to a Crop

Curators typically decide which species to include in a crop. In GRIN-Global, the taxa are said to be “mapped” to a crop. In setting up a crop, the curator will create one crop record. The curator will use the **Taxonomy Crop Map** table to map all the species that she wants included in the crop.



Search Results

Add To Query Clear Query Limit: 50000 Page Size: 1000

Order Request Method Attach **Taxonomy Crop Map** Web Order Request Sys Dataview Field Lang Web Cooperator Methc

Taxonomy Crop Map ID	Taxon	Crop	Alternate Crop Name
19579	Malus sylvestris (L.) Mill.	APPLE	N/A
19642	Malus toringo	APPLE	N/A
19880	Malus sikkimensis	APPLE	N/A

The setup of crop, traits, trait codes, and the crop mapping, requires some initial effort. Once set up, observations can be recorded.

Trigger Determination if the Accession Species Fits Under a Crop

When a user adds an observation record using the Curator Tool, a database trigger reviews the **Taxonomy Crop Map** table to determine if the accession's species has been previously mapped to a crop.

If observations have never been recorded for a crop, and no records have been manually created in the **Taxonomy Crop Map** table for that crop, there is no crop-to-taxon relationship (yet). In that case, saving the first observation record will automatically map the *species* of the inventory to a *crop*, thereby establishing a relationship going forward between the specified crop and the taxon. This is accomplished by a trigger.

The trigger writes a specific kind of record in the **Taxonomy Crop Map** table - an "N/A record" – indicating that that the species is now associated with that crop. These N/A records have three essential fields filled in: **Taxon**, **Crop**, and the **Alternate Crop Name**.

Search Results

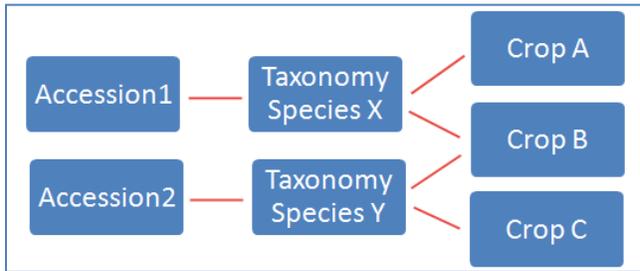
Add To Query Clear Query Limit: 50000 Page Size: 1000

Order Request Method Attach **Taxonomy Crop Map** Web Order Request Sys Dataview Field Lang Web Cooperator Methc

Taxonomy Crop Map ID	Taxon	Crop	Alternate Crop Name
19579	Malus sylvestris (L.) Mill.	APPLE	N/A
19642	Malus toringo	APPLE	N/A
19880	Malus sikkimensis	APPLE	N/A

After a species has been mapped to a crop, subsequent observations for that same species will automatically be expected to be for the same crop. Additional observations must use the same crop *unless another Crop-Species entry is made in the Crop Map Table*.

Usually, an organization will have a taxon associated with just one crop, but it is possible to have a taxon associated with multiple crops, as shown above.



In the example below, two sites in NPGS, Geneva and Davis, manage the same species. By having two map records for *V. aestivalis*, both sites can now record observations for their respective accessions.

At NPGS, this map table may also have other records that do not have “N/A” in the **Alternate Crop Name** field, but these records can be ignored for this mapping discussion. These records are vestigial to another usage, no longer relevant to GRIN-Global.

Order Request	Method Attach	Taxonomy Crop Map	Web Order Request	Sys Dataview Field Lang	Web Cooperator	Method
		Vitis aes%				
Taxonomy Crop Map ID	Taxon	Crop	Alternate Crop Name			
1641	Vitis aestivalis	GRAPE-GENEVA	GRAPE, WINE			
20526	Vitis aestivalis	GRAPE-GENEVA	N/A			
22239	Vitis aestivalis	GRAPE-DAVIS	N/A			
24484	Vitis aestivalis var. aestivalis	GRAPE-DAVIS	N/A			
20668	Vitis aestivalis var. bicolor	GRAPE-GENEVA	N/A			
22749	Vitis aestivalis var. linsecomii	GRAPE-DAVIS	N/A			
23256	Vitis aestivalis var. linsecomii	GRAPE-GENEVA	N/A			

A common question is raised: Why can't I add observations to a crop? An error message displays indicating that the "Accession species and crop species do not match," as shown below:

Crop Trait	Crop Trait Lang	Crop Trait Code	Crop Trait Code Lang	Crop Trait Code Attach	Crop Trait Observation	Crop Trait Observation Data	Crop Trait Attach	Genetic
Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	
-1		MIA 28292 PL	MIA-CARAMBOLA	brix (Mean)			7.9	
-2		MIA 28292 PL	MIA-CARAMBOLA	diameter (Mean)			73.7	
-3		MIA 28292 PL	MIA-CARAMBOLA	fruitLength (Mean)			117	
-4		MIA 28292 PL	MIA-CARAMBOLA	fruitWeight (Mean)			139.9	
-5		MIA 28292 PL	MIA-CARAMBOLA	fruitWidth (Mean)			70.6	
-6		MIA 28292 PL	MIA-CAR				9.3	
-7		MIA 28292 PL	MIA-CAR				1.4	
-8		MIA 28292 PL	MIA-CAR				0	
-9		MIA 28292 PL	MIA-CAR				4.3	
-10		MIA 28292 PL	MIA-CAR				5	
-11		MIA 28292 PL	MIA-CAR					
-12		MIA 28292 PL	MIA-CAR					
-13		MIA 28292 PL	MIA-CAR				12.7	
-14		MIA 28292 PL	MIA-CAR				56.7	

Save Data Error v1.9.8.27

There were errors saving data.

Full error message:

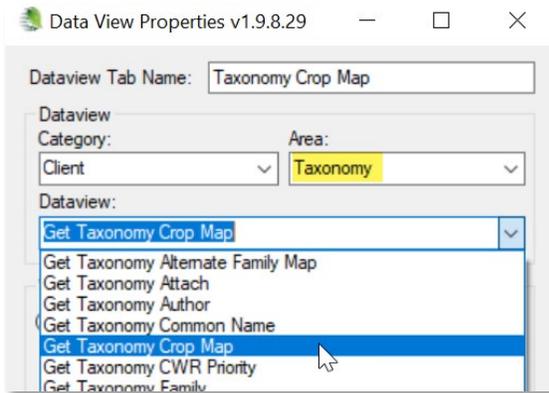
Accession species and crop species do not match.
Accession species and crop species do not match.

OK

This message is a clue that the Taxon was used previously with a different crop. Before saving these observations, the user will need to create an additional "N/A" **Taxonomy Crop Map** record, associating the species to another crop (if that is truly what is wanted). Alternatively, this error message could be a clue that an incorrect Inventory identifier was used in the Observation record.

Adding a taxon to *multiple* crops (Taxonomy Crop Map)

In the Curator Tool, use the **Taxonomy Crop Map** dataview:



Create the desired Taxon-Crop N/A records as needed:

Order Request	Method Attach	Taxonomy Crop Map	Web Order Request	Sys Dataview Field Lang	Web Cooperator	Methc
		Vitis aes%				
Taxonomy Crop Map ID	Taxon	Crop	Alternate Crop Name			
1641	Vitis aestivalis	GRAPE-GENEVA	GRAPE, WINE			
20526	Vitis aestivalis	GRAPE-GENEVA	N/A			
22239	Vitis aestivalis	GRAPE-DAVIS	N/A			
24484	Vitis aestivalis var. aestivalis	GRAPE-DAVIS	N/A			
20668	Vitis aestivalis var. bicolor	GRAPE-GENEVA	N/A			
22749	Vitis aestivalis var. linsecomii	GRAPE-DAVIS	N/A			
23256	Vitis aestivalis var. linsecomii	GRAPE-GENEVA	N/A			

Determining a Crop's species

Search in the **Taxonomy Crop Map** table, or use the Public Website crop page:

Step 1 – Choose Crop New Search

FLAX
FRAXINUS
GLYCINE-PERENNIAL
GRAPE-DAVIS

[Click for crop detail page.](#)

GRAPE-DAVIS

Species

- *Ampelopsis* spp.
- *Ampelopsis delavayana* Planch. var. *delavayana*
- *Ampelopsis delavayana* Planch. var. *glabra* (Diels & Gilg)
- *Ampelopsis glandulosa* (Wall.) Momiy. var. *brevipedunculata*
- *Ampelopsis vitifolia* Planch.
- *Parthenocissus quinquefolia* (L.) Planch.
- *Vitis* hybr.
- *Vitis* spp.
- *Vitis x andersonii* Rehder

Determining a Species' crop

On the Public Website, use the Descriptors page and enter the species:

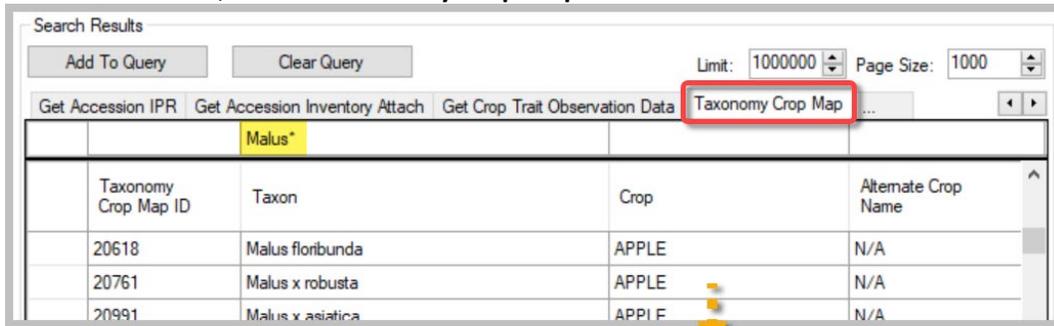
Step 1 – Choose Crop New Search

Filter dropdown Filter dropdown by genus, species or part of a taxon.

Search by crop Find Crop

APPLE Reset Crops Search

In the Search Tool, use the **Taxonomy Crop Map** dataview:



Search Results

Add To Query Clear Query Limit: 1000000 Page Size: 1000

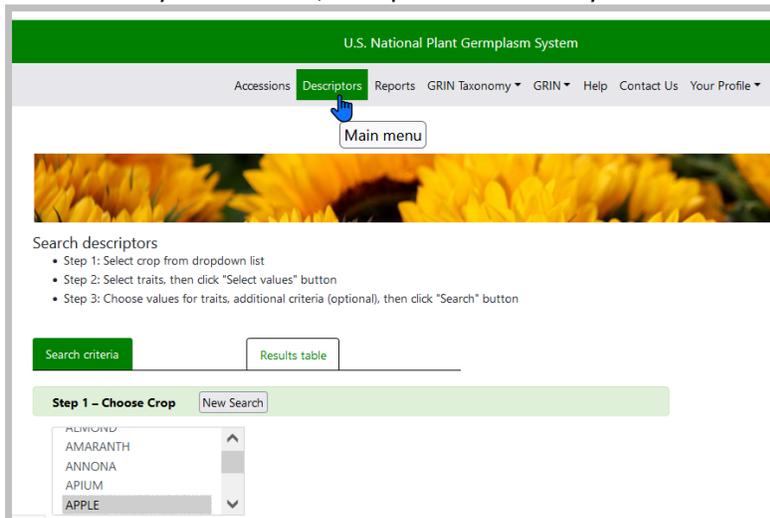
Get Accession IPR Get Accession Inventory Attach Get Crop Trait Observation Data **Taxonomy Crop Map**

Taxonomy Crop Map ID	Taxon	Crop	Alternate Crop Name
20618	Malus floribunda	APPLE	N/A
20761	Malus x robusta	APPLE	N/A
20991	Malus x asiatica	APPLE	N/A

Viewing Crop Observations in the Public Website

There are several ways to view observations in the Public Website. One method is to search by Descriptors – the Public Website has a **Descriptors** menu option.

To review any observation, a crop must be initially selected:



U.S. National Plant Germplasm System

Accessions **Descriptors** Reports GRIN Taxonomy GRIN Help Contact Us Your Profile

Main menu

Search descriptors

- Step 1: Select crop from dropdown list
- Step 2: Select traits, then click "Select values" button
- Step 3: Choose values for traits, additional criteria (optional), then click "Search" button

Search criteria Results table

Step 1 – Choose Crop New Search

AMARANTH
ANNONA
APIUM
APPLE

After the Crop is selected, if it has had observations associated with its inventory/accessions, a list of descriptors will display. This is an indication then that observations using these descriptors have been

made and are stored in the database. Using the checkboxes, the desired descriptors are selected.

Criteria can then be selected for each chosen descriptor:

Results (User can order germplasm, export the data, etc.)

*(Indicates frequency)

Download data
[Export with Options](#) [Export Fieldbooks](#)

Selected item(s) below:
[Add to Cart](#) [Add to Wish List](#) [View Accession Details](#)

Showing 1 to 10 of 116 entries

ACCESSION	NAME	TAXONOMY	ORIGIN	AVAILABILITY	IMAGE	FIRST_RIPE	FLAVOR
<input type="checkbox"/> CFRA 145	'Cambridge Favorite'	<i>Fragaria</i> <i>xananassa</i> Duchesne ex Rozier	England, United Kingdom	Historic		135	5 (1 = WORST, 9 = MOST TASTY)
<input type="checkbox"/> CFRA 218	'Marshall'	<i>Fragaria</i> <i>xananassa</i> Duchesne ex Rozier	Massachusetts, United States	Historic		142	5 (1 = WORST, 9 = MOST TASTY)
<input type="checkbox"/> PI 231090	'Marshall (Japan)'	<i>Fragaria</i> <i>xananassa</i> Duchesne ex	Massachusetts, United States	Not Available		142	5 (1 = WORST, 9 = MOST TASTY)

In the value boxes you can select actual values in the database. The condition dropdown is used to indicate the filtering condition -- "ANY" is the default, but you can change that to "GREATER THAN," "EQUAL TO," etc.

When using criteria boxes, you can select multiple criteria:

The screenshot shows two criteria selection boxes. The first is for 'BULB SHAPE' with 468 accessions. It has a dropdown menu set to 'Equal to' and a list of values: 'FL=FLAT', 'GL=GLOBE', and 'OV=OVAL'. The second is for 'LEAF COLOR' with 19 accessions. It has a dropdown menu set to '(Any)' and a list of values: '3=MEDIUM GREEN' and '5=DARK GREEN'.

Export with Options

The following window lists the additional columns that can be exported:

The screenshot shows a window titled 'Export Descriptors'. It has a section 'Fields downloaded automatically' with a list of fields: 'Accession prefix', 'Accession number', 'Actual evaluation/characterization value', 'Descriptor name', and 'Evaluation method name'. Below this are two buttons: 'Export Selected Traits' and 'Export All Traits'. There is also a section 'Optional fields' with a list of checkboxes: 'Accession suffix', 'Top name (cultivar or other identifier)', 'Species name', 'Country where collected/developed', 'Original value when observation value is standardized', and 'Frequency within the accession this observation value occurs'.

There is an additional feature available only to genebank staff who have their Public Website Username attached to their Curator Tool account – when they are logged in, on this window, they will see an

Export Fieldbooks button.

Available accessions

All conditions		
FRUIT JUICINESS	Greater than or equal to	3=MEDIUM .81 - .85
FRUIT WEIGHT	Greater than or equal to	5=200-250G
TENACITY OF FRUIT	Equal to	2=HOLDS PAST MATURITY, 3=PERSISTS WELL INTO WINTER

Search criteria Results table

*(Indicates frequency)

Download data

Export with Options **Export Fieldbooks**

Selected item(s) below:

Add to Cart Add to Wish List View Accession Details

Show/hide columns Show 10 rows Excel CSV Search:

Displaying CROP Descriptors, species, and other Information

Click the link to access additional lists.

Step 1 – Choose Crop New Search

ALMOND
AMARANTH
ANNONA
APIUM
APPLE

[Click for crop detail page.](#)

APPLE

Contains characteristic data on Apple (Malus) accessions as proposed by the Apple Crop Germplasm Committee (CGC). For additional information on the evaluations, contact the Plant Genetic Resources Unit, Geneva, NY 14456-0462, 315-787-2439

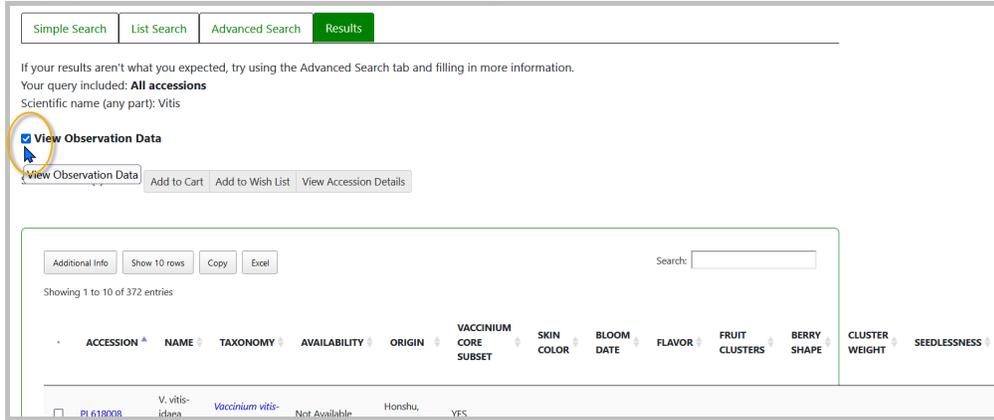
Descriptors Species Citations Methods Genetic Marker

Volatle Profiles of the Malus Core Collection article
Data generated for the above article (Excel format)
Classifying Cider Apple Germplasm Using Genetic Markers for Fruit Acidity

Public Website – Alternative Method for Displaying Descriptors

Under **Search Results**, you can select **View Observation Data**.

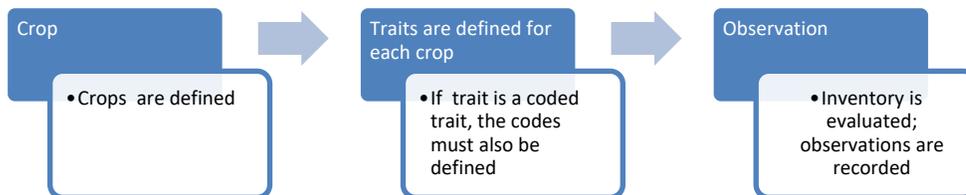
The search results display several columns of observations for accessions that met the search criteria. To display all of the observations, use the **Export** feature to create a CSV file for further review.



Curator Tool Overview of Crops

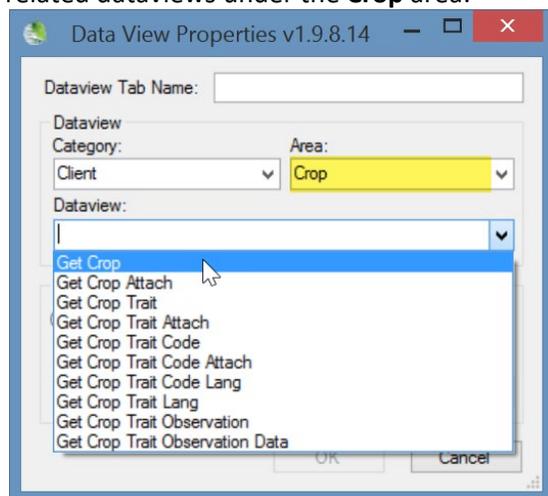
The Crop Group of Dataviews

Before a single observation for an accession can be recorded, the curator / genebank staff must define the crops, the traits, and any codes that may be used with specific traits.



Curator Tool Crop and Trait Dataviews

In the GRIN-Global, there is a “family” of inter-related tables; in the Curator Tool, you can see the related dataviews under the **Crop** area:



Each of these dataviews are described in detail in this document. Also, in [Appendix B](#), step-by-step directions explain how to create a descriptor.



The dataview labeled “**Crop Trait Observation**” supplies data that displays in the Public Website.

The **Crop Trait Observation Data** table was designed to hold raw data, with the intention that in a future CT release, an observation wizard would be designed to summarize the raw data into the **Observation** table/dataview. Currently, the data in the data table is independent and not aggregated in the **Crop Trait Observation summary** table. For NPGS, the GRIN data was transferred into the Observation table, hence use the Observation dataview to view the former GRIN records.

Another dataview critical for setting up crops, the **Taxonomy Crop Map** dataview, is in the **Taxonomy** area.

Creating Observation Records

Assuming the descriptors (“crop traits”) have already been added for the crops for which you are recording observations, in the Curator Tool you will use the **Observation** dataview to enter your evaluation results. In this section of the document, besides showing how to record observation records, a language switching option is explained so that you can input codes rather than their longer titles.



The observation requires a method to be indicated, so ensure that the relevant methods have been defined first before attempting to add observations. (Use the **Get Method** dataview.)

Get Crop Trait Observation

The **Crop Trait Observation** dataview has four *obvious* required fields:

- Inventory
- Crop
- Crop Trait
- Method

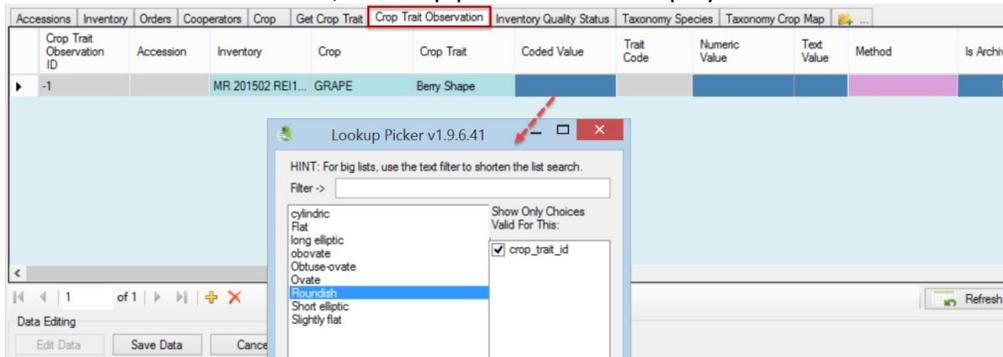
Accessions	Inventory	Orders	Cooperators	Crop	Crop Trait Observation	Crop Trait	Crop Trait Code	Crop Trait Lang	Crop Trait Code Lang	...
Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Text Value	Method	Is Archived?
-1										<input type="checkbox"/>



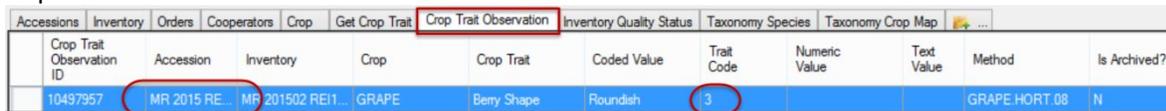
Violet colored cells are required; gray fields are read-only.

However, each observation record must have one of its three “value” fields filled in. The highlighted fields highlighted above– **Coded Value**, **Numeric Value**, and **Text Value** are mutually exclusive – only one of the three fields should be completed. There is no trigger to ensure this – it is possible that you can fill more than one field. But the only field that matters is the one defined by the **Trait** record.

When a trait is a coded field, a lookup picker window displays when that field is selected, as shown here:



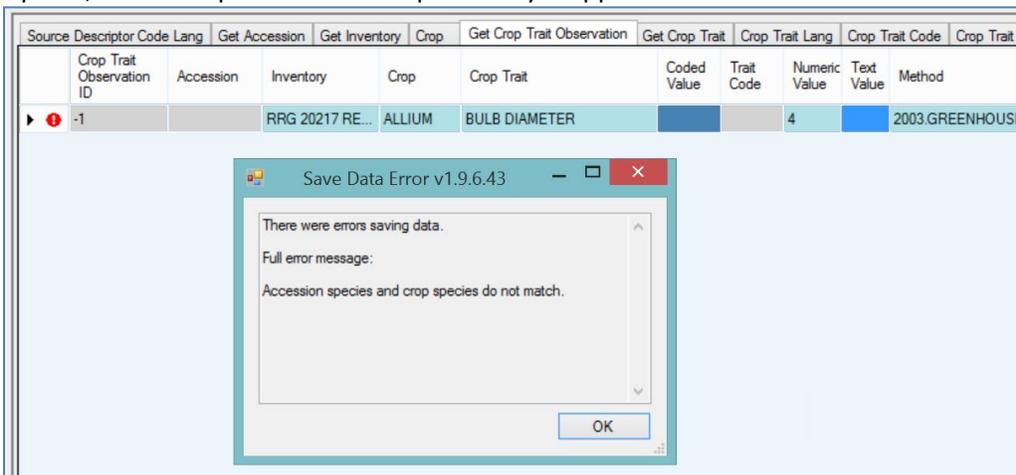
After the **Observation** record has been saved, the **Accession** and **Trait Code** fields fill in with their respective values:



Determination by a Trigger if the Accession Species Fits Under a Crop

When the user adds an observation, a trigger reviews a map table (the **Taxonomy Crop Map** table) to determine if the accession's species has been previously mapped to a crop. When that is the case, the observation must use the same crop. If the accession's taxon has not yet been mapped to a crop, then saving the observation record will map the species to a crop, thereby establishing a relationship going forward between the specified crop and the taxon.

The screen below shows what happens to an observation record being saved when the incorrect Crop is selected. In this case, the user should have selected HOPS, since the accession's taxon was *Humulus lupulus*, and that species had been previously mapped to HOPS.



Attach Observations to the Accession or Inventory?

Observations are typically associated with a specific inventory record; however, because of the flexibility provided by the schema design, an observation can be associated with *either* an inventory record (a specific “lot”) *or* with the accession in general. Also, frequently in the case of historical observations, they have been saved, but not associated with a specific inventory. Rather than lose this data, it can be recorded in GRIN-Global and associated with the accession’s system inventory record (type = “**”)

Accessions	Inventory	Orders	Cooperators	Crop	Get Crop Trait	Crop Trait Observation	Inventory Quality Status	Taxonomy Species	Taxonomy Crop Map	...
Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Text Value	Method	
10497957	MR 2015 RE...	MR 201502 RE18A	GRAPE	Berry Shape	Roundish	3			GRAPE.HC	
-2		PI 100000 **								

Bulk Importing of Observations

At some point you may have many observations to load into GRIN-Global. Inputting them one at a time is time consuming and inefficient, especially if you already have the data stored in a spreadsheet. Instead, it is much more practical to “bulk import” the observation data.



Many users will prefer working with the **Trait Codes** rather than their titles, (**Coded Values**), especially when bulk importing. Refer to the [English vs. ENG](#) section for more details.

Sample Observation Data for Apples

Get Site	Accessions	Accession Source	Inventory	Orders	Cooperators	Get Taxonomy Species	Get Crop	Get Crop Trait Observation	Source Descriptor	Source Descriptor Lang	Source Descriptor C
Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code					
4644682	PI 613844	PI 613844 k SG	APPLE	Fire Blight Shoot (Natural)	Very resistant -no occurrence	1					
4979138	PI 613844	PI 613844 k SG	APPLE	Fire Blight Blossom (Natural)	ML/M, intermediate	3					
5404444	PI 613844	PI 613844 **	APPLE	FRUIT BLOOM	ABSENT	1					
5404494	PI 613844	PI 613844 **	APPLE	FRUIT FLESH COLOR	YELLOW + ORANGE STANDARD: MALUS 'GOLDEN HORNET' GMAL-534	4+5					
5404545	PI 613844	PI 613844 **	APPLE	FRUIT FLESH FIRMNESS	SOFT STANDARD: MALUS X KANSUENSIS GMAL-167	1					
5404596	PI 613844	PI 613844 **	APPLE	FRUIT FLESH FLAVOR	ASTRINGENT STANDARD: M. CORONARIA	5					
5404646	PI 613844	PI 613844 **	APPLE	FRUIT FLESH OXIDATION	SLIGHTLY OXIDIZING 1-4%	2					
5404698	PI 613844	PI 613844 **	APPLE	FRUIT GROUND COLOR	RED STANDARD: MALUS 'CRANBERRY' GMAL-1063	8					

In the following scenario, assume that the observations being recorded are for the Apple trait **FRUIT JUICINESS**. **FRUIT JUICINESS** is a coded trait. There are several methods for determining what the possible valid codes are.

In EDIT mode, one simplistic method is to use the **Get Crop Trait Observation** dataview. Begin by adding a new record and then use the **Coded Value** lookup to determine what codes are valid for the descriptor. Unfortunately there isn’t an easy way to copy these codes into a spreadsheet, so you may transcribe them inaccurately if you attempt to type them.

Inventory	Orders	Cooperators	Get Taxonomy Species	Get Crop	Get Crop Trait Observation	Source Descriptor	Source Descriptor Lang	Source Descri
Inventory	Crop	Crop Trait	Coded Value			Trait Code		
PI 613844	APPLE	FRUIT SIZE UNIFORMITY	UNIFORM STANDARD: EMPIRE					1
PI 613844	APPLE	FRUIT STEM LENGTH						
PI 613844	APPLE	FRUIT STEM THICKNESS						1
PI 613844	APPLE	FRUIT WEIGHT						1
PI 613844	APPLE	FRUIT SHAPE (OVER)						5.0
PI 613844	APPLE	CALYX PERSISTENCE						3
PI 613844	APPLE	CALYX BASIN						2
PI 613844	APPLE	FRUIT TEXTURE						2
PI 613844	APPLE	STEM CAVITY						2
PI 613844	APPLE	FRUIT SHAPE (TOP)					GMAL-444	1
PI 613844	APPLE	FRUIT RUSSET INTENS						
PI 613844	APPLE	OVERCOLOR INTENS						
PI 613844	APPLE	OVERCOLOR PATTER						1
PI 613844	APPLE	HARVEST SEASON						8
PI 613844	APPLE	Ploidy Level						2x
PI 613844	APPLE	BUDBREAK	Fullswell					3
	APPLE	FRUIT JUICINESS						

Lookup Picker v1.9.6.41

HINT: For big lists, use the text filter to shorten the list search.

Filter ->

DRY 76 - 80
MEDIUM .81 - .85
MOD. JUICY .86 - .90
VERY DRY < .75
VERY JUICY > .90

Show Only Choices
Valid For This:
 crop_trait_id

Refresh List OK Cancel

A safer way to get the codes is to use the Search Tool.

GRIN-Global Search v1.9.6.41

Basic Query

Search Now! 2 Limit: 500

Find: Default accession

Matching: Any Word All Words List of Items

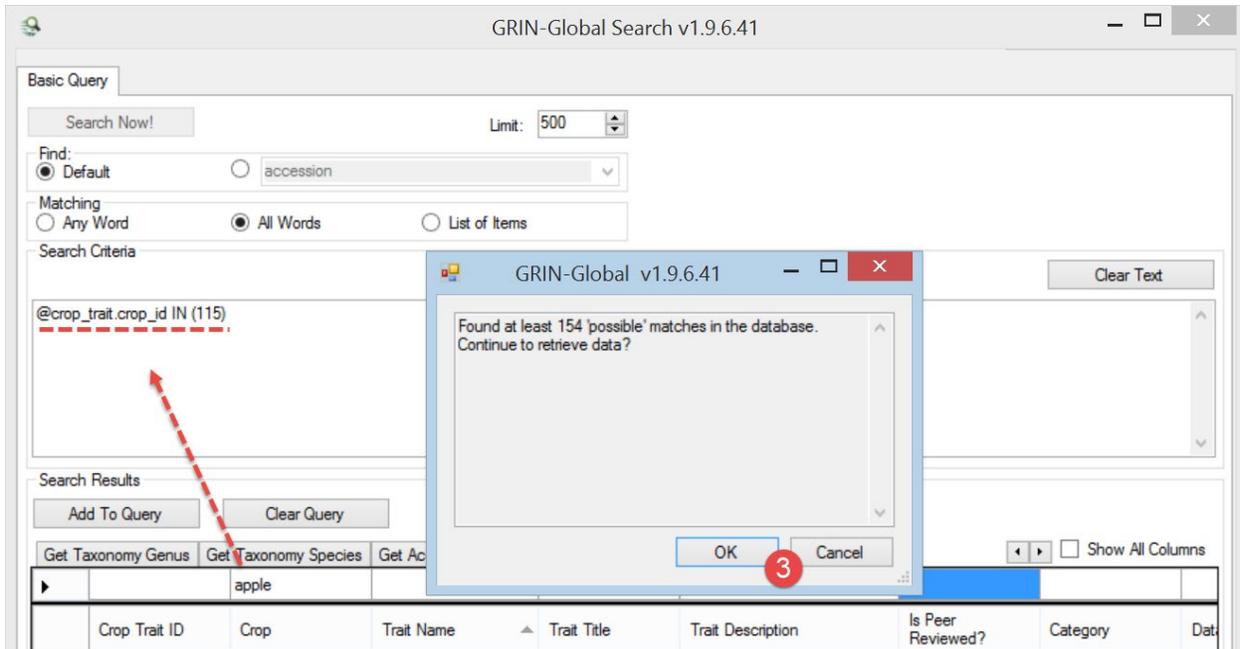
Search Criteria Clear Text

Search Results

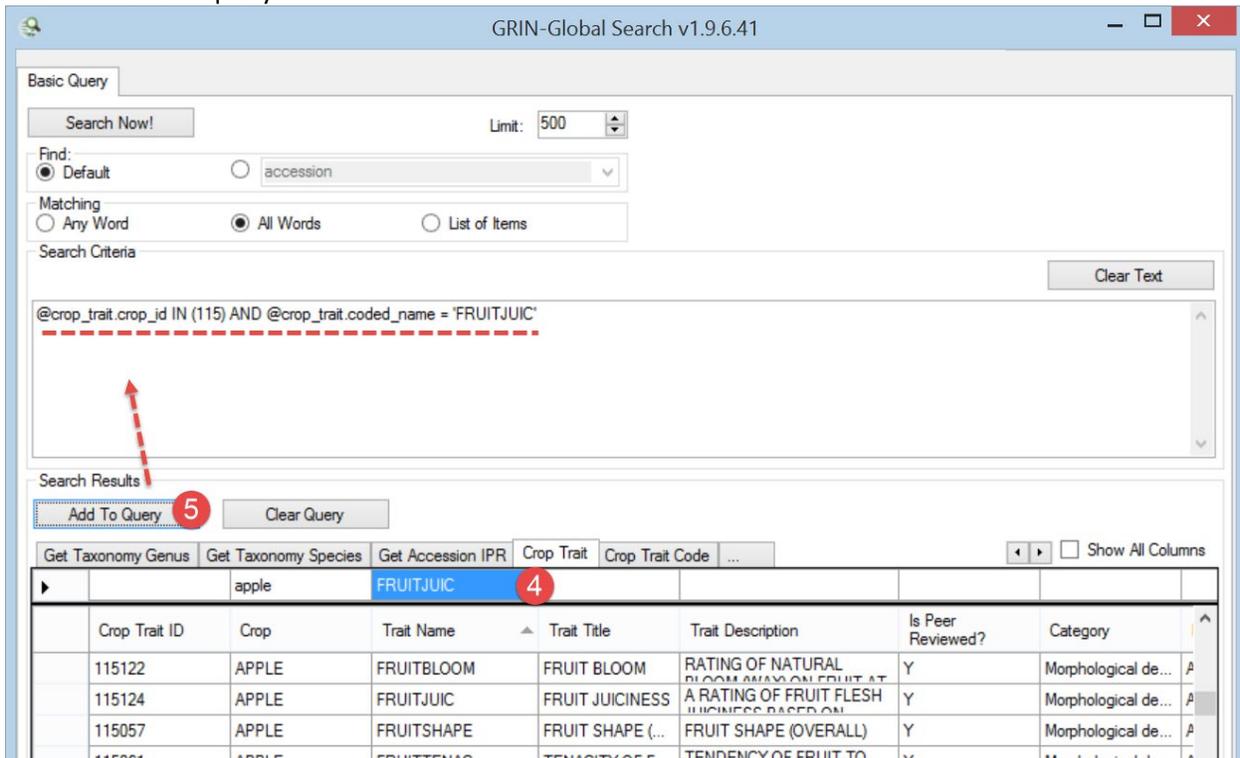
Add To Query Clear Query

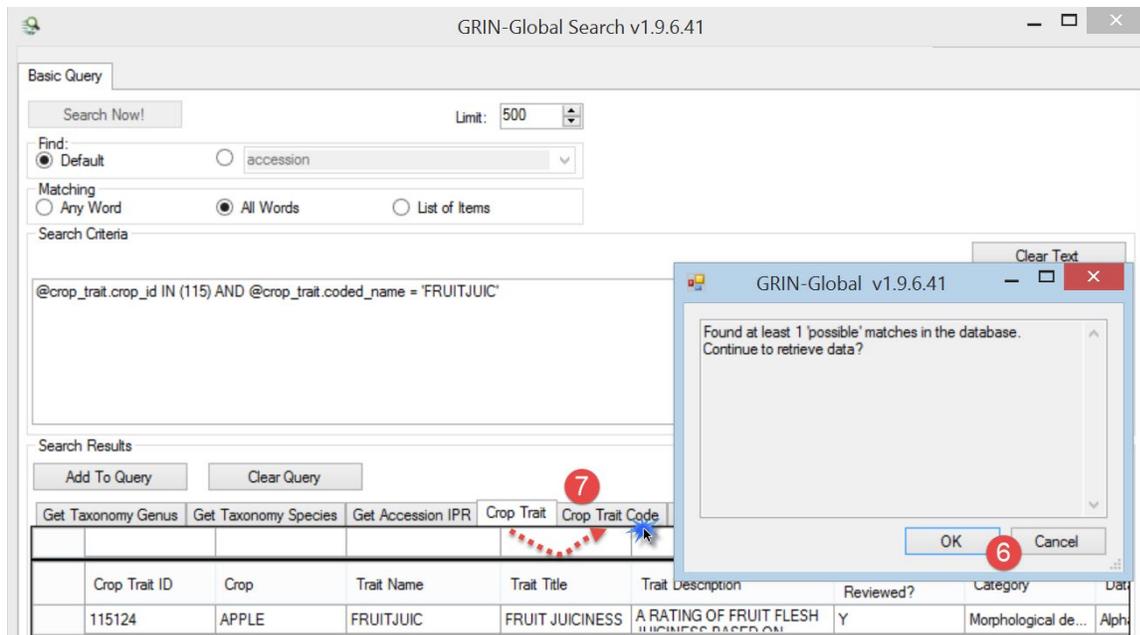
Get Taxonomy Genus Get Taxonomy Species Get Accession IPR Crop Trait Crop Trait Code ... Show All Columns

Crop Trait ID	Crop	Trait Name	Trait Title	Trait Description	Is Peer Reviewed?	Category	Date
	apple 1						

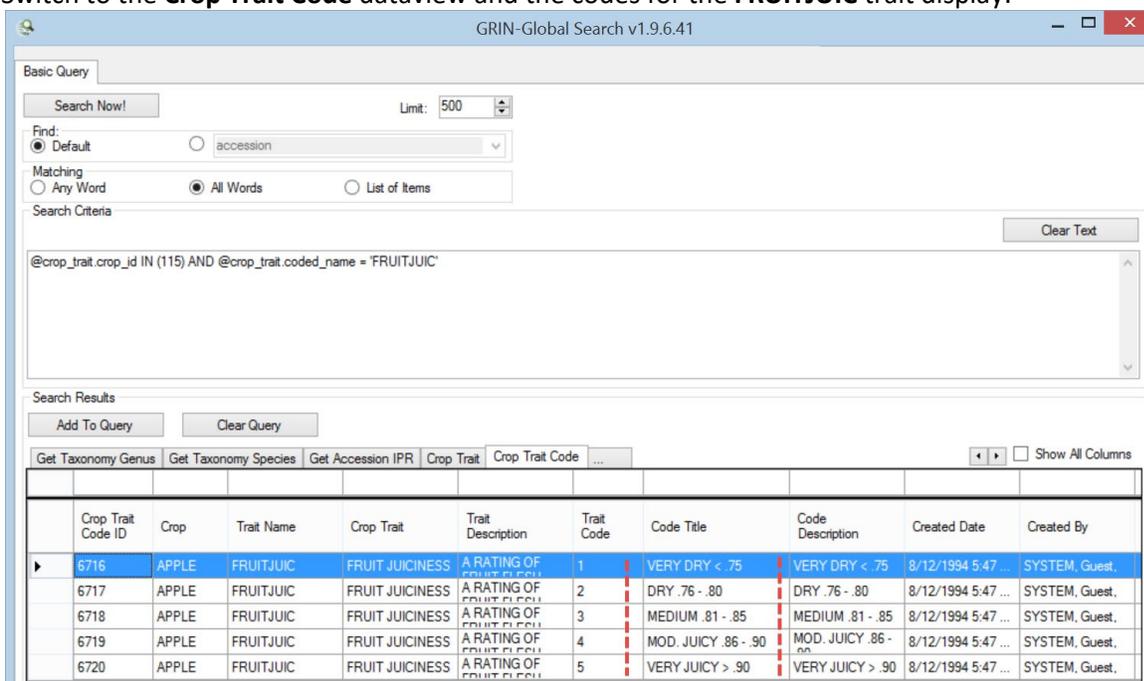


Sorting the list of records found by the Trait Name and scrolling down the list will display the row for **FRUIT JUICINESS**. Notice that the **Trait Title** is *FRUIT JUICINESS*; the **Trait Name** is *FRUITJUIC*. Add *FRUITJUIC* to the query:





Switch to the **Crop Trait Code** dataview and the codes for the **FRUITJUIC** trait display:



You can highlight the rows (in this case the five records for FRUIT JUICINESS) and drag them into Excel:

	A	B	C	D	E	F	G	H
1	Crop Trait	Crop	Trait Name	Crop Trait	Trait Description	Trait Code	Code Title	Code Description
2	6720	APPLE	FRUITJUIC	FRUIT JUICINESS	A RATING OF FRUIT FLESH JUICINESS BASED ON	5	VERY JUICY > .90	VERY JUICY > .90
3	6719	APPLE	FRUITJUIC	FRUIT JUICINESS	A RATING OF FRUIT FLESH JUICINESS BASED ON	4	MOD. JUICY .86 - .90	MOD. JUICY .86 - .90
4	6718	APPLE	FRUITJUIC	FRUIT JUICINESS	A RATING OF FRUIT FLESH JUICINESS BASED ON	3	MEDIUM .81 - .85	MEDIUM .81 - .85
5	6717	APPLE	FRUITJUIC	FRUIT JUICINESS	A RATING OF FRUIT FLESH JUICINESS BASED ON	2	DRY .76 - .80	DRY .76 - .80
6	6716	APPLE	FRUITJUIC	FRUIT JUICINESS	A RATING OF FRUIT FLESH JUICINESS BASED ON	1	VERY DRY < .75	VERY DRY < .75

Now let's see what is needed to save an observation record.

In this partial screen capture of a **Crop Trait Observation** dataview, because of the violet color, we can determine that four fields are required:

Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Text Value	Method
5404596	PI 613844	PI 613844 **	APPLE	FRUIT FLESH FLAVOR	ASTRINGENT STANDARD: M. C...	5			APPLE.MORPHOLOGI...
5404646	PI 613844	PI 613844 **	APPLE	FRUIT FLESH OXIDATION	SLIGHTLY OXIDIZING 1-4%	2			APPLE.MORPHOLOGI...
5404698	PI 613844	PI 613844 **	APPLE	FRUIT GROUND COLOR	RED STANDARD: MALUS CRAN...	8			APPLE.MORPHOLOGI...
5404742	PI 613844	PI 613844 **	APPLE	FRUIT JUICINESS	VERY JUICY > .90	5			APPLE.MORPHOLOGI...
5404794	PI 613844	PI 613844 **	APPLE	FRUIT LENGTH			11.00000		APPLE.MORPHOLOGI...
5404846	PI 613844	PI 613844 **	APPLE	FRUIT WIDTH			11.00000		APPLE.MORPHOLOGI...
10466247	PI 613844	PI 613844 **	APPLE	Ploidy Level	Diploid	2x			MALUS.PLOIDYDETE...
10481111	PI 613844	PI 613844 **	APPLE	BUDBREAK	Fullswell	3			APPLE.MORPHOLOGI...

Required Fields:

- Inventory
- Crop
- Crop Trait
- Method
- and also, not highlighted in pink, one of the three “Value” fields

If the trait was defined as a coded descriptor, then you also need to supply a valid code in the **Coded Value** field. Notice in the above example that the **Trait Code** column has a gray color, indicating that in this dataview you cannot input or drag data into this field.

In the Curator Tool, with the **Crop Trait Observation** dataview active, drag a record that already has the Crop Trait **FRUIT JUICINESS** to a spreadsheet:

Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Text Value	Method
5404646	PI 613844	PI 613844 **	APPLE	FRUIT FLESH OXIDATION	SLIGHTLY OXIDIZING 1-4%	2			APPLE.MORPHOLOGI
5404698	PI 613844	PI 613844 **	APPLE	FRUIT GROUND COLOR	RED STANDARD: MALUS CRAN...	8			APPLE.MORPHOLOGI
5404742	PI 613844	PI 613844 **	APPLE	FRUIT JUICINESS	VERY JUICY > .90	5			APPLE.MORPHOLOGI
5404794	PI 613844	PI 613844 **	APPLE	FRUIT LENGTH			11.00000		APPLE.MORPHOLOGI
5404846	PI 613844	PI 613844 **	APPLE	FRUIT WIDTH			11.00000		APPLE.MORPHOLOGI
5404897	PI 613844	PI 613844 **	APPLE	FRUIT WEIGHT	> 50g	1			APPLE.MORPHOLOGI

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Text Value	Method	Is Archived ?	Data Quality	Original Value	Frequency
2		5404742	PI 613844	PI 613844 **	APPLE	FRUIT JUICINESS	VERY JUICY > .90	5		APPLE.MORPHOLOGIC.00	N			
3														
4														

Now you can use the spreadsheet as a template for building your observation records. In this scenario we are only illustrating the bulk adding of **FRUIT JUICINESS** observations, but you can add any observations, as long as you provide the required fields and when traits are coded traits, you provide valid codes.

Previously we had dumped the valid codes into a spreadsheet. Use the values from the **Crop Trait Code** dataview’s **Code Title** column when creating the observation records. (Further below, in the [English vs. ENG](#) section, we’ll discuss how you can use the **Trait Codes** instead.)



If you setup your spreadsheet with the valid **Crop Trait Code** dataview's **Code Title** values directly above the **Code Value** heading, you will benefit from Excel's handy feature which supplies an item from the list as you type.

Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Text Value	Method	Is Archived?	Data Quality	Original Value
		PI 613844 **	APPLE	FRUIT JUICINESS	VERY JUICY > .90				APPLE.MORPHOLOGIC.00	N		

Eventually you will have the new observation data in the spreadsheet ready to be dragged into the Curator Tool. Highlight the headings – you do not need them all, but you must include the empty **Crop Trait Observation ID** column. Including the empty **Accession** column is fine.

Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Text Value	Method	Is Archived?
		PI 613844 **	APPLE	FRUIT JUICINESS	VERY JUICY > .90	5			APPLE.MORPHOLOGIC.00	N
		PI 589762 .01 PL	APPLE	FRUIT JUICINESS	DRY .76 - .80				APPLE.MORPHOLOGIC.00	
		PI 589762 .01 PL	APPLE	FRUIT JUICINESS	VERY DRY < .75				APPLE.MORPHOLOGIC.00	
		PI 589738 .01 PL	APPLE	FRUIT JUICINESS	MOD. JUICY .86 - .90				APPLE.MORPHOLOGIC.00	

After dragging into the CT, but before saving:

Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Text Value	Method
-1		PI 613844 **	APPLE	FRUIT JUICINESS	VERY JUICY > .90				APPLE.MORPHOLOGIC.00
-2		PI 589762 .01 PL	APPLE	FRUIT JUICINESS	DRY .76 - .80				APPLE.MORPHOLOGIC.00
-3		PI 589762 .01 PL	APPLE	FRUIT JUICINESS	VERY DRY < .75				APPLE.MORPHOLOGIC.00
-4		PI 589738 .01 PL	APPLE	FRUIT JUICINESS	MOD. JUICY .86 - .90				APPLE.MORPHOLOGIC.00

After the Save:

Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Text Value	Method
10481118	PI 589762	PI 589762 .01 PL	APPLE	FRUIT JUICINESS	DRY .76 - .80	2			APPLE.MORPHOLOGIC.00
10481119	PI 589762	PI 589762 .01 PL	APPLE	FRUIT JUICINESS	VERY DRY < .75	1			APPLE.MORPHOLOGIC.00
10481120	PI 589738	PI 589738 .01 PL	APPLE	FRUIT JUICINESS	MOD. JUICY .86 - .90	4			APPLE.MORPHOLOGIC.00

Why only three records in the CT whereas the Excel table had four? The first record, which we used as a template, was already in the database. During the save process, the Curator Tool highlights the duplicate and does not allow it to be saved again. Since it was already in the database, we only saved the three new records. A better alternative would have been for the staff person to first delete the row of the previously existing observation record, and only drag to the CT the three new data rows (and the heading row).

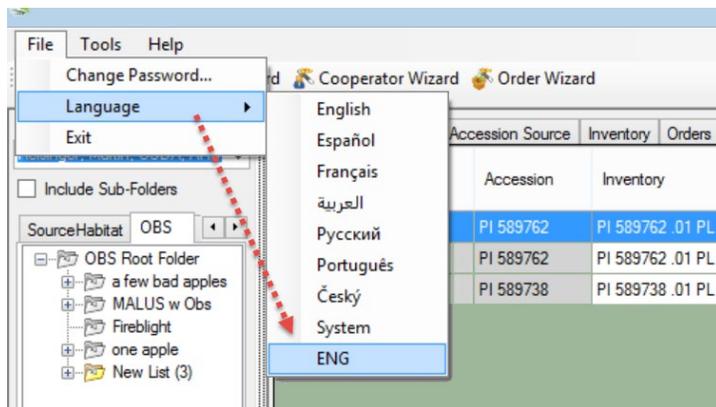
As an aside, the three observations in this example were associated to inventory records, not accessions. Remember that observations associated with [system inventory records](#) are associated to the accession.

English vs. ENG

A set of “ENG” dataviews were created to allow the codes to be used, rather than the lengthier titles. Some people prefer using the ENG dataviews because less typing is typically involved, reducing the chance of typos.

Get Site	Accessions	Accession Source	Inventory	Orders	Cooperators	Get Taxonomy Species	Get Crop	Get Crop Trait Observation	Source Descriptor	Source Descriptor Lang	Source Descriptor Cr	
	Crop Trait Observation ID	Accession	Inventory		Crop	Crop Trait	Coded Value		Trait Code	Numeric Value	Text Value	Method
	10481118	PI 589762	PI 589762 .01 PL		APPLE	FRUIT JUICINESS	DRY .76 - .80		2			APPLE.MORPHOLOG
	10481119	PI 589762	PI 589762 .01 PL		APPLE	FRUIT JUICINESS	VERY DRY < .75		1			APPLE.MORPHOLOG
	10481120	PI 589738	PI 589738 .01 PL		APPLE	FRUIT JUICINESS	MOD. JUICY .86 - .90		4			APPLE.MORPHOLOG

In the CT, rarely used is a feature in which the CT user selects his preferred language. (Historically, GG was designed to work with any language, but in reality, almost all genebanks prefer English. Over time, the headings’ text in the other language’s dataviews have not been maintained, so switching to a different language is no longer recommended. Using ENG is the one exception.



After you switch languages, you will be prompted to update your lookup tables. Since we are only working with the descriptors, we only need to update two:



(The screen capture above illustrates that the **Crop Trait Lookup** has already completed, but the updating of the **Crop Trait Code Lookup** is still in progress.)

Click the **Refresh** button, and the Observation dataview (ENG) now looks like this:

Get Site	Accessions	Accession Source	Inventory	Orders	Cooperators	Get Taxonomy Species	Get Crop	Get Crop Trait Observation	Source Descriptor	Source Descriptor Lang	Source Descriptor Ci
	Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait		Coded Value	Trait Code	Numeric Value	Text Value	Method
	10481118	PI 589762	PI 589762 .01 PL	APPLE	FRUIT JUIC		2	2			APPLE MORPHOLOG
	10481119	PI 589762	PI 589762 .01 PL	APPLE	FRUIT JUIC		1	1			APPLE MORPHOLOG
	10481120	PI 589738	PI 589738 .01 PL	APPLE	FRUIT JUIC		4	4			APPLE MORPHOLOG

Compare the ENG version above with the English version we saw previously:

Get Site	Accessions	Accession Source	Inventory	Orders	Cooperators	Get Taxonomy Species	Get Crop	Get Crop Trait Observation	Source Descriptor	Source Descriptor Lang	Source Descriptor Ci
	Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait		Coded Value	Trait Code	Numeric Value	Text Value	Method
	10481118	PI 589762	PI 589762 .01 PL	APPLE	FRUIT JUICINESS		DRY 76 - 80	2			APPLE MORPHOLOG
	10481119	PI 589762	PI 589762 .01 PL	APPLE	FRUIT JUICINESS		VERY DRY < 75	1			APPLE MORPHOLOG
	10481120	PI 589738	PI 589738 .01 PL	APPLE	FRUIT JUICINESS		MOD JUICY 85 - 90	4			APPLE MORPHOLOG

Notice especially the **Crop Trait** and the **Coded Value** fields. The **ENG** version is much simpler to bulk update.

Typically, CT users after completing their bulk updating will switch from the **ENG** language version back to **English**. The same two lookup tables, now the English version, will need to be updated before proceeding.

The following is another example. In this example, the *Crop Trait Fruit Shape* for the crop Watermelons is shown:

English Version:

Accessions	Inventory	Orders	Cooperators	Crop	Get Crop Trait	Crop Trait Lang	Crop Trait Code Lang	Crop Trait Observation	Inventory Quality Status	Taxonomy Species	Tax
Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Text Value	Method	Is Ar	
4714749	PI 596658	PI 596658 **	WATERMELON	Fruit shape	Round	1			WATERMELON.1...		
4714750	PI 596659	PI 596659 **	WATERMELON	Fruit shape	Oblong	3			WATERMELON.1...		
4714759	PI 596662	PI 596677 **	WATERMELON	Fruit shape	Variable	9			WATERMELON.1...		
4714760	PI 596686	PI 596686 **	WATERMELON	Fruit shape	Oblate	2			WATERMELON.1...		
4714761	PI 596691	PI 596691 **	WATERMELON	Fruit shape	Round	1			WATERMELON.1...		
4714762	PI 596692	PI 596692 **	WATERMELON	Fruit shape	Round	1			WATERMELON.1...		
4714763	PI 596696	PI 596696 **	WATERMELON	Fruit shape	Oblong	3			WATERMELON.1...		
-1656											

ENG Version:

Accessions	Inventory	Orders	Cooperators	Crop	Get Crop Trait	Crop Trait Lang	Crop Trait Code Lang	Crop Trait Observation	Inventory Quality Status	Taxonomy Species	Tax
Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Text Value	Method	I	
4714749	PI 596658	PI 596658 **	WATERMELON	FRUITSHAPE	1	1			WATERMELON.1...		
4714750	PI 596659	PI 596659 **	WATERMELON	FRUITSHAPE	3	3			WATERMELON.1...		
4714759	PI 596662	PI 596677 **	WATERMELON	FRUITSHAPE	9	9			WATERMELON.1...		
4714760	PI 596686	PI 596686 **	WATERMELON	FRUITSHAPE	2	2			WATERMELON.1...		
4714761	PI 596691	PI 596691 **	WATERMELON	FRUITSHAPE	1	1			WATERMELON.1...		
4714762	PI 596692	PI 596692 **	WATERMELON	FRUITSHAPE	1	1			WATERMELON.1...		
4714763	PI 596696	PI 596696 **	WATERMELON	FRUITSHAPE	3	3			WATERMELON.1...		
-1656											

Another GG document, [English vs. ENG](#), has more details on working with the **ENG** alternative language, but for the purpose of working with crop traits, the information above should be adequate.

Archived Observations

Observation records have a TRUE/FALSE flag indicating whether the data for this observation has been archived. The default is "N." However, when set to "Y," the GRIN-Global Public Website user will not be able to search this observation data, and the observation record is not displayed in the observation detail page. This term "archived" may be misleading to some – the records are not being moved or archived somewhere else, they are simply no longer visible on the Public Website.

Descriptor Standards and Guidelines

Refer to Bioversity's webpage on [descriptors and standards](#) and their Technical Bulletin Number 13, "[Developing crop descriptor lists, Guidelines for developers](#)" which cover the topic of crop descriptors in detail. Their webpage on descriptors states: "Descriptors lists and Derived Standards represent an important tool for a standardized characterization system and it is promoted by Bioversity throughout the world. It provides an international format and a universally understood 'language' for plant genetic resources data. The adoption of this scheme for data encoding, or at least the production of a transformation method to convert other schemes to the Bioversity format, will produce a rapid, reliable and efficient means for information exchange, storage, retrieval and communication, and will assist with the utilization of germplasm."

The following definitions of descriptors are from the International Board for Plant Genetic Resources (IBPGR):

- characterization descriptors: "consists of recording those characters which are highly heritable, can be easily seen by the eye and are expressed in all environments."
- preliminary evaluation descriptors: "consists of recording a limited number of additional traits thought desirable by a consensus of users of the particular crop."

The Crop "Family" of Dataviews

Overview

There are five crop-related dataviews that need to be considered when setting up the crops and crop traits for your organization *before Observations can be recorded*.

Crop

The hierarchy of the observation tables begins with the Crop table. Historically in the GRIN system, the Crop data table was not necessarily set up using scientific names, since the expectation was that the public users would be more familiar with common rather than taxonomic names.

Crop Dataview

Two fields in this dataview can be inputted:

- **Crop** (required)
- **Note**

The note for each crop provides some general details about who is responsible for maintaining the crop descriptors or where additional information can be found. In setting up crop characterization and evaluation descriptor:

Crop ID	Crop	Note	Created Date
285	BLACKBERRY	Contains characteristic data on Blackberry accessions maintained at the...	7/11/2011
286	BLACK-RASPBERRY	Contains characteristic data on Black Raspberry accessions maintained ...	7/11/2011
287	RED-RASPBERRY	Contains characteristic data on Red Raspberry accessions maintained a...	7/11/2011
289	SORGHUM-GENSTOCKS	Contains data on the Sorghum Genetic Stock Collection. For additional i...	8/19/2011
400	RICE-GENETIC STOCKS	Contains evaluation/selection data on Core Collection Rice Genetic Stock from...	4/23/2011
300	AVOCADO	Contains characteristic data on Avocado (Persea), accessions. For addit...	4/23/2011
301	CASSAVA		6/21/2013
400	CHAYOTE	Contains characteristic data on chayote.	2/22/2013
-191			12/5/2013 10:41 AM

Notes in the Crop record will be visible on the Public Website crop page:

Crop ID	Crop	Note	Created By	Owr
68	ALFALFA	Contains characteristic/evaluation data on Alfalfa (Medicago) accessions as proposed by the Alfalfa Crop Germplasm Committee (CGC). For additional information contact the curator: Brian M. Irish, Ph.D. USDA-ARS, PGITRU Temperate-adapted Forage Legumes 24106 N. Bunn Road Prosser, WA 99350-9687 Phone: (509) 786-9316 Email: brian.irish@usda.gov	SYSTEM, Guest,	Tayl

Public Website

ALFALFA

Contains characteristic/evaluation data on Alfalfa (Medicago) accessions as proposed by the Alfalfa Crop Germplasm Committee (CGC). For additional information contact the curator:

Brian M. Irish, Ph.D.
USDA-ARS, PGITRU
Temperate-adapted Forage Legumes
24106 N. Bunn Road
Prosser, WA 99350-9687
Phone: (509) 786-9316
Email: brian.irish@usda.gov

In the **Note** field, the HTML code `
` that controls line breaks was used to produce a nice format.

Method

Methods provide a narrative – details of the observations are stored in the database for later reference. Before any observations are recorded, the relevant method must be defined. For observations, the method typically describes where and how the plant was grown and tested. When creating method records, include details – provide specifics and adequate information about the environment, the trial, etc.

Method ID	Name	Geography	Elevation (meters)	Latitude	Longitude	Uncertainty	Formatted Locality	
497036	ProcinorteN	name -- The name describing the method environment and/or procedure						

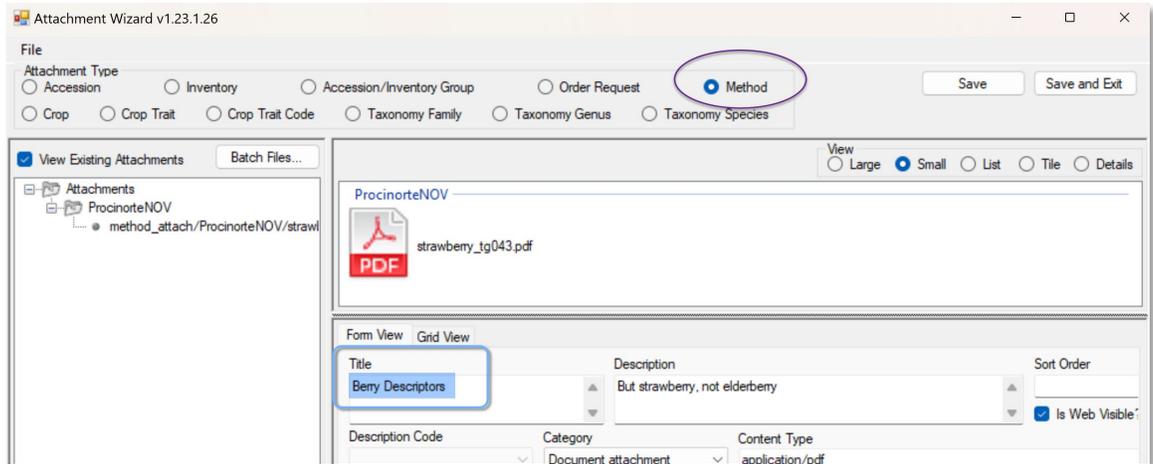
the method environment and/or procedure

- What you measure (e.g., plant height, days to flowering, days to harvest)
- How you measure (using a ruler, instrument, laboratory equipment, etc.)
- When you measure it (early vegetative stage, early reproductive stage, flowering stage, harvest)
- Who you have followed when obtaining descriptors (FAO, Bioversity, UPOV)

- Any changes or additions to the list of descriptors (modified or new descriptors)
- How you have controlled different factors that affect characterization data



Consider describing the method in a document (PDF) and save as a **Method Attachment**



Crop Trait

Crop Trait Dataview

This dataview accesses the descriptor table for the crop or descriptor set. It includes both characterization (plant height, oil content, days to flower, etc.) and evaluation parameters (resistance to an insect species, response to fertilizer, etc.) Required fields:

- Crop
- Trait Name
- Category
- Data Type

A new **Crop Trait** being added (not saved yet):

Source	Descriptor Code	Lang	Get Accession	Get Inventory	Crop	Get Crop Trait Observation	Get Crop Trait	Crop Trait Lang	Crop Trait Code	Crop Trait Code Lang	Get Site	Inventory
	Crop Trait ID	Crop	Trait Name	Trait Title	Trait Description	Is Peer Reviewed?	Category	Data Type	Is Coded?	Maximum Length	Numer Format	
	-1	ELDERBERRY	LEAFCOLOR			<input checked="" type="checkbox"/>	Morphologi...	Alpha/numeric d...	<input checked="" type="checkbox"/>	1		
	-2	ELDERBERRY	PLANTSIXE			<input checked="" type="checkbox"/>	Morphologi...	Alpha/numeric d...	<input type="checkbox"/>	20		
	-3					<input type="checkbox"/>	[Null]	[Null]	<input type="checkbox"/>			

Three Observation Types: Numeric, Text, and Coded

A trait is designed to hold one of three kinds of values. When recording an observation record, one of the values is required. The trait determines which is to be entered:

- Text
- Numeric
- Coded

On the PW, the user will be expected to select the respective criteria matching one of the three types.

Examples are also online at:

https://rrginc.com/gg_training/resources/2024_nordgen_descriptors/session4_descriptors_nordgen_2024mar06.pdf

When defining the trait in the CT, two fields determine the data type:

Value type	Field: Data Type	Field: Is Coded?
Text	Alpha/numeric descriptor	- no -
Numeric	Numeric descriptor	- no -
Coded	Can be any Data Type , but Numeric is recommended	- yes -

Crop Trait ID	Crop	Trait Name	Trait Title	Trait Description	Is Peer Reviewed	Category	Data Type	Is Coded?	Maximum Length	N. Fo
375965	ELDERB...	ELDERNOTATI...	Notes	Field notes	<input type="checkbox"/>	General information	Alpha/numeric descriptor	<input type="checkbox"/>		
375966	ELDERB...	ELHEIGHT	Height (m)	Ht measured at center stem	<input type="checkbox"/>	Morphological descriptors	Numeric descriptor	<input type="checkbox"/>	5	#.F
375967	ELDERB...	BERRYCOLOR	Berry color	Dominant color of the berries	<input type="checkbox"/>	Morphological descriptors	Alpha/numeric descriptor	<input checked="" type="checkbox"/>	1	

Data Type	Is Coded?
Alpha/numeric descriptor	<input type="checkbox"/>
Numeric descriptor	<input type="checkbox"/>
Alpha/numeric descriptor	<input checked="" type="checkbox"/>

Numeric Traits

In the following illustration, Ear Height has been designed as a numeric trait.

Ear Height
Number of accessions (5476)

Equal to v

206 ^

207

208

210 v

Crop	Trait Name	Trait Title	Trait Description	Is Peer Reviewed?	Category	Data Type	Is Coded?	Maximum Length
MAIZE	EAR-HEIGHT	Ear Height	HEIGHT OF THE TOP EAR ON THE CENTRAL STALK FROM GROUND LEVEL TO THE NODE WHERE THE EAR ATTACHES TO THE STALK.	Y	Morphological descriptors	Numeric descriptor	N	4

When defining a numeric trait, you may want to indicate how the number can be formatted as well as a possible range. There are four fields that assist in controlling allowed values.

Category	Data Type	Is Coded?	Maximum Length	Numeric Format	Numeric Maximum	Numeric Minimum	Original Value Type
Morphological descr...	Numeric descriptor	N	4	##0			

Maximum and **Minimum** are self-explanatory and are perhaps the most useful; by setting these, you can control what range of allowable values. Another field, the **Maximum Length**, is referring to the number of allowed digits. The **Numeric Format** field is not as intuitive. If used, the most frequently used symbols are the #, the 0, and the decimal point. Three examples are shown below.

Numeric Format Explained

Format specifier	Name	Description	Examples
"0"	Zero placeholder	Each zero placeholder is replaced with the corresponding digit when present; otherwise, zero displays	1234.5678 ("00000") -> 01235 0.45678 ("0.00") -> 0.46
"#"	Digit placeholder	Replaces the "#" symbol with the corresponding digit when present; otherwise, no digit displays. No digit displays if the corresponding digit in the input	1234.5678 ("#####") -> 1235 0003 ("#####") -> 3 0.45678 ("#.###") -> .46

		string is a non-significant 0.	
","	Decimal point	Determines the location of the decimal separator in the result string.	0.45678 ("0.00", en-US) -> 0.46

Coded Traits

The following is an example of a coded trait. With **Ear Shape**, five codes, 1 thru 5, have been defined.:

Ear Shape
Number of accessions (8248)

Equal to ▼

1=CYLINDRICAL

2=CYLINDRICAL - CONICAL

3=CONICAL

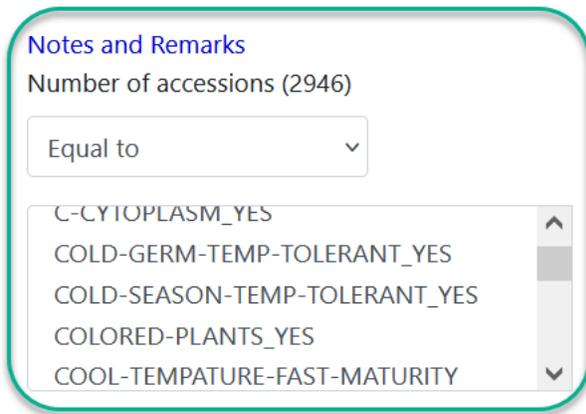
4=ROUND

Trait Observation								Get Crop Trait Observation Data	Get Method	Crop Trait	Get Crop	Crop Trait Code	...
Crop	Trait Name	Trait Title	Trait Description	Is Peer Reviewed?	Category	Data Type	Is Coded?	Maximum Length					
MAIZE	EAR-SHAPE	Ear Shape	SHAPE OF THE UPPERMOST EAR	Y	Morphological descriptors	Alpha/numeric descriptor	Y	1					

Crop Trait Observation								Get Crop Trait Observation Data	Get Method	Crop Trait	Get Crop	Crop Trait Code	...
Crop Trait Code ID	Crop	Trait Name	Crop Trait	Trait Description	Trait Code	Code Title	Code Description						
3956	MAIZE	EAR-SHAPE	Ear Shape	SHAPE OF THE UPPERMOST EAR	1	CYLINDRICAL	CYLINDRICAL						
3957	MAIZE	EAR-SHAPE	Ear Shape	SHAPE OF THE UPPERMOST EAR	2	CYLINDRICAL - CONICAL	CYLINDRICAL - CONICAL						
3958	MAIZE	EAR-SHAPE	Ear Shape	SHAPE OF THE UPPERMOST EAR	3	CONICAL	CONICAL						
3959	MAIZE	EAR-SHAPE	Ear Shape	SHAPE OF THE UPPERMOST EAR	4	ROUND	ROUND						
3960	MAIZE	EAR-SHAPE	Ear Shape	SHAPE OF THE UPPERMOST EAR	5	FASCIATED	FASCIATED						

Text Traits

A text trait is just that, text is stored for the trait's values. In this example, at first you might think it is coded, but each phrase in the criterion box is actual text that was recorded in an observation.



The Trait is Text because of what it isn't – it isn't Coded, and the **Data Type** is not numeric.

Crop	Trait Name	Trait Title	Trait Description	Is Peer Reviewed?	Category	Data Type	Is Coded?	Ma
MAIZE	NOTES	Notes and Remarks	Observations made by cooperators or curators while evaluating or regenerating gemplasm. Usually these observations are not published and need verification or there are too few observations of this type to promote a separate trait.	N	General information	Alpha/numeric descriptor	N	80

The curator decided there were too many possibilities to set up as coded, but he did use the text consistently.

Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Mean Value	Text Value	Method
PI 607391 **	MAIZE	Notes and Remarks					SOUTHERN-LEAF-BLIGHT-RESIS_YES	MAIZE.DONOR
PI 607391 **	MAIZE	Notes and Remarks					ANTHRACNOSE-RESISTANT_YES	MAIZE.DONOR
PI 607388 **	MAIZE	Notes and Remarks					ANTHRACNOSE-RESISTANT_YES	MAIZE.DONOR
PI 594048 **	MAIZE	Notes and Remarks					GRAY-LEAF-SPOT-RESISTANT_YES	MAIZE.DONOR
PI 517873 **	MAIZE	Notes and Remarks					GRAY-LEAF-SPOT-RESISTANT_YES	MAIZE.DONOR

Trait Titles and Descriptions

The read-only fields, **Trait Title** and **Trait Description**, will be supplied after a corresponding **Crop Trait Language** record has been completed.

Until the Crop Trait gets its Title and Description (via the **Crop Trait Lang** dataview), the list item displays as it does below – **:croptraitid=crop trait record ID**

Crop Trait ID	Crop	Trait Name	Trait Title	Trait Description	Is Peer Reviewed?	Category	Data Type	Is Coded?	Maximum Length
310112	ELDERBERRY	LEAFCOLOR			Y	Morphologic...	Alpha/numeric d...	Y	1
310113	ELDERBERRY	PLANTSIXE			Y	Morphologic...	Alpha/numeric d...	N	20

The next step, to get the **Trait Title** and **Trait Description**, would be to add the respective **Crop Trait Language** records. If you do that immediately after creating the Crop Trait records, you most likely will get errors:

Crop Trait Lang ID	Crop	Crop Trait	Language	Trait Title	Trait Description
-1	ELDERBERRY		English	LEAF COLOR	Color of the leaf at 60 - 90 days
-2	ELDERBERRY		English	Plant Size	Plant size at harvest

To avoid receiving those errors, click the **Refresh Data** button when the **Crop Trait** dataview is active. Then, when saving the corresponding **Crop Trait Language** records, the **Trait Title** and the **Trait Description** fields will be accepted and display:

Crop Trait Lang ID	Crop	Crop Trait	Language	Trait Title	Trait Description	Created Date	Created By
-1	ELDERBERRY	LEAFCOLOR	English	LEAF COLOR	Color of the leaf at 60 - 90 days	2/21/2017 6:30 ...	Reising
-2	ELDERBERRY	PLANTSIXE	English	Plant Size	Plant size at harvest	2/21/2017 6:30 ...	Reising

Crop Trait Language

Crop Trait Language Dataview

The **Crop Trait Language** dataview has three required fields:

- **Crop**
- **Crop Trait**
- **Language**

Although they are optional, the main purpose of this dataview is to supply the **Trait Title** and **Trait Description** fields for a specific language.

Crop Trait Lang ID	Crop	Crop Trait	Language	Trait Title	Trait Description	Created Date	Created By
-3						2/21/2017 6:30 ...	

Notice in the following screen, the **Trait Name** is displayed in the lookup list. After the **Trait Title** is entered and the **Crop Trait Language** record saved, the **Trait Title** will display in future lookups.

Crop Trait Lang ID	Crop	Crop Trait	Language	Trait Title	Trait Description	Created
6994	ELDERBERRY	Berry color	English	Berry color	Color of the berries	2/26/2014 10:15...
6995	ELDERBERRY	Leaf size	English	Leaf size	Length of the lea...	2/26/2014 10:16...
6996	ELDERBERRY	Fruit shape	English	Fruit shape	Shape of the fruit	2/26/2014 10:48...
-4	ELDERBERRY					2/27/2014 10:50...

Lookup Picker v1.9.5.0

HINT: For big lists, use the text filter to shorten the list search.

Filter ->

Berry color

Fruit shape

Leaf size

PLANTSIZE

Show Only Choices Valid For This:

crop_id



Leave the **crop_id** filter checked!

A new **Crop Trait Language** record:

Crop Trait Lang ID	Crop	Crop Trait	Language	Trait Title	Trait Description	Created Date
6994	ELDERBERRY	Berry color	English	Berry color	Color of the berries	2/26/2014 10:15...
6995	ELDERBERRY	Leaf size	English	Leaf size	Length of the leaves	2/26/2014 10:16...
6996	ELDERBERRY	Fruit shape	English	Fruit shape	Shape of the fruit	2/26/2014 10:48...
6997	ELDERBERRY	PLANTSIZE	English	Plant size	Size of the plant	2/27/2014 10:50...

Here's the lookup now:

Crop Trait Lang ID	Crop	Crop Trait	Language	Trait Title	Trait Description	Created Date
6994	ELDERBERRY	Berry color	English	Berry color	Color of the berries	2/26/2014 3:15 ...
6995	ELDERBERRY	Leaf size	English	Leaf size	Length of the lea...	2/26/2014 3:16 ...
6996	ELDERBERRY	Fruit shape	English	Fruit shape	Shape of the fruit	2/26/2014 3:48 ...
6997	ELDERBERRY	Plant size	English	Plant size	Size of the plant	2/27/2014 3:50 ...
-5	ELDERBERRY					2/27/2014 10:56...

Lookup Picker v1.9.5.0

HINT: For big lists, use the text filter to shorten the list search.

Filter ->

- Berry color
- Fruit shape
- Leaf size
- Plant size

Show Only Choices Valid For This:

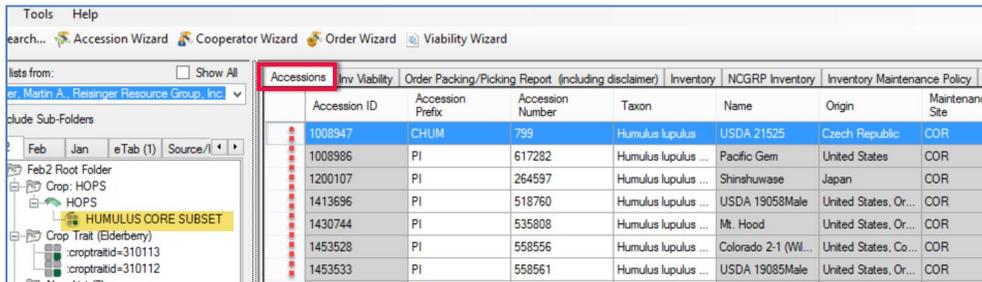
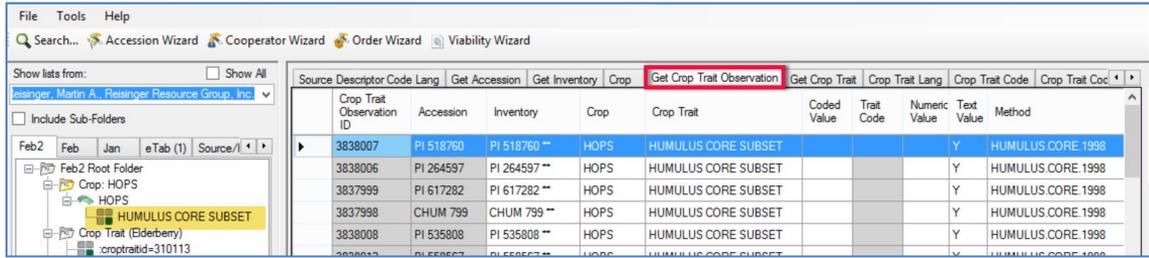
crop_id

Using either the Curator Tool or the Search Tool, you can get a complete list of the crops. The **Crop** dataview automatically displays all of the Crop records when the active folder in the List Panel is empty.

Source	Descriptor	Code	Lang	Get Accession	Get Inventory	Crop	Get Crop Trait Observation	Get Crop Trait	Crop Trait Lang
	Crop ID	Crop	Note						
	295	ACEROLA	Contains characteristic data on Acerola accessions. For additional information contact David Rosser at the North Central Regional Plant						
	237	ACTAEA	Contains evaluation data on Actaea accessions. For additional information contact Jeff Cantner at the North Central Regional Plant						
	77	AEGILOPS	Contains characteristic data on Aegilop accessions maintained at the National Small Grains Collection (NSGC). For additional information contact						
	68	ALFALFA	Contains characteristic data on Alfalfa (Medicago) accessions as proposed by the Root & Bulb Crop Committee (R&BCC). For additional						
	90	ALLIUM	Contains characteristic data on Allium (onion) accessions as proposed by the Root & Bulb Crop Committee (R&BCC). For additional						
	232	ALLIUM-GARLIC	Contains data on Allium (Garlic) accessions as proposed by the Root & Bulb Crop Committee (R&BCC). For additional information contact						
	71	ALLIUM-WILD	Contains data on Allium accessions as proposed by the Root & Bulb Crop Committee (R&BCC). For additional information contact David						
	266	ALMOND	Contains characteristic data on Almond accessions maintained at the National Small Grains Collection, Davis, CA. For additional						
	159	AMARANTH	Contains characteristic data on Amaranth accessions. For more information contact David Rosser at the North Central Regional Plant						
	119	ADULT	Contains characteristic data on Anjum (celestial and related). For further						



Drag one crop record to an empty folder in the left list panel to “filter” for accessions having observations for that trait.

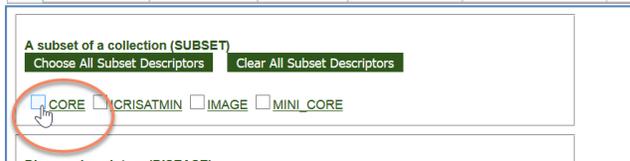


CORE Subset of Accessions



The concept of a CORE trait evolved from GRIN. The idea is that a curator assembles a subset of the entire collection. To make it easier for ordering the subset, if each accession to be included in the subset has the same trait, CORE, then the Public Website user can search for the CORE trait, and then select all those accession as a group. In the example below, the site created two subsets: CORE, and a MINI-CORE.

Get Source Descriptor Observation	Acc2	Crop	Crop Trait Observation	Crop Trait	Crop Trait Lang	Crop Trait Code	Get Crop Trait Code Lang	Crop Attach	Get Crop Trait Attach	Taxonomy Use
	PEANUTS		MINI_CORE							
Crop Trait ID	Crop	Trait Name	Trait Title	Trait Description	Is Peer Reviewed?	Category	Data Type	Is Coded?		
86032	PEANUTS	MINI_CORE	MINI_CORE SUBSET	A flag to indicate the accession is part of the peanut mini core	N	A subset of a coll...	Alpha/numeric d...	Y		
86041	PEANUTS	CORE	CORE SUBSET	A flag to indicate the accession is part of the core subset	Y	A subset of a coll...	Alpha/numeric d...	Y		





Crop Trait Code

Crop Trait Code Dataview

Table of the list of acceptable code values for the crop descriptors.

In a previous example, **Plant size** was set up here as a coded field. (In the “real world,” some organizations may simply record the actual height measurement for the Plant Size trait. Nevertheless, for this example, we will establish this trait as a coded field to illustrate what is needed when setting up a coded field.)

When adding a code via the **Crop Trait Code** dataview, three fields are to be supplied – all three are required:

- Crop
- Crop Trait
- Trait Code

The **Crop** and **Crop Trait** fields use lookups to have their entries selected; the actual code is inputted in the **Trait Code** field. The read-only fields **Trait Name** and **Trait Description** will be automatically filled after the save.

Before:

Crop	Get Site	Crop Trait	Get Crop Trait Lang	Crop Trait Code	Crop Trait Code Lang	Crop Trait Observation	Source Descriptor	Source ID
Crop Trait Code ID	Crop	Trait Name	Crop Trait	Trait Description	Trait Code	Code Title	Code Description	
-1								

After the Save:

Accessions	Inventory	Orders	Cooperators	Get Code Value	Get Site	Crop Trait	Get Crop Trait Lang	Crop Trait Code	Crop Trait Observation
Crop Trait Code ID	Crop	Trait Name	Crop Trait	Trait Description	Trait Code	Code Title	Code Description		
23069	ELDERBERRY	PLANTSIZE	Plant size	Size of the plant	1				

The **Code Title** and **Code Description** fields are also “read-only;” they will be filled *after* the corresponding **Crop Trait Code Language** record has been created.



In Edit mode, use **Ctrl – N** to create additional records below the one new record; and add any additional Trait Codes that will be used.

Later, after a corresponding **Crop Trait Code Language** record was saved:

Crop Trait Code ID	Crop	Trait Name	Crop Trait	Trait Description	Trait Code	Code Title	Code Description	Cre
23069	ELDERBERRY	PLANTSIZE	Plant size	Size of the plant	1	Very short	(<1.2 meters)	2/3

Crop Trait Code Language Dataview

The **Crop Trait Code Language** record is used to assign a **Code Title** and **Code Description** to a **Crop Trait Code** record. Six fields can be supplied (while not shown in the violet color and technically not required fields, why else would you create this record if you were not supplying at least the **Code Title** field?)

Required fields:

- Crop
- Crop Trait
- Code Definition
- Language

Before:

Crop Trait Code Lang ID	Crop	Crop Trait	Trait Name	Code Definition	Trait Title	Trait Description	Language	Code Title	Code Description
-1									

Crop Trait Code Lang ID	Crop	Crop Trait	Trait Name	Code Definition	Trait Title	Trait Description	Language
-1	ELDERBERRY	Plant size					

Lookup Picker v1.9.5.0

HINT: For big lists, use the text filter to shorten the list search.

Filter ->

1

Show Only Choices Valid For This:

crop_trait_id

After:

Crop Trait Code Lang ID	Crop	Crop Trait	Trait Name	Code Definition	Trait Title	Trait Description	Language
23069	ELDERBERRY	Plant size	PLANTSIZE	1	Plant size	Size of the plant	English

Shown here are the **Crop Trait Code Language** records for all five codes designed for the “Plant size” **Crop Trait** for the ELDERBERRY crop:

Crop Trait Code Lang ID	Crop	Crop Trait	Trait Name	Code Definition	Trait Title	Trait Description	Language	Code Title	Code Description
23069	ELDERBERRY	Plant size	PLANTSIZE	Very short	Plant size	Size of the plant	English	Very short	(<1.3 meters)
23070	ELDERBERRY	Plant size	PLANTSIZE	Short	Plant size	Size of the plant	English	Short	(1.3 --1.5 meters)
23071	ELDERBERRY	Plant size	PLANTSIZE	Intermediate	Plant size	Size of the plant	English	Intermediate	(1.6 --1.8 meters)
23072	ELDERBERRY	Plant size	PLANTSIZE	Tall	Plant size	Size of the plant	English	Tall	(1.9 --2.1 meters)
23073	ELDERBERRY	Plant size	PLANTSIZE	Very tall	Plant size	Size of the plant	English	Very tall	(> 2.1 meters)

Crop Trait Code Lang ID	Crop	Crop Trait	Trait Name	Code Definition	Trait Title	Trait Description	Language	Code Title	Code Description
12067	GRAPE	Berry Shape	BERRYSHAPE	Roundish	Berry Shape	Typical berry shape	English	Roundish	Roundish

Attachments (File attachments)

Crop Attach

This dataview has a unique function. **Crop Attach** records may be added to include links to files displayed on the **Crop** page.

Recommended: use the Attachment Wizard to attach files with Crops or Crop Traits. Refer to the [Attachment Wizard](#) document for details.

In the following example, The **PEANUTS** crop has two links, one with a **URL Link** for the **Category** type, and the other an **Image attachment**:

Crop Attach ID	Crop	Virtual Path	Thumbnail Virtual Path	Sort Order	Title	Description
22	PEANUTS	http://sun.ars-grin.gov/npgs/images/s9/peanuts/peanuteval/USPeanut_Descriptors.pdf		1	U.S. Peanut Descriptors, July 1995 publication	U.S. P
23	PEANUTS	http://sun.ars-grin.gov/npgs/images/s9/peanuts/peanuteval/USPeanut_Descriptors_Cover.jpg		1		

...scrolling to the right to see the remainder of the records:

Description	Content Type	Category	Is Web Visible?	Cooperator	Attach Date Format	Attach Date	Note
on U.S. Peanut Descriptors, July 1995 publication		URL link	Y				
		Image attachment	Y				

U.S. National Plant Germplasm System



[Accessions](#) > [Descriptors](#) > [GRIN Taxonomy](#) > [View Cart](#) [Reports](#) [My Profile](#) > [About GRIN-Global](#)

NPGS Home Page > [Descriptors](#) > [Descriptors](#)

Choose Crop: **PEANUTS** (Click this link to go to crop page)

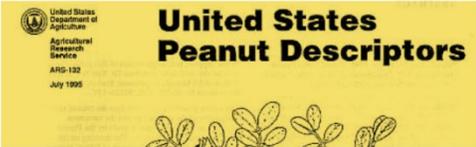
Choose des [Accessions](#) > [Descriptors](#) > [GRIN Taxonomy](#) > [View Cart](#) [Reports](#) [My Profile](#) > [About GRIN-Global](#)

PEANUTS

Contains evaluation data on Peanut (Arachis) accessions as proposed by the Peanut Crop Germplasm Committee. For more information contact the Genetic Resources Conservation Unit in Griffin, GA 30223. Phone: (770) 229-3255. Email: Shyam.Tallury@ars.usda.gov

[List of Descriptors](#) [List of Species](#) [List of Citations](#) (containing accessions in crop)

U.S. Peanut Descriptors, July 1995 publication



Crop Trait Attach

Similar to the **Crop Attach** dataview, with the **Crop Trait Attach** dataview, you can have images or links associated with Crop Traits. In the following example, **SAFFLOWER** has two traits which have an "attachment."

Crop	Crop Trait Observation	Crop Trait	Crop Trait Lang	Crop Trait Code	Get Crop Trait Code Lang	Crop Attach	Get Crop Trait Attach	Taxonomy Use	Access	Show All Columns
		SAFFLOWER								<input checked="" type="checkbox"/>
Crop Trait Attach ID	Crop	Crop Trait	Content Type	Category	Virtual Path	Thumbnail Virtual Path	Sort Order	Title		
54	SAFFLOWER	Rust (Puccinia ca...		URL link	http://www.ars-grin.gov/npgs/images/w6/saffeval/mundel_rust.doc		1	Image of safflower Rust rati...		
65	SAFFLOWER	Botrytis head rot		Image attachment	http://www.ars-grin.gov/npgs/images/w6/saffdesc/botrytis.jpg		5	Example of Botrytis head rot		

In the first record listed above, the trait is using a URL link to a Word document:

Descriptor: Rust (Puccinia carthami) (RUST) [Download list of accessions evaluated for this trait](#)

Definition:	Rust ratings causes by Puccinia carthami on a 0-5 scale
Crop:	SAFFLOWER
Category:	Disease descriptors
Status:	
Data Type:	Alphanumeric descriptor
Maximum Length:	1
Responsible site:	Western Regional PI Station (W6)

Studies or environments for this trait

- SAFFLOWER_2006.CFERRY.RUST - (225 Accessions)
- SAFFLOWER_2007.CFERRY.RUST - (121 Accessions)
- SAFFLOWER_2008.CFERRY.RUST - (206 Accessions)
- SAFFLOWER_2009.CFERRY.RUST - (202 Accessions)
- SAFFLOWER_2010.CFERRY.RUST - (207 Accessions)
- SAFFLOWER_2011.CFERRY.RUST - (119 Accessions)
- SAFFLOWER_2014.CFERRY.RUST - (140 Accessions)
- SAFFLOWER_2015.CFERRY.RUST - (122 Accessions)

Other information about the descriptor

- [Image of safflower Rust ratings from Hans-Henning Mundel](#) Comment: Image of safflower Rust ratings from Hans-Henning Mundel in Canada (as a .doc file)

In the second record, the trait has an associated image:

Descriptor: Botrytis head rot (BOTRYTIS) [Download list of accessions evaluated for this trait](#)

Definition:	Botrytis head rot caused by the fungus Botrytis cinerea
Crop:	SAFFLOWER
Category:	Disease descriptors
Status:	
Data Type:	Alpha/numeric descriptor
Maximum Length:	2
Responsible site:	Western Regional PI Station (W6)



Studies or environments for this trait

- SAFFLOWER_2009.GERMANY - (29 Accessions)

Using Descriptors to Establish a *Core* Subset of Accessions

GRIN-Global descriptors can be used as a means for creating subsets of collections. In other words, the curator may assemble a subset of accessions which are representative of the collection, based on various factors

In the NPGS Peanuts collection, they have four subsets available on the Public Website:

A subset of a collection (SUBSET)
[Choose All Subset Descriptors](#) [Clear All Subset Descriptors](#)

CORE ICRISATMIN IMAGE MINI_CORE

Disease descriptors (DISEASE)
[Choose All Disease Descriptors](#) [Clear All Disease Descriptors](#)

In this specific case, when the CORE trait is selected, 819 representative accessions will be listed. Under the Crop's descriptors, a PW user can order this collection at one time. The MINI-CORE has a smaller

subset:

CORE SUBSET (831)

(Any) ▾

Y=Yes, accession is part of the core ▲

MINI CORE SUBSET (112)

(Any) ▾

Y=Yes, accession is part of the mini core ▲

Crop	Crop Trait Observation	Crop Trait	Crop Trait Lang	Crop Trait Code	Get Crop Trait Code Lang	Crop Attach	Get Crop Trait Attach	Taxonomy Use	Accession	Show All Columns
		PEANUTS	MINI_CORE							
Crop Trait ID	Crop	Trait Name	Trait Title	Trait Description	Is Peer Reviewed?	Category	Data Type	Is Coded?		
86032	PEANUTS	MINI_CORE	MINI_CORE SUBSET	A flag to indicate the accession is part of the peanut mini core subset	N	A subset of a coll...	Alpha/numeric d...	Y		
86041	PEANUTS	CORE	CORE SUBSET	A flag to indicate the accession is part of the core subset	Y	A subset of a coll...	Alpha/numeric d...	Y		

Get Accession	Get Inventory	Crop	Get Crop Trait Observation	Get Crop Trait	Crop Trait Lang	Crop Trait Code	Crop Trait Code Lang	Crop Attach	Crop Trait Attach	Get Site	Inventory Vi...
Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Text Value	Method		
4387658	PI 162404	PI 162404 **	PEANUTS	CORE SUBSET	YES, ACCESSION IS PART OF THE CORE	Y			PEANUT.CORE.US		
7787536	PI 155107	PI 155107 **	PEANUTS	MINI_CORE SUBSET	Yes, accession is part of the mini core	Y			PEANUT.MINI.CORE		
4387657	PI 161867	PI 161867 **	PEANUTS	CORE SUBSET	YES, ACCESSION IS PART OF THE CORE	Y			PEANUT.CORE.US		

Method Examples for the CORE and Mini-CORE Trait

Crop	Get Crop Trait Observation	Get Crop Trait	Crop Trait Lang	Crop Trait Code	Crop Trait Code Lang	Crop Attach	Crop Trait Attach	Method	Get Site	Inventory Viability	Order Summar...
Method ID	Name	Geography	Elevation (meters)	Latitude	Longitude	Material or Method Used					
490668	PEANUT.CORE.US	United States, G...				Accession which comprise the U.S. cultivated peanut core collection					
494255	PEANUT.MINI.CORE	United States, G...				A mini core of the U.S. Peanut germplasm collection. A 10% sample resulting in a core of the core collection (mini core) based on eight above-ground and eight below-ground morphological characteristics. The above-ground descriptors were growth habit, plant size, prominence of main stem at mid-season, prominence of main stem at harvest, presence of flowers on the main axis, leaf color, stem pigmentation, and maturity. The below-ground descriptors were measured post harvest and included pod shape, pod constriction, pod reticulation, seed per pod, 100-pod weight, U.S. pod market type, seed coat color, and 100-seed weight.					

Methods – Used to Display Comparative Data

Methods or the **Note** field in **Method Citations** is perhaps an easier way to indicate comparative data used when making observations. An example of a method with a link to both an Excel file and an HTML file on a photoperiod insensitive sorghum collection can be found at: <https://npgsweb.ars-grin.gov/gringlobal/method.aspx?id=492511>. It includes a check mean and standard deviation data to correlate with the descriptors.

Evaluation location:	Nebraska, United States
Methods:	<p>Accessions from the U.S. photoperiod insensitive sorghum collection were grown at Ithaca, Nebraska over 2001 and 2002 in single-row non-replicated plots. Wheatland check plots were included at 13% check plot density. Approximately one quarter of the accessions in the collection were not planted due to space constraints in the field, or were not harvested due primarily to those accessions not reaching maturity before frost. Grain from all harvested accessions were ground to pass a 1 mm screen on a cyclone mill and scanned using NIRS 6500 scanning monochromator.</p> <p>Over 500 reference samples were selected based on spectral data for wet lab analyses. Reference samples were analyzed by a commercial feed lab, NIRS prediction equations developed, and predicted values (from spectral data) reported for starch, fat, protein, fiber, phosphorous, total digestible nutrients, metabolizable energy, and net energy content of the samples. Various statistics are reported for the prediction equations. The mean and standard deviation of each trait are also reported for the check variety Wheatland.</p> <p>View various statistics of the Sorghum Photoperiod sensitive chemical and nutritional data in an Excel Spreadsheet or as an HTML webpage.</p>

Crop	Get Crop Trait Observation	Get Crop Trait	Crop Trait Lang	Crop Trait Code	Crop Trait Code Lang	Crop Attach	Crop Trait Attach	Method	Get Site	Inventory	Viability	C
	Method ID	Name	Material or Method Used									
	492511	SORGHUM.PHOTOPERIOD.CHEMICAL...	<p>Accessions from the U.S. photoperiod insensitive sorghum collection were grown at Ithaca, Nebraska over 2001 and 2002 in single-row non-replicated plots. Wheatland check plots were included at 13% check plot density. Approximately one quarter of the accessions in the collection were not planted due to space constraints in the field, or were not harvested due primarily to those accessions not reaching maturity before frost. Grain from all harvested accessions were ground to pass a 1 mm screen on a cyclone mill and scanned using NIRS 6500 scanning monochromator. Over 500 reference samples were selected based on spectral data for wet lab analyses. Reference samples were analyzed by a commercial feed lab, NIRS prediction equations developed, and predicted values (from spectral data) reported for starch, fat, protein, fiber, phosphorous, total digestible nutrients, metabolizable energy, and net energy content of the samples. Various statistics are reported for the prediction equations. The mean and standard deviation of each trait are also reported for the check variety Wheatland. View various statistics of the Sorghum Photoperiod sensitive chemical and nutritional data in an Excel Spreadsheet or as an HTML webpage.</p>									



HTML code, the `<a href>` attribute, is used to display the links on the Public website.

Correcting Observation Records to Point to a Different Accession

Sometimes the question is asked: “How do I correct an observation record when we realize the observation is pointing to an incorrect accession?”

In the following example, suppose the accession PI 269004 should have been PI 269005:

Crop	Get Crop Trait Observation	Get Crop Trait	Crop Trait Lang	Crop Trait Code	Crop Trait Code Lang	Crop Attach	Crop Trait Attach	Method	Get Site	Inv
	Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value		Trait Code	Num	Valu
	6587771	PI 269001	PI 269001 **	PEANUTS	LEAFSPOT	Highly resistant		2		
	6587785	PI 269002	PI 269002 **	PEANUTS	LEAFSPOT	Very highly resistant (immune)		1		
	6587799	PI 269004	PI 269004 **	PEANUTS	LEAFSPOT	Very highly resistant (immune)		1		

You cannot edit the Accession field since that is grayed out. In edit mode, click in the inventory field to display the Lookup Picker window. Deselect the accession_id filter, and then type or backspace to

change the accession identifier to PI 269005:

Get Inventory	Crop	Get Crop Trait Observation	Get Crop Trait	Crop Trait Lang	Crop Trait Code	Crop Trait Cod
Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait		Coded Value
6587785	PI 269002	PI 269002 **	PEANUTS	LEAFSPOT		Very highly re
6587799	PI 269004		PEANUTS	LEAFSPOT		Very highly re
6587813	PI 269006	PI 269006 **	PEANUTS	LEAFSPOT		Very highly re
6587827	PI 269009					highly re
6587841	PI 269010					highly re
6587855	PI 269011					highly re
6587869	PI 269013					highly re
6587883	PI 269015					highly re
6587897	PI 269016					highly re
6587911	PI 269017					highly re
6588499	PI 269062					highly re
6588513	PI 269063					highly re



In the above example, since the observation was on the accession level and not for a specific inventory, the accession's system inventory record (Type **) was selected.

Appendix A: Changes in this Document

2024, April 3

- Major edit of text
- Inclusion of links to presentation files

2023, February 7

- Major edit of text
- Included new images and screens from the PW2
- Included images and search tool examples of the three value types

2020, February 28

- additional text to explain crop mapping and the association between a taxon and multiple crops

2019, March 20

- additional text and graphics to explain multiple crops

July 24, 2018

- added text to explain how an accession can be included in multiple crops; a Crop Map dataview example was included

January 6, 2018

- added text regarding the Observation Data dataview
- changed Appendix B to reference a new document that illustrates adding a new crop and trait

May 5, 2017

- added Appendix C: Examples

March 17, 2017

- added notes about crop maps
- added Appendix B, a section illustrating the step by step procedure for creating a new descriptor

February 24, 2017

- replaced outdated screens
- modified text to emphasize the how-to steps for creating descriptors
- added section on creating a Core subset of Accessions
- added sections on the **Crop_Attach** and the **Crop_Trait_Attach** dataviews
- added text for correcting the observations assigned to the incorrect accession

October 21, 2015

- reviewed document and replaced outdated screens

February 23, 2015

- added extensive overviewed
- replaced Observations screens which have been modified
- replaced PW pages to include Descriptors option on the menu

Appendix B: Step-by-Step Directions for Creating a New Descriptor

Step-by-Step Directions for Creating a New Crop and Descriptor

Refer to the document https://www.grin-global.org/docs/elderberry_crop_added.docx This document demonstrates the step-by-step process involved in recording evaluations (observations) in GRIN-Global. A new elderberry crop is created here as an example crop and then a trait (Leaf Color) for the elderberry crop is defined. As part of this example, the trait is a “coded trait” meaning it only accepts specific codes. Finally, sample observations are recorded to illustrate the results displayed in the Public Website.

Appendix C: Examples



These examples on the following pages were randomly selected to show how coded traits appear when using the Lookup Picker within the Curator Tool. Note that these traits were brought into GRIN-Global from the USDA GRIN. There are included here to illustrate the Trait Codes and Trait Code Titles display as well as to compare how the ENG version of the dataviews can be used to display the codes instead of the titles. Some users prefer using the ENG version when copying data in bulk from a spreadsheet to the Curator Tool.

WHEAT (HABIT)

English Version

Crop Trait Observation ID	Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value
2207025	Ctr 4816	Ctr 4816 TR981...	WHEAT	Growth Habit	WINTER TYPE ...	W-S	
2207029	Ctr 4959	Ctr 4959 TR981...	WHEAT	Growth Habit	WINTER	W	

Eng Version

Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value
ctr 4816	Ctr 4816 TR981...	WHEAT	HABIT	W-S	W-S	
ctr 4959	Ctr 4959 TR981...	WHEAT	HABIT	W	W	

Inventory	Orders	Cooperators	Get Crop	Get Crop Trait	Get Crop Trait Code	Get Crop Trait Lang	Get Crop Trait Code Lang	Get Crop Trait Observation
Crop Trait Code ID	Crop	Trait Name	Crop Trait	Trait Description	Trait Code	Code Title	Code Des	
1	WHEAT	HABIT	Growth Habit	Growth habit, based on a spring	F	FACULTATIVE	FACULTA	
2	WHEAT	HABIT	Growth Habit	Growth habit, based on a spring	F-S	FACULTATIVE TYPE MIXED WITH SOME SPRING TYPES	FACULTA	
3	WHEAT	HABIT	Growth Habit	Growth habit, based on a spring	F-W	FACULTATIVE TYPE MIXED WITH SOME WINTER TYPES	FACULTA	
4	WHEAT	HABIT	Growth Habit	Growth habit, based on a spring	S	SPRING	SPRING	
5	WHEAT	HABIT	Growth Habit	Growth habit, based on a spring	S-F	SPRING TYPE MIXED WITH SOME FACULTATIVE TYPES	SPRING T	
6	WHEAT	HABIT	Growth Habit	Growth habit, based on a spring	S-W	SPRING TYPE MIXED WITH SOME WINTER TYPES	SPRING T	
7	WHEAT	HABIT	Growth Habit	Growth habit, based on a spring	W	WINTER	WINTER	
8	WHEAT	HABIT	Growth Habit	Growth habit, based on a spring	W-F	WINTER TYPE MIXED WITH SOME FACULTATIVE TYPES	WINTER T	
9	WHEAT	HABIT	Growth Habit	Growth habit, based on a spring	W-S	WINTER TYPE MIXED WITH SOME SPRING TYPES	WINTER T	

WHEAT (AWNCOLOR)

Inventory	Orders	Cooperators	Get Crop	Get Crop Trait	Get Crop Trait Code	Get Crop Trait Lang	Get Crop Trait Code Lang	Get Crop Tra
Crop Trait Code ID	Crop	Trait Name	Crop Trait	Trait Description	Trait Code	Code Title		
179	WHEAT	APHID	Aphid	Reaction to aphids.	7	7 (1 = RESISTANT, 9 = SUSCEPTIBLE)		
180	WHEAT	APHID	Aphid	Reaction to aphids.	8	8 (1 = RESISTANT, 9 = SUSCEPTIBLE)		
173	WHEAT	APHID	Aphid	Reaction to aphids.	9	SUSCEPTIBLE		
72	WHEAT	AWN...	Awn Color	Color of the awns.	1	BLACK		
73	WHEAT	AWN...	Awn Color	Color of the awns.	1A	BLACK AND WHITE		
74	WHEAT	AWN...	Awn Color	Color of the awns.	1B	BLACK AND BROWN		
75	WHEAT	AWN...	Awn Color	Color of the awns.	2	BLUE		
76	WHEAT	AWN...	Awn Color	Color of the awns.	3	BROWN		
77	WHEAT	AWN...	Awn Color	Color of the awns.	3A	BROWN AND WHITE		
78	WHEAT	AWN...	Awn Color	Color of the awns.	4	GREY		
79	WHEAT	AWN...	Awn Color	Color of the awns.	5	PURPLE		
80	WHEAT	AWN...	Awn Color	Color of the awns.	6	RED		
81	WHEAT	AWN...	Awn Color	Color of the awns.	7	TAN		
82	WHEAT	AWN...	Awn Color	Color of the awns.	8	WHITE/AMBER		
83	WHEAT	AWN...	Awn Color	Color of the awns.	9	YELLOW		
84	WHEAT	AWN...	Awn Color	Color of the awns.	MIX	ROW MIXED FOR COLOR		
85	WHEAT	AWN...	Awn Type	Type and extent of the awns.	1	AWNED		

Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value
Citr 4816	Citr 4816 TR981...	WHEAT	Growth Habit	WINTER TYPE ...	W-S	
Citr 4959	Citr 4959 TR981...	WHEAT	Growth Habit	WINTER	W	
Citr 4987	Citr 4987 TR981...	WHEAT	Growth Habit	FACULTATIVE	F	
bit				WINTER	W	
bit				WINTER	W	
bit				WINTER	W	
bit				SPRING	S	
bit				SPRING	S	
bit				SPRING	S	
bit				WINTER	W	
bit				WINTER	W	
bit				WINTER	W	
bit				WINTER	W	
bit				WINTER	W	
bit				SPRING	S	
bit				WINTER	W	
bit				SPRING	S	
bit				SPRING	S	

Lookup Picker v1.9.6.43

HINT: For big lists, use the text filter to shorten the list search.

Filter ->

- BLACK
- BLACK AND BROWN
- BLACK AND WHITE
- BLUE
- BROWN
- BROWN AND WHITE
- GREY
- PURPLE
- RED
- ROW MIXED FOR COLOR
- TAN
- WHITE/AMBER
- YELLOW

Show Only Choices Valid For This:

crop_trait_id

Refresh List OK Cancel

WHEAT (HESSIAN FLY)

English Version

Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value
Ctr 4816	Ctr 4816 TR981...	WHEAT	Growth Habit	WINTER TYPE ...	W-S	
Ctr 4959	Ctr 4959 TR981...	WHEAT	Growth Habit	WINTER	W	
				FACULTATIVE	F	
				WINTER	W	
				WINTER	W	
				SPRING	S	
				SPRING	S	
				SPRING	S	
				WINTER	W	
				WINTER	W	
				WINTER	W	
				SPRING	S	
				WINTER	W	
				SPRING	S	
PI 494103	PI 494103 **	WHEAT	Growth Habit	SPRING	S	
		WHEAT	Hessian Fly			

Eng Version

Accession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value
Ctr 4816	Ctr 4816 TR981...	WHEAT	HABIT	W-S	W-S	
Ctr 4959	Ctr 4959 TR981...	WHEAT	HABIT	W	W	
				F	F	
				W	W	
				W	W	
				S	S	
				S	S	
				S	S	
				W	W	
				W	W	
				W	W	
				W	W	
				S	S	
				W	W	
				S	S	
PI 494103	PI 494103	WHEAT	HABIT	S	S	
		WHEAT	HESSIANFLY			

Crop	Trait Name	Crop Trait	Trait Description	Trait Code	Code Title	Code
WHEAT	HESS...	Hessian Fly	Reaction to Hessian fly	1	RESISTANT (0-5% S)	RES
WHEAT	HESS...	Hessian Fly	Reaction to Hessian fly	2	2 (1 = RESISTANT, 9 = SUSCEPTIBLE 6-10% S)	(1 =
WHEAT	HESS...	Hessian Fly	Reaction to Hessian fly	3	3 (1 = RESISTANT, 9 = SUSCEPTIBLE 11-15% S)	(1 =
WHEAT	HESS...	Hessian Fly	Reaction to Hessian fly	4	4 (1 = RESISTANT, 9 = SUSCEPTIBLE 16-30% S)	(1 =
WHEAT	HESS...	Hessian Fly	Reaction to Hessian fly	5	5 (1 = RESISTANT, 9 = SUSCEPTIBLE 31-45% S)	(1 =
WHEAT	HESS...	Hessian Fly	Reaction to Hessian fly	6	6 (1 = RESISTANT, 9 = SUSCEPTIBLE 46-60% S)	(1 =
WHEAT	HESS...	Hessian Fly	Reaction to Hessian fly	7	7 (1 = RESISTANT, 9 = SUSCEPTIBLE 61-70% S)	(1 =
WHEAT	HESS...	Hessian Fly	Reaction to Hessian fly	8	8 (1 = RESISTANT, 9 = SUSCEPTIBLE 71-80% S)	(1 =
WHEAT	HESS...	Hessian Fly	Reaction to Hessian fly	9	SUSCEPTIBLE (81-100% S)	SUS

MAIZE (NORTHERN LEAF BLIGHT)

operators | Get Crop | Get Crop Trait | Get Crop Trait Code | Get Crop Trait Lang | Get Crop Trait Code Lang | Get Crop Trait Observation

Inventory | Crop | Crop Trait | Coded Value | Trait Code | Nu Va

MAIZE | NORTHERN LEAF BLIGHT

Lookup Picker v1.9.6.43

HINT: For big lists, use the text filter to shorten the list search.

Filter ->

- 0 No symptoms
- 1 Resistance excellent
- 2 Resistance high
- 3 Resistance indicated
- 4 Response above average
- 5 Response average
- 6 Response below average
- 7 Susceptibility average
- 8 Susceptibility high
- 9 Susceptibility highest

Show Only Choices Valid For This:

crop_trait_id

Refresh List | OK | Cancel

Crop Trait	Trait Description	Trait Code	Code Title	Code Description
NORTHERN LEAF BLIGHT	Leaf response to northern leaf blight organism (Exserhium turcicum [Pass.] Leonard & S.	0	0 No symptoms	No symptoms observed
NORTHERN LEAF BLIGHT	Leaf response to northern leaf blight organism (Exserhium turcicum [Pass.] Leonard & S.	1	1 Resistance excellent	Very few lesions; little or no sporulation.
NORTHERN LEAF BLIGHT	Leaf response to northern leaf blight organism (Exserhium turcicum [Pass.] Leonard & S.	2	2 Resistance high	2 on a scale 0 = No symptoms observed, 9 = Severe disease development
NORTHERN LEAF BLIGHT	Leaf response to northern leaf blight organism (Exserhium turcicum [Pass.] Leonard & S.	3	3 Resistance indicated	Occasional lesions; sporulation slight.
NORTHERN LEAF BLIGHT	Leaf response to northern leaf blight organism (Exserhium turcicum [Pass.] Leonard & S.	4	4 Response above average	4 on a scale 0 = No symptoms observed, 9 = Severe disease development
NORTHERN LEAF BLIGHT	Leaf response to northern leaf blight organism (Exserhium turcicum [Pass.] Leonard & S.	5	5 Response average	Many lesions; abundant sporulation.
NORTHERN LEAF BLIGHT	Leaf response to northern leaf blight organism (Exserhium turcicum [Pass.] Leonard & S.	6	6 Response below average	6 on a scale 0 = No symptoms observed, 9 = Severe disease development
NORTHERN LEAF BLIGHT	Leaf response to northern leaf blight organism (Exserhium turcicum [Pass.] Leonard & S.	7	7 Susceptibility average	7 on a scale 0 = No symptoms observed, 9 = Severe disease development
NORTHERN LEAF BLIGHT	Leaf response to northern leaf blight organism (Exserhium turcicum [Pass.] Leonard & S.	8	8 Susceptibility high	8 on a scale 0 = No symptoms observed, 9 = Severe disease development
NORTHERN LEAF BLIGHT	Leaf response to northern leaf blight organism (Exserhium turcicum [Pass.] Leonard & S.	9	9 Susceptibility highest	Severe disease development; plants often dead.

MAIZE (NORTHERN LEAF BLIGHT RACE O)

Operators: Get Crop | Get Crop Trait | Get Crop Trait Code | Get Crop Trait Lang | Get Crop Trait Code Lang | Get Crop Trait Observation

Inventory | Crop | Crop Trait | Coded Value | Trait Code

MAIZE | NORTHERN LEAF BLIGHT RACE O

Lookup Picker v1.9.6.43

HINT: For big lists, use the text filter to shorten the list search.

Filter ->

- (0) NO SYMPTOMS OBSERVED
- (1) VERY FEW LESIONS; LITTLE OR NO SPORULATION
- (2) (0 = NO SYMPTOMS OBSERVED, 9 = SEVERE DISEASE DEVELOPMENT)
- (3) OCCASIONAL LESIONS; SPORULATION SLIGHT.
- (4) (0 = NO SYMPTOMS OBSERVED, 9 = SEVERE DISEASE DEVELOPMENT)
- (5) MANY LESIONS; ABUNDANT SPORULATION.
- (6) (0 = NO SYMPTOMS OBSERVED, 9 = SEVERE DISEASE DEVELOPMENT)
- (7) (0 = NO SYMPTOMS OBSERVED, 9 = SEVERE DISEASE DEVELOPMENT)
- (8) (0 = NO SYMPTOMS OBSERVED, 9 = SEVERE DISEASE DEVELOPMENT)
- (9) SEVERE DISEASE DEVELOPMENT, PLANTS OFTEN DEAD

Show Only Choices
Valid For This:
 crop_trait_id

Refresh List | OK | Cancel

Crop Trait	Trait Description	Trait Code	Code Title
NORTHERN LEAF BLIGHT RACE O	Leaf response to northern leaf	0	(0) NO SYMPTOMS OBSERVED
NORTHERN LEAF BLIGHT RACE O	Leaf response to northern leaf	1	(1) VERY FEW LESIONS; LITTLE OR NO SPO...
NORTHERN LEAF BLIGHT RACE O	Leaf response to northern leaf	2	(2) (0 = NO SYMPTOMS OBSERVED, 9 = SEV...
NORTHERN LEAF BLIGHT RACE O	Leaf response to northern leaf	3	(3) OCCASIONAL LESIONS; SPORULATION S...
NORTHERN LEAF BLIGHT RACE O	Leaf response to northern leaf	4	(4) (0 = NO SYMPTOMS OBSERVED, 9 = SEV...
NORTHERN LEAF BLIGHT RACE O	Leaf response to northern leaf	5	(5) MANY LESIONS; ABUNDANT SPORULATI...
NORTHERN LEAF BLIGHT RACE O	Leaf response to northern leaf	6	(6) (0 = NO SYMPTOMS OBSERVED, 9 = SEV...
NORTHERN LEAF BLIGHT RACE O	Leaf response to northern leaf	7	(7) (0 = NO SYMPTOMS OBSERVED, 9 = SEV...
NORTHERN LEAF BLIGHT RACE O	Leaf response to northern leaf	8	(8) (0 = NO SYMPTOMS OBSERVED, 9 = SEV...
NORTHERN LEAF BLIGHT RACE O	Leaf response to northern leaf	9	(9) SEVERE DISEASE DEVELOPMENT, PLAN...

MAIZE (VIGOR)

operators | Get Crop | Get Crop Trait | Get Crop Trait Code | Get Crop Trait Lang | Get Crop Trait Code Lang | Get Crop Trait Observation

Inventory | Crop | Crop Trait | Coded Value | Trait Code

MAIZE | PLANT VIGOR

Lookup Picker v1.9.6.43

HINT: For big lists, use the text filter to shorten the list search.

Filter ->

2 (1 = GOOD, 9 = POOR)
 3 (1 = GOOD, 9 = POOR)
 4 (1 = GOOD, 9 = POOR)
 5 (1 = GOOD, 9 = POOR)
 6 (1 = GOOD, 9 = POOR)
 7 (1 = GOOD, 9 = POOR)
 8 (1 = GOOD, 9 = POOR)
 GOOD
 POOR

Show Only Choices
 Valid For This:
 crop_trait_id

Refresh List | OK | Cancel

Crop	Trait Name	Crop Trait	Trait Description	Trait Code	Code Title	Code Description
MAIZE	PLANT-VIGOR	PLANT VIGOR	VISUAL RATING OF PLANT VIGOR	1	GOOD	GOOD
MAIZE	PLANT-VIGOR	PLANT VIGOR	VISUAL RATING OF PLANT VIGOR	2	2 (1 = GOOD, 9 = POOR)	(1 = GOOD, 9 = POOR)
MAIZE	PLANT-VIGOR	PLANT VIGOR	VISUAL RATING OF PLANT VIGOR	3	3 (1 = GOOD, 9 = POOR)	(1 = GOOD, 9 = POOR)
MAIZE	PLANT-VIGOR	PLANT VIGOR	VISUAL RATING OF PLANT VIGOR	4	4 (1 = GOOD, 9 = POOR)	(1 = GOOD, 9 = POOR)
MAIZE	PLANT-VIGOR	PLANT VIGOR	VISUAL RATING OF PLANT VIGOR	5	5 (1 = GOOD, 9 = POOR)	(1 = GOOD, 9 = POOR)
MAIZE	PLANT-VIGOR	PLANT VIGOR	VISUAL RATING OF PLANT VIGOR	6	6 (1 = GOOD, 9 = POOR)	(1 = GOOD, 9 = POOR)
MAIZE	PLANT-VIGOR	PLANT VIGOR	VISUAL RATING OF PLANT VIGOR	7	7 (1 = GOOD, 9 = POOR)	(1 = GOOD, 9 = POOR)
MAIZE	PLANT-VIGOR	PLANT VIGOR	VISUAL RATING OF PLANT VIGOR	8	8 (1 = GOOD, 9 = POOR)	(1 = GOOD, 9 = POOR)
MAIZE	PLANT-VIGOR	PLANT VIGOR	VISUAL RATING OF PLANT VIGOR	9	POOR	POOR

CHROMOSOME COUNT (SWEET POTATO)

Cooperators	Get Crop	Get Crop Trait	Get Crop Trait Code	Get Crop Trait Lang	Get Crop Trait Code Lang	Get Crop Trait Observation	
ession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value	Te
6662	PI 566662 01 IV	SWEETPOTATO	Vine Internode L...	VERY SHORT (...	1		
6662	PI 566662 01 IV	SWEETPOTATO	Plant Type	COMPACT	3		
6662	PI 566662 01 IV	SWEETPOTATO	...	PURPLE	7		
				GREEN	3		
				MEDIUM (8-15cm)	5		
				SLIGHT	3		
				DEEP	7		
				SMALL (< 8cm)	3		
				GREEN	3		
				GREEN	3		
				SPREADING	7		
				SHORT (3-5cm)	3		
				EXTREMELY SP...	9		
				INTERMEDIATE...	5		
				MODERATELY ...	5		
				PURPLE-GREEN	4		
		SWEETPOTATO	Chromosome Count				

Lookup Picker v1.9.6.43

HINT: For big lists, use the text filter to shorten the list search.

Filter ->

- DIPLOID
- HEXAPLOID
- OTHER
- TETRAPLOID
- TRIPLOID

Show Only Choices Valid For This:

- crop_trait_id

Refresh List OK Cancel

rd Viability Wizard

Cooperators	Get Crop	Get Crop Trait	Get Crop Trait Code	Get Crop Trait Lang	Get Crop Trait Code Lang	Get Crop Trait Observati
Trait Name	Crop Trait	Trait Description	Trait Code	Code Title	Code Description	
CHROMOSOME	Chromosome Count	Chromosome count.	1	DIPLOID	DIPLOID	
CHROMOSOME	Chromosome Count	Chromosome count.	2	TRIPLOID	TRIPLOID	
CHROMOSOME	Chromosome Count	Chromosome count.	3	TETRAPLOID	TETRAPLOID	
CHROMOSOME	Chromosome Count	Chromosome count.	4	HEXAPLOID	HEXAPLOID	
CHROMOSOME	Chromosome Count	Chromosome count.	5	OTHER	OTHER	

FLOWERCOLOR (SWEET POTATO)

Cooperators	Get Crop	Get Crop Trait	Get Crop Trait Code	Get Crop Trait Lang	Get Crop Trait Code Lang	Get Crop Trait Observation
ession	Inventory	Crop	Crop Trait	Coded Value	Trait Code	Numeric Value
6662	PI 566662 01 IV	SWEETPOTATO	Vine Internode L...	VERY SHORT (...	1	
6662	PI 566662 01 IV	SWEETPOTATO	Plant Type	COMPACT	3	
6662	PI 566662 01 IV	SWEETPOTATO	Flower Color	PURPLE	7	
				GREEN	3	
				MEDIUM (8-15cm)	5	
				SLIGHT	3	
				DEEP	7	
				SMALL (< 8cm)	3	
				GREEN	3	
				GREEN	3	
				SPREADING	7	
				SHORT (3-5cm)	3	
				EXTREMELY SP...	9	
				INTERMEDIATE...	5	
				MODERATELY ...	5	
				PURPLE-GREEN	4	

Lookup Picker v1.9.6.43

HINT: For big lists, use the text filter to shorten the list search.

Filter ->

OTHER Show Only Choices

PALE PURPLE LIMB WITH PURPLE THROAT Valid For This:

PURPLE

WHITE

WHITE LIMB WITH PALE PURPLE RING

WHITE LIMB WITH PURPLE THROAT

crop_trait_id

Refresh List

Inventory	Orders	Cooperators	Get Crop	Get Crop Trait	Get Crop Trait Code	Get Crop Trait Lang	Get Crop Trait Code Lang	Get Crop Trait Observ
Crop Trait Code ID	Crop	Trait Name	Crop Trait	Trait Description	Trait Code	Code Title	Code Desc	
6956	SWEETPOTATO	FLOWERCOL	Flower Color	Flower color taken at growth stages 5-7.	1	WHITE	WHITE	
6957	SWEETPOTATO	FLOWERCOL	Flower Color	Flower color taken at growth stages 5-7.	2	WHITE LIMB WITH PURPLE ...	WHITE LIMB WITH PURPLE ...	
6958	SWEETPOTATO	FLOWERCOL	Flower Color	Flower color taken at growth stages 5-7.	3	WHITE LIMB WITH PALE PU...	WHITE LIMB WITH PALE PU...	
6959	SWEETPOTATO	FLOWERCOL	Flower Color	Flower color taken at growth stages 5-7.	4	PALE PURPLE LIMB WITH P...	PALE PURPLE LIMB WITH P...	
6960	SWEETPOTATO	FLOWERCOL	Flower Color	Flower color taken at growth stages 5-7.	5	PURPLE	PURPLE	
6961	SWEETPOTATO	FLOWERCOL	Flower Color	Flower color taken at growth stages 5-7.	6	OTHER	OTHER	

Developing crop descriptor lists

Bioversity Technical Bulletin #13

<http://www.bioversityinternational.org/e-library/publications/detail/developing-crop-descriptor-lists/>

Examples from page 26:

Example #25

(A full scale)

Length of peduncle

1	Very short	(<3 cm)
2	Very short to short	(3-5 cm)
3	Short	(6-8 cm)
4	Short to intermediate	(9-10 cm)
5	Intermediate	(11-13 cm)
6	Intermediate to long	(11-13 cm)
7	Long	(14-16 cm)
8	Long to very long	(17-19 cm)
9	Very long	(>19 cm)

If this were a trait to be coded in GG, the Trait's Codes and Code Titles could be:

Code	Code Title
1	1. Very Short (<3cm)
2	2. Very short to short (3-5cm)
3	3. Short (6-8 cm)
4	4. Short to intermediate (9-10 cm)
5	5. Intermediate (11-13 cm)
6	6. Intermediate to long (11-13 cm) (*note -- duplicating as above from the original text, but perhaps this scale actually needs a correction since 5 and 6 have the same lengths?)
7	7. Long (14-16 cm)
8	8. Long to very long (17-19 cm)
9	9. Very long (>19 cm)