

SQL in GG the “Basics”

March 2, 2023

Agenda

- Running Queries in the Public Website
- Comparing to Search Tool statements
- SQL statement dissected
- Sources of GG information

Today's Goals

1. Use the Public Website to run SQL statements
2. Review the basics of SQL coding
3. Determine how to locate GRIN-Global (GG) table and column names
4. Determine how to create:
 - simple queries
 - queries accessing data from multiple GG tables

Login!

Welcome! mar@rrginc.com **1**

U.S. National Plant Germplasm System

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Enter SQL

Only select queries are allowed

```
SELECT
sdf.field_name,
sd.dataview_name,
sd.database_area_code,
st.table_name,
stfl.title,
stfl.description
```

3

Save SQL

Limit rows to: **4**

Load SQL from file

No file selected.

Web Query
Create Query
Download Curator Tool
Main menu

After choosing a file, click the upload button and the text will appear in the textbox to the left.

SQL Statements: Basic Components

SELECT – what columns (fields) / data to display

FROM – what table(s) to search

WHERE – what criteria to specify

CT vs SQL

- CT - dataviews
- SQL - tables

CT vs SQL

- CT
 - dataviews
 - can write to the database
- SQL
 - tables
 - *cannot* write to (insert), or delete from the database

Syntax

- text: case doesn't matter...upper, lower, etc.
- commas are needed between list items
- wild cards:
 - %
 - _ (underscore)

Syntax

- text: case doesn't matter: ...upper, lower, etc.
- commas are needed between list items
- wild cards: % _ (underscore)
- it's a tradition -- use uppercase to indicate SQL reserved terms

Your Comments Please!

-- text following 2 dashes is a comment

/*

extended comments can be included between ...
good SQL writers leave a legacy for others;
selfish SQL writers do not

*/

Example 1: simple

```
SELECT last_name, first_name, email  
FROM web_cooperator  
WHERE last_name = 'Reisinger'
```

Example 2

```
SELECT *  
FROM web_cooperator  
WHERE last_name LIKE 'Reis%'
```

Quotes – When?

Quotes – When?

WHERE accession_id = 1927546

WHERE s.site_short_name = 'S9'

BETWEEN '10-01-2014' and '9-30-2015'

ORDER BY

to sort the results in
ascending or descending order

ORDER BY

to sort the results in
ascending or descending order

```
SELECT site_id, site_short_name, fao_institute_number  
FROM site  
ORDER BY site_id
```

Determining GG names

Tables and fields – in GRIN-Global,
aren't there many? How do I ...?

Determining GG names

One method

Cheat: use the search tool!

```
SELECT last_name, first_name, email  
FROM web_cooperator  
WHERE last_name = 'Reisinger'
```

Search Criteria

Clear Text

@web_cooperator.email

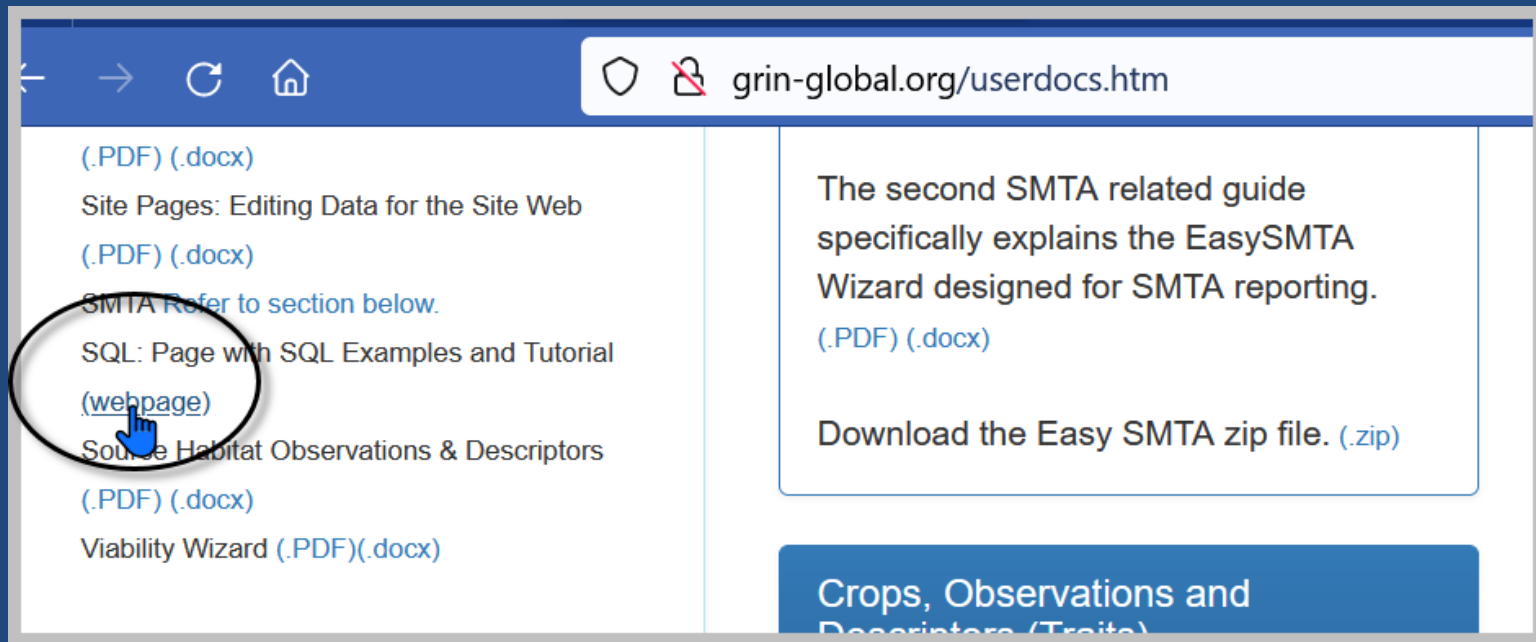
Search Results

Add To Query Clear Query Limit: 500 Page Size: 1000

Get Site Crop Trait Get Crop Trait Observation Get Method Crop Crop Trait Code **WORs** WOR Item ...

Web Cooperator	Web Order Request ID	Email	Last Name	Title	First Name

SQL Resources



https://www.grin-global.org/sql_examples.htm

Determining GG names

Use a SQL Query!

FROM information_schema.columns

Only select queries are allowed

FROM information_schema.columns

ORDER BY table_name, ordinal_position

Limit rows to:

100000

Clear all

Execute SQL

Show/hide columns

Show 10 rows

Excel

CSV

Search:

Showing 1 to 10 of 51 entries

table_name	column_name	is_nullable	data_type	character_maximum_length
inventory	inventory_id	NO	int	
inventory	inventory_number_part1	NO	nvarchar	50
inventory	inventory_number_part2	YES	int	
inventory	inventory_number_part3	YES	nvarchar	50

ALIASES

An alias is simply an alternative name for either a table (or a field)

```
SELECT
```

```
a.accession_number_part1, a.accession_number_part2,
```

```
a.accession_number_part3,
```

```
ts.name
```

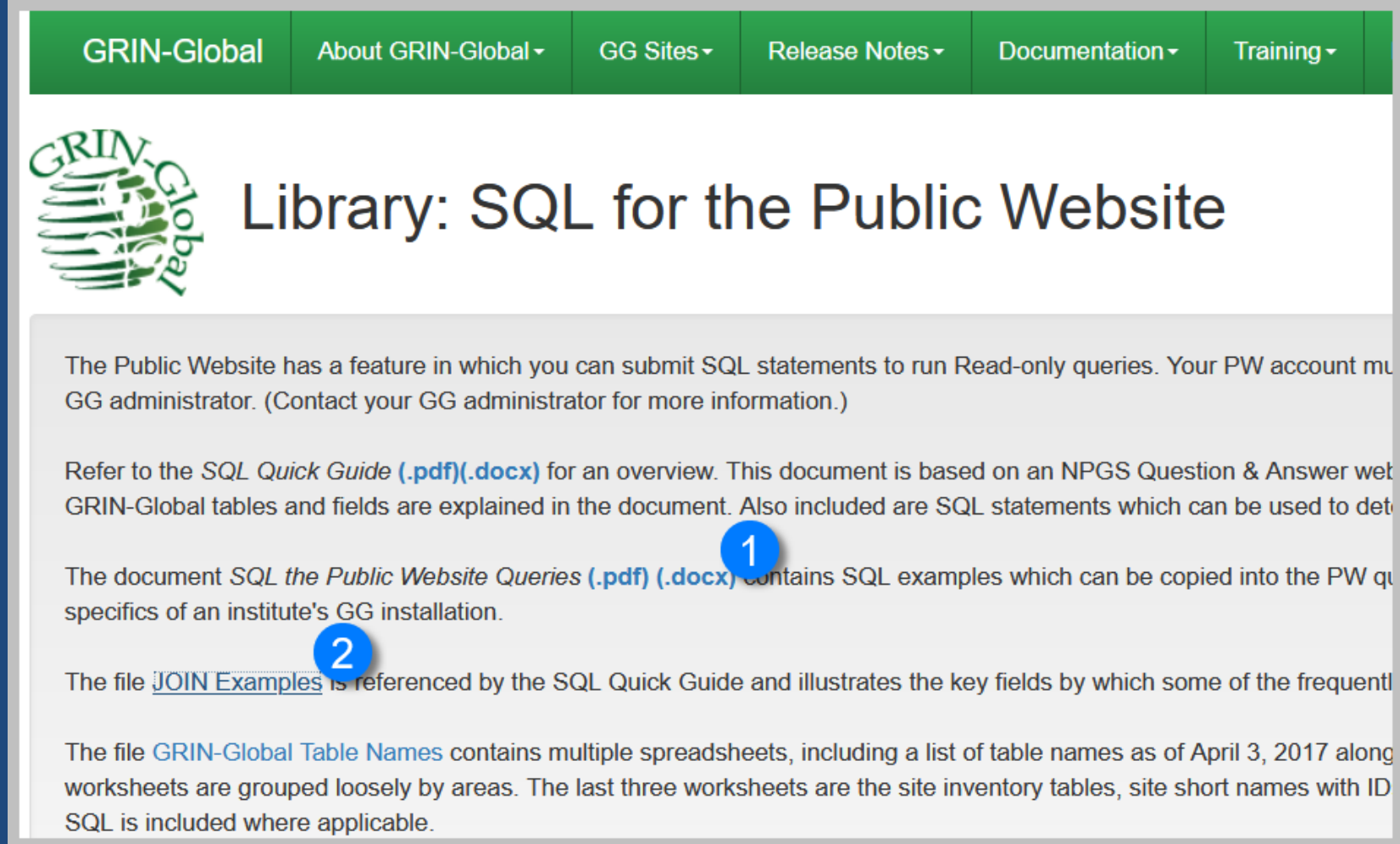
```
FROM taxonomy_species ts
```

```
JOIN accession a ON ts.taxonomy_species_id = a.taxonomy_species_id
```


```
WHERE ts.name LIKE 'Trit%'
```

```
AND a.status_code = 'ACTIVE'
```

JOIN Examples



GRIN-Global About GRIN-Global GG Sites Release Notes Documentation Training



Library: SQL for the Public Website

The Public Website has a feature in which you can submit SQL statements to run Read-only queries. Your PW account must be a GRIN-Global administrator. (Contact your GG administrator for more information.)

Refer to the *SQL Quick Guide* ([.pdf](#))([.docx](#)) for an overview. This document is based on an NPGS Question & Answer web page. The GRIN-Global tables and fields are explained in the document. Also included are SQL statements which can be used to define tables and fields.


The document *SQL the Public Website Queries* ([.pdf](#)) ([.docx](#)) contains SQL examples which can be copied into the PW queries. The examples are specific to the specifics of an institute's GG installation.

The file [JOIN Examples](#) is referenced by the SQL Quick Guide and illustrates the key fields by which some of the frequent queries are run.

The file [GRIN-Global Table Names](#) contains multiple spreadsheets, including a list of table names as of April 3, 2017 along with the corresponding worksheets are grouped loosely by areas. The last three worksheets are the site inventory tables, site short names with ID numbers, and site names. SQL is included where applicable.

https://www.grin-global.org/docs/join_examples.xlsx

from #1 (previous slide)

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Information_schema

```
SELECT table_name, column_name, data_type,  
character_maximum_length
```

```
FROM information_schema.columns
```

```
/* to see all tables, omit the WHERE clause */
```

```
WHERE table_name = 'inventory'
```

```
ORDER BY table_name, ordinal_position
```


Debugging Example

```
SELECT
a.accession_number_part1,
a.accession_number_part2,
a.accession_number_part3,
plant_name,
ts.name
FROM taxonomy_species ts
JOIN accession a ON ts.taxonomy_species_id =
a.taxonomy_species_id
JOIN inventory i ON a.accession_id = i.accession_id
JOIN accession_inv_name invn ON invn.inventory_id = i.inventory_id
WHERE ts.name LIKE 'Sorghum%'
AND a.status code = 'ACTIVE'
```

Sources

Check out:

- https://www.grin-global.org/sql_examples.htm
- <https://www.w3schools.com/sql/default.asp>
- <https://www.sqltutorial.org/sql-where/>
- <https://www.tutorialspoint.com/sql/sql-operators.htm>