

# Observations and Descriptors: CROP Dataviews

---



## Revision Date

February 23, 2015



This document describes several inter-related dataviews that handle descriptor data (“observations”). Since many GRIN-Global users will only need to know how to use existing trait descriptors to record their observations, this document begins by focusing on using the crop descriptors to record observation data. You will also see how traits can be reviewed in the Public Website.

The remainder of the document describes explains the supporting trait and code tables and dataviews. Typically in most organizations, only a few users (or perhaps an administrator) will be defining the trait descriptors and their related codes, whereas many genebank personnel be using 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 [feedback@ars-grin.gov](mailto:feedback@ars-grin.gov) 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](#).

# Contents

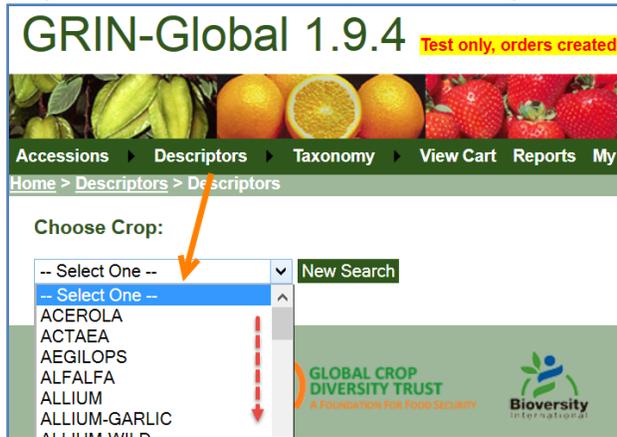
|   |           |
|---|-----------|
| <b>Overview .....</b>   | <b>3</b>  |
| <b>Get Crop Trait Observation.....</b>                            | <b>7</b>  |
| Get Crop Trait Observation.....                                   | 7         |
| Attach Observations to the Accession or Inventory? .....          | 8         |
| Bulk Importing of Observations.....                               | 8         |
| English vs. ENG .....   | 14        |
| Archived Observations.....  | 15        |
| <b>Descriptor Standards and Guidelines.....</b>                   | <b>16</b> |
| <b>The Crop “Family” of Dataviews - Overview .....</b>            | <b>22</b> |
| <b>Use the PW to Determine What Traits Have Observations.....</b> | <b>16</b> |
| Descriptors Search.....   | 16        |
| <b>Crop .....</b>   | <b>23</b> |
| Crop Dataview .....   | 23        |
| <b>Crop Trait.....</b>  | <b>23</b> |
| Crop Trait Dataview .....   | 23        |
| Crop Trait Language Dataview .....                                | 25        |
| <b>Crop Trait Code.....</b>                                       | <b>27</b> |
| Crop Trait Code Dataview .....                                    | 27        |
| Crop Trait Code Language Dataview.....                            | 29        |

## Overview

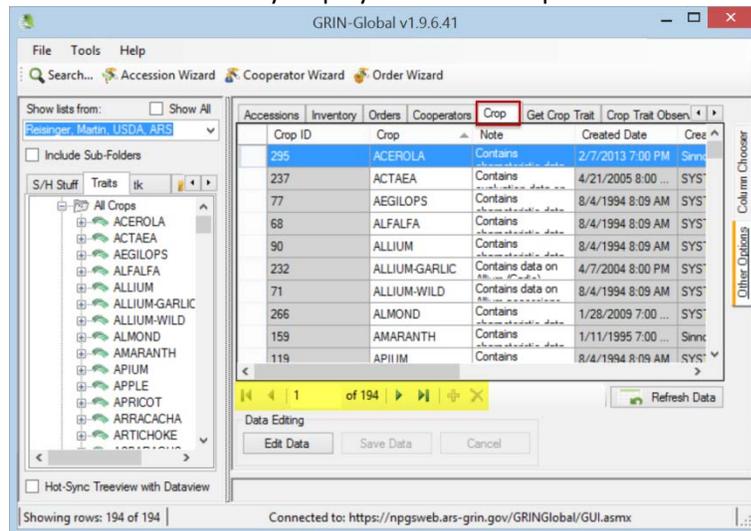
(GRIN users referred to this table as the “Observation” table.) This dataview contains the crop specific observations for an accession. The observation table holds all the crop-specific characteristic/evaluation data for all accessions and inventory.

### Crops

Before discussing the descriptors, it is important to understand that the descriptors are organized by crops. On the Public Website, to review any observation, a crop must initially be selected:



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.

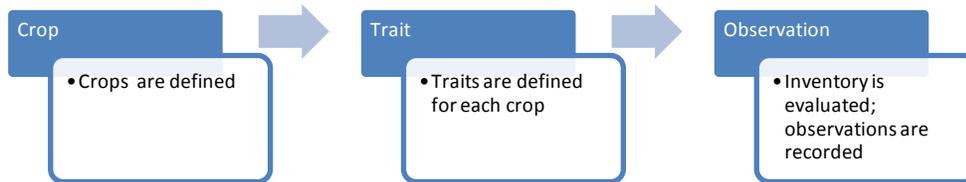


When a curator or genebank personnel record the results of their evaluations, they record them via the **Crop Trait** observation dataview. However, before any observations can be recorded, the traits (descriptors) must be defined. This is done using the **Crop Trait** dataview:

| Accessions    | Inventory | Orders     | Cooperators | Crop Trait Observation | Inventory Quality Status | Taxonomy Species | Crop      | Taxonomy Crop Map        | Get Crop Trait | ...            |                 |                 |                     |                       |                          |              |      |    |
|---------------|-----------|------------|-------------|------------------------|--------------------------|------------------|-----------|--------------------------|----------------|----------------|-----------------|-----------------|---------------------|-----------------------|--------------------------|--------------|------|----|
| Crop Trait ID | Crop      | Trait Name | Trait Title | Trait Description      | Is Peer Reviewed?        | Category         | Data Type | Is Coded?                | Maximum Length | Numeric Format | Numeric Maximum | Numeric Minimum | Original Value Type | Original Value Format | Is Archived?             | Ontology URL | Note | C  |
| 1             |           |            |             |                        | <input type="checkbox"/> | [Null]           | [Null]    | <input type="checkbox"/> |                |                |                 |                 | [Null]              |                       | <input type="checkbox"/> |              |      | 2/ |

The details for creating a new Crop Trait record are explained later in this document; refer to the [Crop Trait](#) section for details. Notice that the first required field in the sample new Crop Trait record above is

“Crop.” So if an organization is initially setting up GRIN-Global, it will need to establish its Crops; this is done using the [Crop](#) dataview.



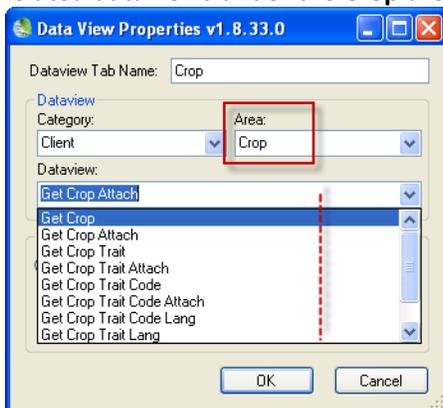
So the question becomes, how are the observations related to accessions? Review the **Crop Trait Observation** dataview below. Starting from left to right, the first required field that must be entered is the **Inventory** field. The user proceeds to input the **Crop**, the **Crop Trait**, the value of the observation record, and so on:

| 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            | Is Archive |
| -1                        |           |           |             |            |                |                        |                          |                  |                   |            |

Notice that the **Accession** field cannot be inputted. After the record is saved, GG will complete the **Accession** field, based on the Inventory-Accession relationship. Observations are explained in detail in the [Get Crop Trait Observation](#) section.

### 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:



### Public Website

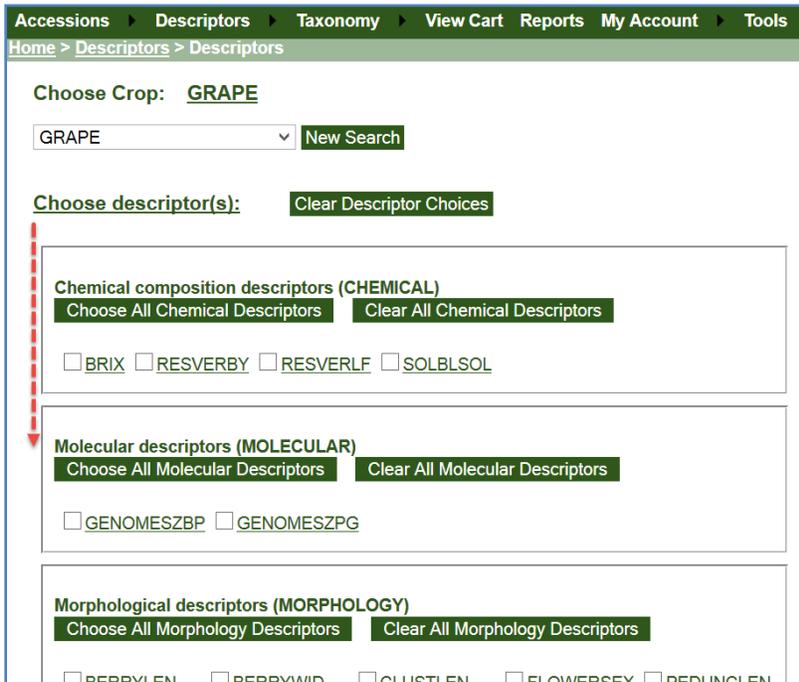
There are several ways to view observations in the Public Website. One method is to search by Descriptors – the Public Website has a **Descriptors** menu option:



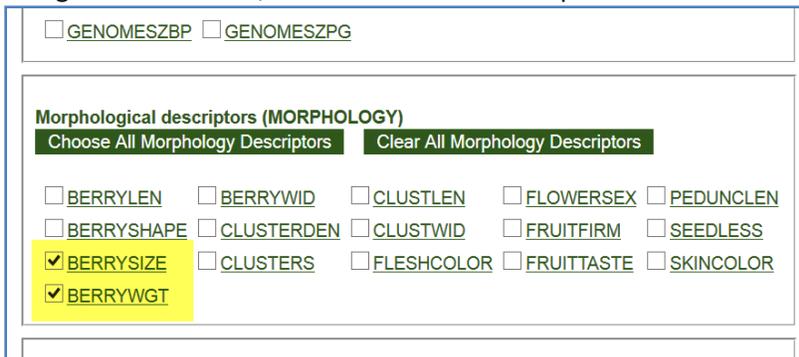
To review any observation, a crop must be initially selected:



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, select the desired descriptors:



Results:

**Query Criteria:**  
 Crop: GRAPE  
 Berry Size Equal To ALL VALUES;  
 Berry Weight Equal To ALL VALUES;

Results match all trait conditions.

Choose Crop: **GRAPE**

GRAPE

Choose descriptor(s):

Select descriptor values:

**Results:**

Select: All, None, Inverse, Highlighted Options: Show  items << <  of 981 >>

| Group By:                          |            |              |   |      |     |  |
|------------------------------------|------------|--------------|---|------|-----|--|
| <input type="checkbox"/> Plant ID  | Berry Size | Berry Weight | <input checkbox"="" type="button" value="+&lt;/input&gt;&lt;/th&gt; &lt;/tr&gt; &lt;/thead&gt; &lt;tbody&gt; &lt;tr&gt; &lt;td&gt;&lt;input type="/> PI 588054 <td>81.9</td> <td>0.5</td> <td></td> | 81.9 | 0.5 |  |
| <input type="checkbox"/> PI 588055 | 57.8       | 0.3          |   |      |     |  |
| <input type="checkbox"/> PI 588057 | 73.9       | 0.45         |   |      |     |  |
| <input type="checkbox"/> PI 588058 | 124.3      | 0.9          |   |      |     |  |

*Public Website – Alternative Method for Displaying Descriptors*

Under Search Options, you can select Web Search Observation. The search results display several columns of observations for accessions that met the search criteria; in this example the search criterion was simply “vitis vinifera.” In this example, GG returned 72 rows of observation data. To display all of the observations , use the **Export** feature to create a CSV file for further review.

Accessions **1** Descriptors Taxonomy View Cart Reports My Account Help Choose language English

Home Page > Accessions > General

**Query Criteria:**  
 Search String: vitis vinifera

Search For: vitis vinifera

Search Options | Advanced Search

Return up to  accessions

Match All Terms  Allow Multiple Lines

Retrieve:   **3**

Select: All, None, Inverse, Highlighted Options: Show  items << <  of 72 >>

| Group By:                          |                             |               |  |   |                       |                        |                   |
|------------------------------------|-----------------------------|---------------|--|---|-----------------------|------------------------|-------------------|
| <input type="checkbox"/> Plant ID  | Sex of Flower               | Berry Shape   | Bud Burst Date   | Flavor                                      | Flesh Color           | Leaf Date              | Leaf lobes on mat |
| <input type="checkbox"/> DVIT 2073 | 3 - Hermaphrodite (Concord) | 8 - cylindric | 124.00000;<br>139.00000;<br>87.00000;<br>89.00000;<br>93.00000;<br>108.00000 | 0 - None (no especially distinctive flavor) | 1 - Flesh not colored | 91.00000               | 3 - Five          |
| <input type="checkbox"/> DVIT 2076 | 3 - Hermaphrodite           | 8 - cylindric | 97.00000;<br>109.00000;<br>79.00000;   | 0 - None (no especially                     | 1 - Flesh not colored | 85.00000;<br>88.00000; | 3 - Five          |

## Get Crop Trait Observation

Assuming the descriptors (“crop traits”) have already been added for the crops for which you are recording observations, as a Curator Tool user you may need to only use the **Observation** dataview in which to enter your evaluation results. In this first section of the document, besides showing how to record observation records, we also discuss a language switching option 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 many fields; four are required:

- Inventory
- Crop
- Crop Trait
- Method

| Crop Trait Observation ID | Accession | Inventory | Crop | Crop Trait | Coded Value | Trait Code | Numeric Value | Text Value | Method | Is Archived? |
|---------------------------|-----------|-----------|------|------------|-------------|------------|---------------|------------|--------|--------------|
| -1                        |           |           |      |            |             |            |               |            |        |              |

| Crop Trait Observation ID | Accession | Inventory        | Crop  | Crop Trait  | Coded Value | Trait Code | Numeric Value | Text Value | Method | Is Archived? |
|---------------------------|-----------|------------------|-------|-------------|-------------|------------|---------------|------------|--------|--------------|
| -1                        |           | MR 201502 RE1... | GRAPE | Berry Shape |             |            |               |            |        |              |

Lookup Picker v1.9.6.41

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

Filter ->

Show Only Choices Valid For This:

- crop\_trait\_id

Roundish

Short elliptic

Slightly flat



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

After saving (the **Trait Code** field fills in with the respective value):

| Crop Trait Observation ID | Accession     | Inventory        | Crop  | Crop Trait  | Coded Value | Trait Code | Numeric Value | Text Value | Method        | Is Archived? |
|---------------------------|---------------|------------------|-------|-------------|-------------|------------|---------------|------------|---------------|--------------|
| 10497957                  | MR 2015 RE... | MR 201502 RE1... | GRAPE | Berry Shape | Roundish    | 3          |               |            | GRAPE HORT.08 | N            |

In the above example, the **Accession** and **Trait Code** values were supplied after the save.

## 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. Sometimes historical observations have been saved, but not associated with 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       | Bery Shape | Roundish       | 3                      |                          |                  | GRAPE.HC          |     |
| -2                        |               | PI 100000 **    |             |            |                |                        |                          |                  |                   |     |

## Bulk Importing of Observations

At some point in time 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 the **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 Descr |
|-----------|--------|-----------------------|--------------------------|----------|----------------------------|-------------------|------------------------|--------------|
| 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 THICKN     |                          |          |                            |                   |                        | 1            |
| PI 613844 | APPLE  | FRUIT WEIGHT          |                          |          |                            |                   |                        | 1            |
| PI 613844 | APPLE  | FRUIT SHAPE (OVER     |                          |          |                            |                   |                        | 5.0          |
| PI 613844 | APPLE  | CALYX PERSISTENC      |                          |          |                            |                   |                        | 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 INTE     |                          |          |                            |                   |                        |              |
| PI 613844 | APPLE  | OVERCOLOR INTENS      |                          |          |                            |                   |                        |              |
| PI 613844 | APPLE  | OVERCOLOR PATTE       |                          |          |                            |                   |                        | 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

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

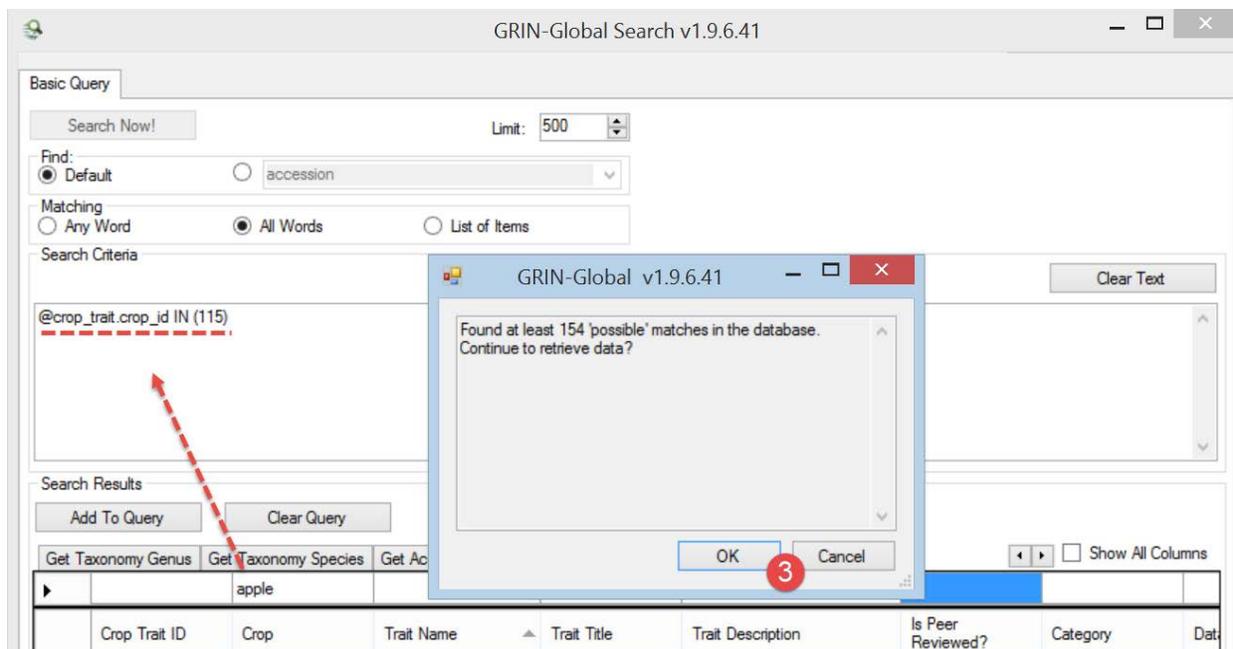
Search Criteria Clear Text

Search Results

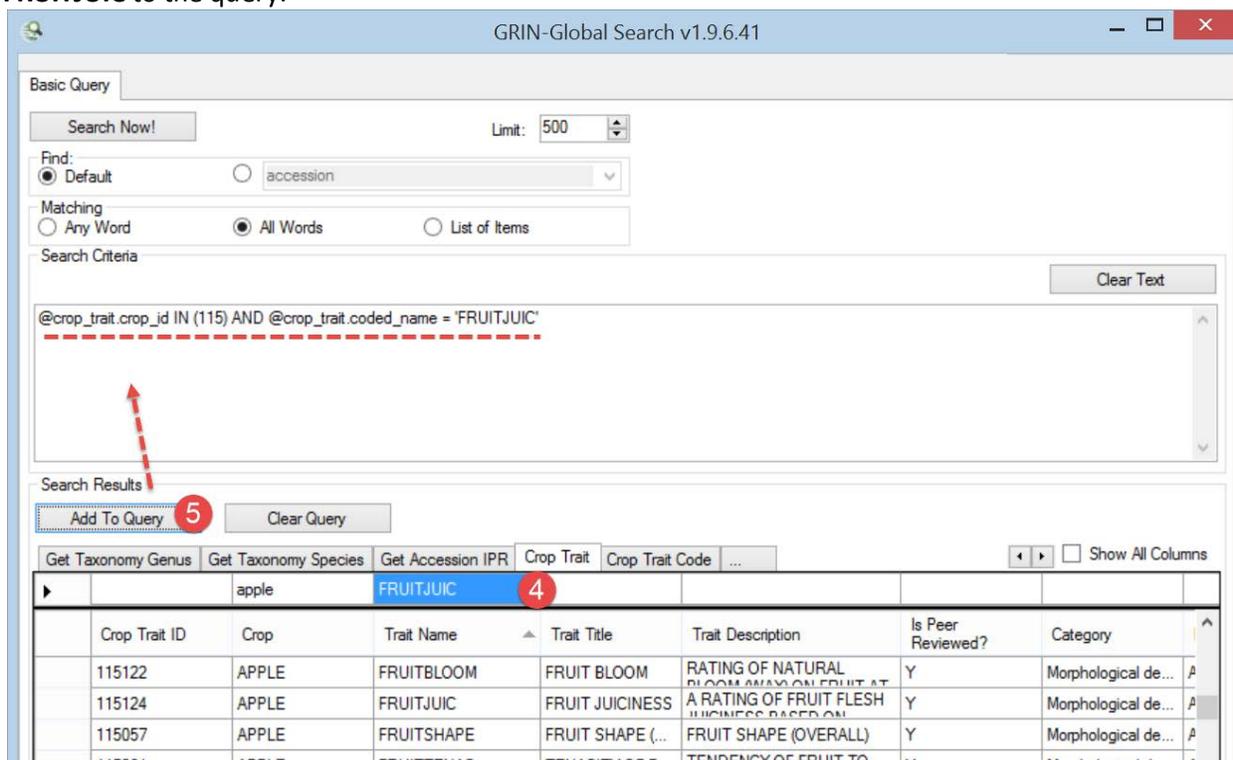
Add To Query    Clear Query

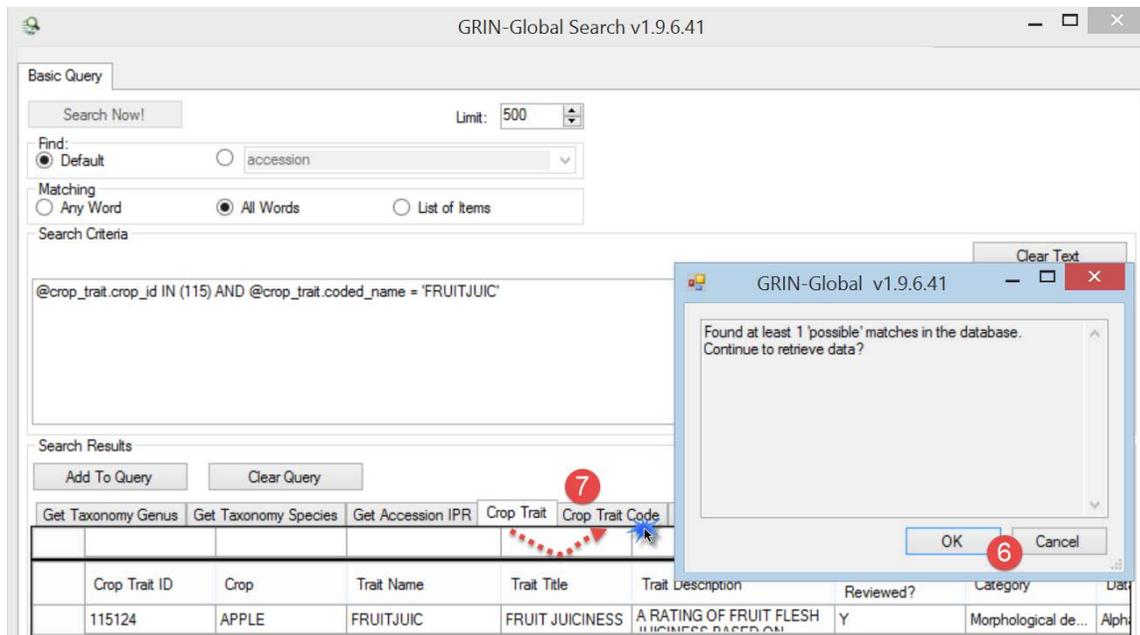
| Get Taxonomy Genus | Get Taxonomy Species  | Get Accession IPR | Crop Trait | Crop Trait Code | ... |
|--------------------|---|-------------------|------------|-----------------|-----|
|                    | apple <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">1</span> |                   |            |                 |     |

| Crop Trait ID | Crop | Trait Name | Trait Title | Trait Description | Is Peer Reviewed? | Category | Date |
|---------------|------|------------|-------------|-------------------|-------------------|----------|------|
|               |      |            |             |                   |                   |          |      |

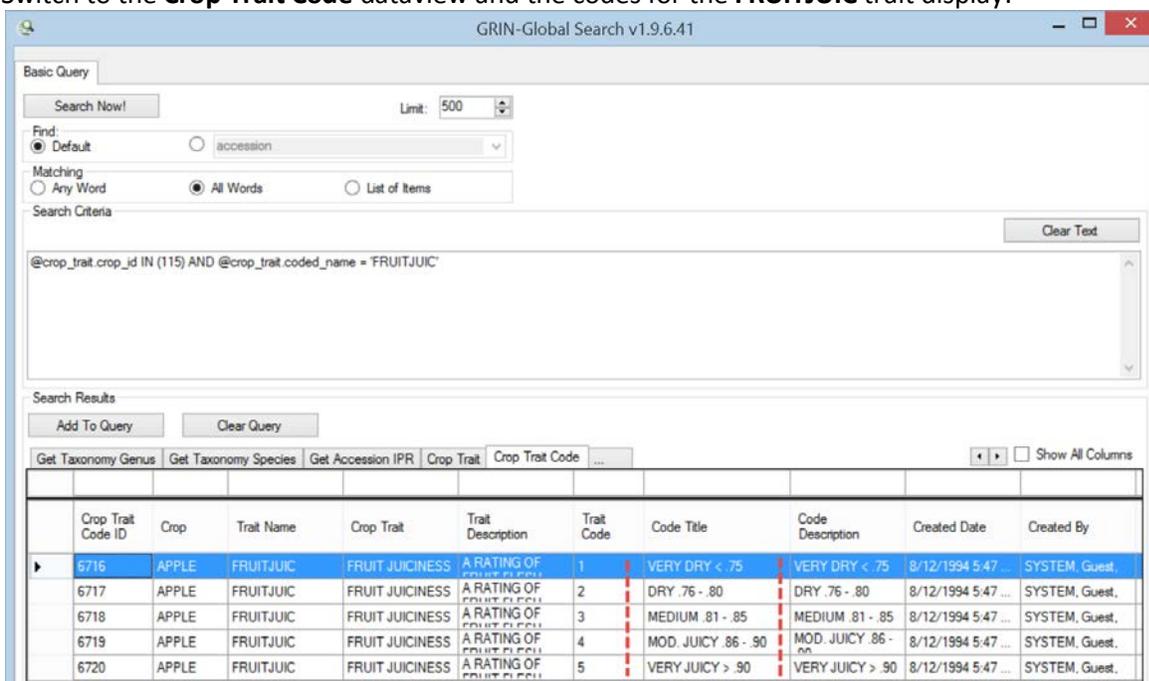


Sorting the list of records found by the Trait Name and scrolling down the list will display the row for **FRUIT JUICINESS**. Notice that the Trait Title is **FRUIT JUICINESS**; the Trait Name is **FRUITJUIC**. Add **FRUITJUIC** to the query:





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

If the trait is a coded descriptor, then you will also need to supply a valid code. 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          | 1.500                       | 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. (Note: 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 will supply an item from the list as you type.

| A              | B            | C         | D               | E                | F                    | G          | H             | I          | J                    | K            | L            | M              |
|----------------|--------------|-----------|-----------------|------------------|----------------------|------------|---------------|------------|----------------------|--------------|--------------|----------------|
|                |              |           |                 |                  | VERY JUICY > .90     |            |               |            |                      |              |              |                |
|                |              |           |                 |                  | MOD. JUICY .86 - .90 |            |               |            |                      |              |              |                |
|                |              |           |                 |                  | MEDIUM .81 - .85     |            |               |            |                      |              |              |                |
|                |              |           |                 |                  | DRY .76 - .80        |            |               |            |                      |              |              |                |
|                |              |           |                 |                  | VERY DRY < .75       |            |               |            |                      |              |              |                |
| Crop Trait     | Accession    | Inventory | Crop            | Crop Trait       | Coded Value          | Trait Code | Numeric Value | Text Value | Method               | Is Archived? | Data Quality | Original Value |
| Observation ID | PI 613844 ** | APPLE     | FRUIT JUICINESS | VERY JUICY > .90 | 5                    |            |               |            | 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.

| A              | B                | C         | D               | E                    | F                | G          | H             | I          | J                    | K            |
|----------------|------------------|-----------|-----------------|----------------------|------------------|------------|---------------|------------|----------------------|--------------|
|                |                  |           |                 |                      | MEDIUM .81 - .85 |            |               |            |                      |              |
|                |                  |           |                 |                      | DRY .76 - .80    |            |               |            |                      |              |
|                |                  |           |                 |                      | VERY DRY < .75   |            |               |            |                      |              |
| Crop Trait     | Accession        | Inventory | Crop            | Crop Trait           | Coded Value      | Trait Code | Numeric Value | Text Value | Method               | Is Archived? |
| Observation ID | 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:

| Get Site | Accessions                | Accession Source | Inventory | Orders          | Cooperators          | Get Taxonomy Species | Get Crop   | Get Crop Trait Observation | Source Descriptor | Source Descriptor Lang | Source Descriptor Cl. |
|----------|---------------------------|------------------|-----------|-----------------|----------------------|----------------------|------------|----------------------------|-------------------|------------------------|-----------------------|
|          | 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:

| Get Site | Accessions                | Accession Source | Inventory        | Orders | Cooperators     | Get Taxonomy Species | Get Crop   | Get Crop Trait Observation | Source Descriptor | Source Descriptor Lang | Source Descriptor Cl. |
|----------|---------------------------|------------------|------------------|--------|-----------------|----------------------|------------|----------------------------|-------------------|------------------------|-----------------------|
|          | 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   |                       |

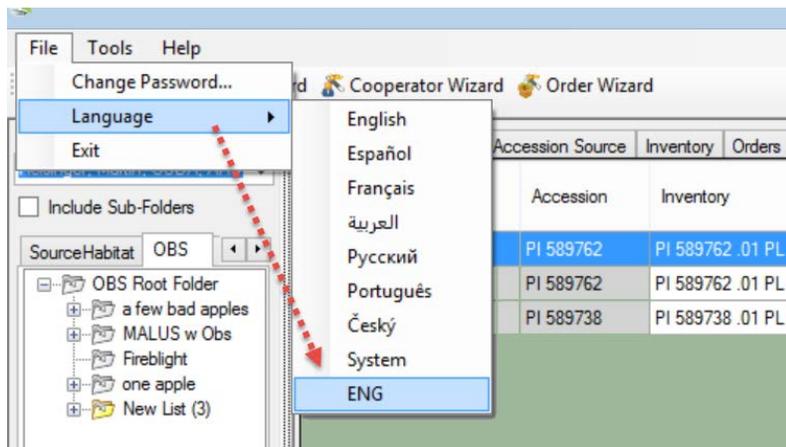
Why only three whereas the Excel table has four? The first record, which we used as a template, was already in the database. During the Save process, the Curator Tool highlights the duplicate and does not allow it to be saved again. Since it was already in the database, we saved just the three new records.

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.

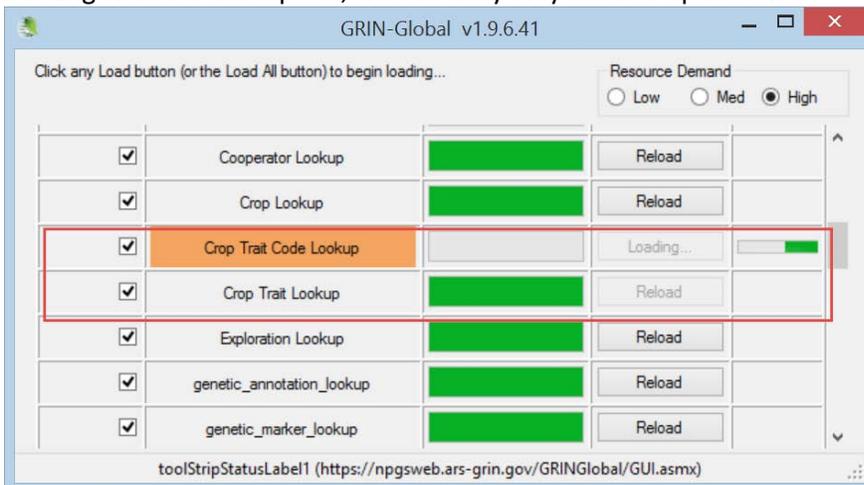
## English vs. ENG

A set of dataviews were created to allow the codes to be used, rather than the lengthier titles. Some people prefer using the ENG dataviews.

| Get Site                  | Accessions | Accession Source | Inventory | Orders          | Cooperators          | Get Taxonomy Species | Get Crop      | Get Crop Trait Observation | Source Descriptor | Source Descriptor Lang | Source Descriptor Co |
|---------------------------|------------|------------------|-----------|-----------------|----------------------|----------------------|---------------|----------------------------|-------------------|------------------------|----------------------|
| 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   |                        |                      |



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



(The **Crop Trait Lookup** updated before the screen capture completed.)

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 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     | FRUITJUIC  | 2           | 2                    |               |                            | APPLE.MORPHOLC    |                        |                      |
| 10481119                  | PI 589762  | PI 589762 .01 PL | APPLE     | FRUITJUIC  | 1           | 1                    |               |                            | APPLE.MORPHOLC    |                        |                      |
| 10481120                  | PI 589738  | PI 589738 .01 PL | APPLE     | FRUITJUIC  | 4           | 4                    |               |                            | APPLE.MORPHOLC    |                        |                      |

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 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     | FRUITJUICINESS | DRY .76 - .80        | 2                    |               |                            | APPLE.MORPHOLC    |                        |                      |
| 10481119                  | PI 589762  | PI 589762 .01 PL | APPLE     | FRUITJUICINESS | VERY DRY < .75       | 1                    |               |                            | APPLE.MORPHOLC    |                        |                      |
| 10481120                  | PI 589738  | PI 589738 .01 PL | APPLE     | FRUITJUICINESS | MOD. JUICY .86 - .90 | 4                    |               |                            | APPLE.MORPHOLC    |                        |                      |

Notice especially the **Crop Trait** and the **Coded Value** fields. The **ENG** version is much simpler to bulk update. After you complete the updating, you can always switch back to the **English** version.

The following is another example. In this example, the Crop Trait Fruit Shape for 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...          |                  |     |
| 4714751                   | PI 596662 | PI 596662 ** | WATERMELON  | Fruit shape | Variable       | 9               |                      |                        | WATERMELON.1...          |                  |     |
| 4714759                   | PI 596677 | 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 | Taxo |
|---------------------------|-----------|--------------|-------------|------------|----------------|-----------------|----------------------|------------------------|--------------------------|------------------|------|
| 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...          |                  |      |
| 4714760                   | PI 596662 | PI 596662 ** | WATERMELON  | FRUITSHAPE | 2              | 9               |                      |                        | 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                     |           |              |             |            |                |                 |                      |                        |                          |                  |      |

Refer to the document [English vs. ENG](#) for complete details on working with the **ENG** alternative language.

### 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.

## 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):

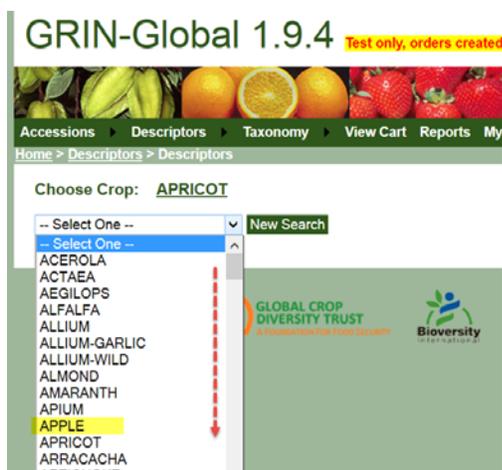
- characterization descriptors: "consists of recording those characters which are highly heritable, can be easily seen by the eye and are expressed in all environments."
- preliminary evaluation descriptors: "consists of recording a limited number of additional traits thought desirable by a consensus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

## Using the Public Website to Determine What Traits Have Observations

Besides using the Curator Tool, there are many features within the GRIN-Global Public Website which genebank personnel may also use to examine descriptors.

### Descriptors Search

Use the **Descriptors** option to review existing descriptors and observations. First select the desired crop; after doing so, you have several tools with which you can review descriptors and observations.



After the crop has been selected, if the crop has observations, all descriptors which have been used to denote the observations will be listed:

Choose Crop: **APPLE**

APPLE

Choose descriptor(s):

**Chemical composition descriptors (CHEMICAL)**

SOLSOLIDS

**Disease descriptors (DISEASE)**

FBBLNAT  FBSHNAT

**Morphological descriptors (MORPHOLOGY)**

AFTERRIPE  FRTFLSHCOL  FRTWEIGHT  LOBTUBRAT  SHOOTCUTIC  
 ANTHERCOLOR  FRTFLSHFLA  FRUITBLOOM  OVERCOLOR  SHOOTHAIR  
 BARKCOLOR  FRTFLSHFRM  FRUITJUIC  OVERCOLPAT  SLENTINTEN  
 CALLOBECOL  FRTFLSHOXI  FRUITSHAPE  PETALHAIR  SLENTSHAPE

You can select any of the descriptors to review the observations:

Choose Crop: **APPLE**

APPLE

Choose descriptor(s):

**Chemical composition descriptors (CHEMICAL)**

SOLSOLIDS

**Disease descriptors (DISEASE)**

After selecting the descriptors, scroll down and click the **Go** button:

**Cytological or cellular descriptors (CYTOLOGIC)**

PLOIDY

**Growth descriptors (GROWTH)**

TREEVIGOR

In this example, the Apple crop has 2780 observations recorded for the **Soluble Solids** trait. Of course multiple traits can be selected.

The screenshot shows a search interface for the trait 'Soluble Solids' in the crop 'APPLE'. The 'Choose Crop' dropdown is set to 'APPLE' with a 'New Search' button. The 'Choose descriptor(s):' dropdown is set to 'SOLUBLE SOLIDS (2780)' with a 'Clear Descriptor Choices' button. The 'Select descriptor values:' dropdown is set to '(Any)' with a 'Clear Descriptor Values' button. Below these are radio buttons for 'Results Match': 'All Conditions' (selected), 'Any Condition', and 'Results have observation data for all selected descriptors'. A criteria box for 'SOLUBLE SOLIDS (2780)' is shown with a dropdown set to '(Any)' and a list of values: 1, 3.2, 6.4, and 6.8.

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 a criteria box for 'SOLUBLE SOLIDS (2780)' with a dropdown set to '(Any)'. The list of values is 7.4, 8, 8.2, and 8.3. The values 7.4, 8, and 8.2 are highlighted in blue, indicating they are selected. A red text box says 'Hold Ctrl & click to select multiple values' with a mouse cursor pointing to the 8.3 value.

Click **Search** to continue:



The results are displayed and can also be exported to a spreadsheet:

**Choose descriptor(s):** [Clear Descriptor Choices](#)

**Select descriptor values:** [Clear Descriptor Values](#)

**Results:**

**Actions...** [Export with Options](#)

Select: All, None, Inverse, Highlighted Options: Show 25 items << < 1 - 25 > >> [Export...](#)

**Group By:**  Plant ID SOLUBLE SOLIDS +

|                          |                           |      |
|--------------------------|---------------------------|------|
| <input type="checkbox"/> | <a href="#">PI 588745</a> | 12.8 |
| <input type="checkbox"/> | <a href="#">PI 588746</a> | 9.5  |
| <input type="checkbox"/> | <a href="#">PI 588748</a> | 15   |
| <input type="checkbox"/> | <a href="#">PI 588749</a> | 13.5 |
| <input type="checkbox"/> | <a href="#">PI 588750</a> | 13.4 |
| <input type="checkbox"/> | <a href="#">PI 588751</a> | 13.3 |

The **Export with Options** feature provides additional data columns which can be selected to include in the export:

Home Page > Search Accessions > Descriptors

**Query Criteria:**  
Crop: APPLE  
SOLUBLE SOLIDS Equal To ALL VALUES;  
Results match all trait conditions.

**Choose Crop:** APPLE  
APPLE [New Search](#)

**Choose descriptor(s):** [Clear Descriptor Choices](#)

**Select descriptor values:** [Clear Descriptor Values](#)

**Results:**

**Actions...** [Export with Options](#)

Select: All, None, Inverse, Highlighted Options: Show 25 items << < 1 - 25 > >> [Export...](#)

**Group By:**  Plant ID SOLUBLE SOLIDS +

|                          |                           |      |
|--------------------------|---------------------------|------|
| <input type="checkbox"/> | <a href="#">PI 588745</a> | 12.8 |
| <input type="checkbox"/> | <a href="#">PI 588746</a> | 9.5  |
| <input type="checkbox"/> | <a href="#">PI 588748</a> | 15   |

### Export with Options

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

**Optional fields**

- Accession suffix
- Plant name (cultivar or other identifier)
- Species name
- Country where collected/developed
- Original value when ob value is standardized
- Frequency within the accession this ob value occurs
- Minimum value for this accession
- Maximum value for accession
- Average value for accession
- Standard deviation for accession
- Sample size for above statistics
- Inventory prefix
- Inventory number
- Inventory suffix
- Comment about the accession

**Export**

Use the link on the **Crop** name to access additional lists.

[Home Page](#) > [Search Accessions](#) > [Descriptors](#)

**Query Criteria:**  
Crop: APPLE  
[SOLUBLE SOLIDS](#) Equal To ALL VALUES;

Results match all trait conditions.

**Choose Crop:** [APPLE](#)

APPLE

**Choose descriptor(s):**



[Accessions](#) > [Descriptors](#) > [Taxonomy](#) > [View Cart](#) [Reports](#) [My Account](#) > [Help](#) > [Choose language](#) **English** ▼

**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, 315-787-2390.

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

Partial Descriptor List for Apples:

**Descriptors for APPLE:**

**Category: CHEMICAL**

- [SOLUBLE SOLIDS \(SOLSOLIDS\)](#)  
PERCENT SOLUBLE SOLIDS (AVERAGE REFRACTOMETER READINGS FROM 3 FRUITS AT FULL MATURITY)

**Category: CYTOLOGIC**

- [Ploidy Level \(PLOIDY\)](#)  
Ploidy level determined by nuclear DNA content using flow cytometry

**Category: DISEASE**

- [Fire Blight Blossom \(Natural\) \(FBBLNAT\)](#)  
Natural occurrence of Blossom Fire Blight (Erwinia amylovora) in Geneva, New York.
- [Fire Blight Shoot \(Natural\) \(FBSHNAT\)](#)  
Natural occurrence of Shoot Fire Blight (Erwinia amylovora) in Geneva, New York.

**Category: GROWTH**

Click on any descriptor link to list the descriptor details, studies, and distributions of values for the selected trait:

**Descriptors for APPLE:**

**Category: CHEMICAL**

- [SOLUBLE SOLIDS \(SOLSOLIDS\)](#)  
PERCENT SOLUBLE SOLIDS (AVERAGE REFRACTOMETER READINGS FROM 3 FRUITS AT FULL MATURITY)

**Category: CYTOLOGIC**

- [Ploidy Level \(PLOIDY\)](#)

**Descriptor: SOLUBLE SOLIDS (SOLSOLIDS)** [Download this trait](#)

|                          |  |
|--------------------------|--|
| <b>Definition:</b>       | PERCENT SOLUBLE SOLIDS (AVERAGE REFRACTOMETER READINGS FROM 3 FRUITS AT FULL MATURITY) |
| <b>Crop:</b>             | APPLE  |
| <b>Category:</b>         | Chemical composition descriptors   |
| <b>Status:</b>           | Crop Germplasm Committee approved  |
| <b>Data Type:</b>        | Numeric descriptor   |
| <b>Maximum Length:</b>   | 7  |
| <b>Data Format:</b>      | 990.99   |
| <b>Responsible site:</b> | Natl. Germplasm Repository - Geneva ( <a href="#">GEN</a> )                            |

**Studies or environments for this trait**

- [APPLE.MORPHOLOGIC.00](#) - (233 Accessions)
- [APPLE.MORPHOLOGIC.01](#) - (109 Accessions)
- [APPLE.MORPHOLOGIC.02](#) - (185 Accessions)
- [APPLE.MORPHOLOGIC.03](#) - (500 Accessions)
- [APPLE.MORPHOLOGIC.04](#) - (347 Accessions)

APPLE.MORPHOLOGIC.99 - (283 Accessions)

**Distribution of Values for SOLUBLE SOLIDS (SOLSOLIDS)**

| Range                 | Number of Accessions |
|-----------------------|----------------------|
| 1.00000 - 73.90000    | 2779                 |
| 73.90000 - 146.80000  | 0                    |
| 146.80000 - 219.70000 | 0                    |
| 219.70000 - 292.60000 | 0                    |
| 292.60000 - 365.50000 | 0                    |
| 365.50000 - 438.40000 | 0                    |

## 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*.

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    | Trait                 | Crop Trait<br>Crop Trait Lang           |
| 3    | Code                  | Crop Trait Code<br>Crop Trait Code Lang |

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.

## 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 to be taxonomy specific, 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-GENSTOCKS    | Contains evaluation data on Louisiana Rice Genetic Stock Collection...     | 8/19/2011          |
| 300     | AVOCADO           | Contains characteristic data on Avocado (Persea), accessions. For addit... | 4/23/2013          |
| 301     | CASSAVA           |  | 6/21/2013          |
| 400     | CHAYOTE           | Contains characteristic data on chayote.                                   | 2/22/2013          |
| -191    |                   |  | 12/5/2013 10:41 AM |



For this document I created an ELDERBERRY crop and then created supporting descriptor records to illustrate the family of Crop dataviews. If the example seems to not be botanically sound, it probably isn't!

--Marty Reisinger

| Crop ID | Crop       | Note                          | Created Date      | Created By            | Modified Date |
|---------|------------|-------------------------------|-------------------|-----------------------|---------------|
| 401     | ELDERBERRY | Elderberry data - contact mar | 2/26/2014 2:51 PM | Reisinger, Martin,... |               |
| -2      |            |                               | 2/27/2014 2:37 PM | Reisinger, Martin,... |               |

## 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.)

| Accessions Inventory Orders Cooperators Get Code Value Get Site Crop Trait Crop Trait Observation ... |            |            |             |                      |                   |                   |              |  |  |
|---|------------|------------|-------------|----------------------|-------------------|-------------------|--------------|--|--|
| Crop Trait ID   | Crop       | Trait Name | Trait Title | Trait Description    | Is Peer Reviewed? | Category          | Data Type    |  |  |
| 294056  | ELDERBERRY | BERRYCOLOR | Berry color | Color of the berries | N                 | Morphological ... | Alpha/numeri |  |  |
| 294057  | ELDERBERRY | LEAFSIZE   | Leaf size   | Length of the        | N                 | Morphological ... | Alpha/numeri |  |  |
| 294058  | ELDERBERRY | FRUITSHAPE | Fruit shape | Shape of the fruit   | Y                 | Morphological ... | Alpha/numeri |  |  |

| Accessions Inventory Orders Cooperators Crop Get Crop Trait Crop Trait Observation Inventory Quality Status Taxonomy Species Taxonomy Crop Map ... |       |            |             |                     |                   |                   |                          |           |                |           |  |
|--|-------|------------|-------------|---------------------|-------------------|-------------------|--------------------------|-----------|----------------|-----------|--|
| Crop Trait ID  | Crop  | Trait Name | Trait Title | Trait Description   | Is Peer Reviewed? | Category          | Data Type                | Is Coded? | Maximum Length | Num Forms |  |
| 174018   | GRAPE | BERRYSHAPE | Berry Shape | Typical berry shape | Y                 | Morphological ... | Alpha/numeric descriptor | Y         | 1              |           |  |

Required fields:

- Crop
- Trait Name
- Category
- Data Type

| Accessions Inventory Orders Cooperators Get Code Value Get Site Crop Trait Get Crop Trait Lang Crop Trait Observation ... |            |            |             |                     |                                     |                  |                    |                                     |  |
|---|------------|------------|-------------|---------------------|-------------------------------------|------------------|--------------------|-------------------------------------|--|
| Crop Trait ID   | Crop       | Trait Name | Trait Title | Trait Description   | Is Peer Reviewed?                   | Category         | Data Type          | Is Coded?                           |  |
| 294056  | ELDERBERRY | BERRYCOLOR | Berry color | Color of the ber... | <input type="checkbox"/>            | Morphological... | Alpha/numeric d... | <input checked="" type="checkbox"/> |  |
| 294057  | ELDERBERRY | LEAFSIZE   | Leaf size   | Length of the le... | <input type="checkbox"/>            | Morphological... | Alpha/numeric d... | <input type="checkbox"/>            |  |
| 294058  | ELDERBERRY | FRUITSHAPE | Fruit shape | Shape of the fruit  | <input checked="" type="checkbox"/> | Morphological... | Alpha/numeric d... | <input checked="" type="checkbox"/> |  |
| -4  |            |            |             |                     | <input type="checkbox"/>            | [Null]           | [Null]             | <input type="checkbox"/>            |  |

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

A new **Crop Trait** being added:

| Accessions Inventory Orders Cooperators Get Code Value Get Site Crop Trait Get Crop Trait Lang Crop Trait Observation ... |            |            |             |                      |                                     |                   |                 |                                     |                |  |
|---|------------|------------|-------------|----------------------|-------------------------------------|-------------------|-----------------|-------------------------------------|----------------|--|
| Crop Trait ID   | Crop       | Trait Name | Trait Title | Trait Description    | Is Peer Reviewed?                   | Category          | Data Type       | Is Coded?                           | Maximum Length |  |
| 294056  | ELDERBERRY | BERRYCOLOR | Berry color | Color of the berries | <input type="checkbox"/>            | Morphological ... | Alpha/numeri... | <input checked="" type="checkbox"/> | 1              |  |
| 294057  | ELDERBERRY | LEAFSIZE   | Leaf size   | Length of the lea... | <input type="checkbox"/>            | Morphological ... | Alpha/numeri... | <input type="checkbox"/>            | 3              |  |
| 294058  | ELDERBERRY | FRUITSHAPE | Fruit shape | Shape of the fruit   | <input checked="" type="checkbox"/> | Morphological ... | Alpha/numeri... | <input checked="" type="checkbox"/> | 2              |  |
| -4  | ELDERBERRY | PLANTSIZE  |             |                      | <input type="checkbox"/>            | Morphological ... | Alpha/numeri... | <input checked="" type="checkbox"/> | 1              |  |

Search... Accession Wizard Cooperator Wizard Order Wizard

Show lists from: Reisinger, Martin, USDA, ARS

Include Sub-Folders

marAccessions CROPS Images

CROPS Root Folder

- New List
- SESAME
- elderberry\_stuff
  - New List
  - Berry color
  - ELDERBERRY
    - Berry color
    - Leaf size
    - Fruit shape
    - Leaf size
    - Berry color - English
    - Leaf size - English
    - Fruit shape
    - Fruit shape - English
    - :croptraitid=294059**

| Crop Trait ID | Crop       | Trait Name | Trait Title | Trait Description    | Is P Rev |
|---------------|------------|------------|-------------|----------------------|----------|
| 294056        | ELDERBERRY | BERRYCOLOR | Berry color | Color of the berries | N        |
| 294057        | ELDERBERRY | LEAFSIZE   | Leaf size   | Length of the        | N        |
| 294058        | ELDERBERRY | FRUITSHAPE | Fruit shape | Shape of the fruit   | Y        |
| 294059        | ELDERBERRY | PLANTSIZE  |             |                      | Y        |

Until the Crop Trait gets its Title, the list item uses the format :croptraitid=...

Later:

Show lists from: Reisinger, Martin, USDA, ARS

Include Sub-Folders

marAccessions CROPS Images

CROPS Root Folder

- New List
- SESAME
- elderberry\_stuff
  - New List
  - Berry color
  - ELDERBERRY
    - Berry color
    - Leaf size
    - Fruit shape
    - Leaf size
    - Berry color - English
    - Leaf size - English
    - Fruit shape
    - Fruit shape - English
    - Plant size**
    - PLANTSIZE - English

| Crop Trait ID | Crop       | Trait Name | Trait Title | Trait Description    | Is Peer Reviewed? | Category         |
|---------------|------------|------------|-------------|----------------------|-------------------|------------------|
| 294056        | ELDERBERRY | BERRYCOLOR | Berry color | Color of the berries | N                 | Morphological... |
| 294057        | ELDERBERRY | LEAFSIZE   | Leaf size   | Length of the        | N                 | Morphological... |
| 294058        | ELDERBERRY | FRUITSHAPE | Fruit shape | Shape of the fruit   | Y                 | Morphological... |
| 294059        | ELDERBERRY | PLANTSIZE  | Plant size  | Size of the plant    | Y                 | Morphological... |

filled in after the corresponding Crop Trait Language record was saved

The **Trait Title** and the **Trait Description** fields are displayed now because the corresponding **Crop Trait Language** record had been saved.

### Crop Trait Language Dataview

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

- Crop
- Crop Trait
- Language

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

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 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 |
| 6995               | ELDERBERRY | Leaf size   | English  | Leaf size   | Length of the lea... | 2/26/2014 |
| 6996               | ELDERBERRY | Fruit shape | English  | Fruit shape | Shape of the fruit   | 2/26/2014 |
| -4                 | ELDERBERRY |             |          |             |                      | 2/27/2014 |

**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

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

## Crop Trait Code

### Crop Trait Code Dataview

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

In the example above, **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 C |
|--------------------|----------|------------|---------------------|-------------------|----------------------|------------------------|-------------------|----------|
| 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 Obser |
|--------------------|------------|------------|-------------|-------------------|------------|------------|---------------------|-----------------|------------------|
| 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* a 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:

| Inventory          | Orders     | Cooperators | Get Code Value | Get Site          | Crop Trait | Get Crop Trait Lang | Crop Trait Code  | Crop Trait Code Lang | Crop |
|--------------------|------------|-------------|----------------|-------------------|------------|---------------------|------------------|----------------------|------|
| 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          | Very short          | (<1.2 meters)    |                      |      |

## 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 for the **Crop Trait “Plant size”** 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         |

## Appendix: Changes in this Document

*February 23, 2015*

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