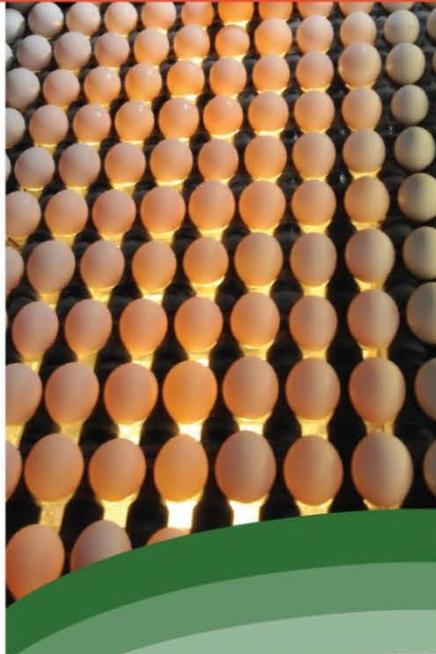




United States Department of Agriculture

Agricultural Marketing Service

Creating Opportunities for American Farmers and Businesses





Agricultural Marketing Service

Creating Opportunities for American Farmers and Businesses

MARS Application Programming Interface (API)

February 7, 2018

Today's Speaker

Srihari Akiri

MARS/My Market News

Application Architect

AMS Market News



Theme for discussion

- Discuss the idea behind MARS API
- Describe features of MARS API
- Describes how data can be pulled using the MARS API
 - Learn more about what available
 - Access Market News data and reports
- What's Next?



MARS – Delivering Market Data to Agricultural Producers
Around the Globe Faster and Easier

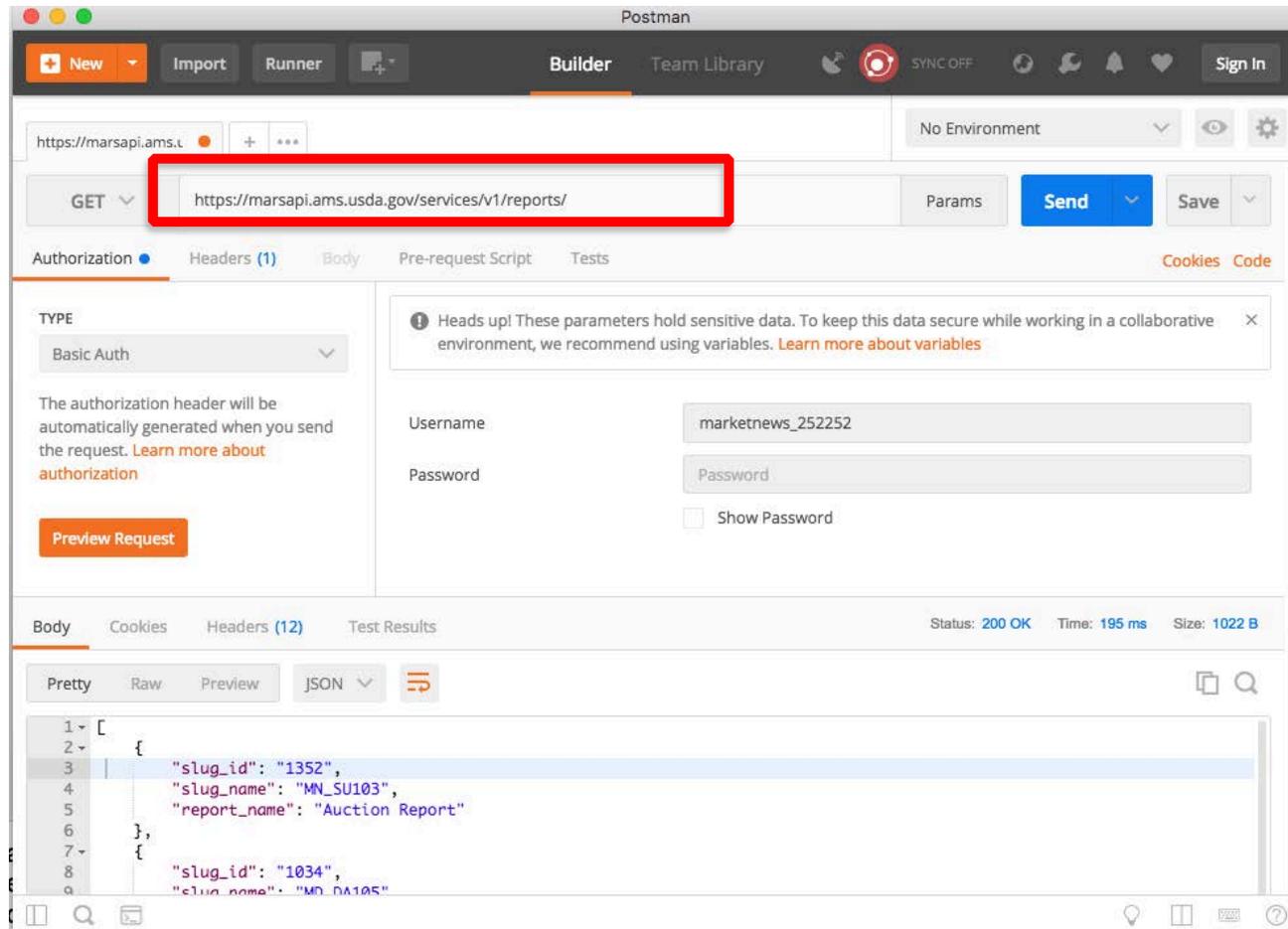
Introduction

- MARS APIs are implemented using the industry standard REST methodology.
- HTTP Codes are used for error notification
 - 401 for access denied
 - 200 for success response
- HTTP GET is used to pull the data
- HTTP request parameters are used to filter, sort response data
- Responses are in JSON Format

MARS API

- URL to access the APIs
 - PROD: <https://marsapi.ams.usda.gov/services/v1/reports/>
 - DEV : <https://marsapidev.ams.usda.gov/services/v1/reports/>
- Version management is done through the endpoint url
 - We will publish documentation as how the urls are changes
- This request will return the list of reports which are available for the public.
- Only published report data is available for download

Example 1 (Postman)



Response

```
1 - [
2   {
3     "slug_id": "1352",
4     "slug_name": "MN_SU103",
5     "report_name": "Auction Report"
6   },
7   {
8     "slug_id": "1034",
9     "slug_name": "MD_DA105",
10    "report_name": "Dairy Individual Commodity Report"
11  },
12  {
13    "slug_id": "1045",
14    "slug_name": "MD_DA530",
15    "report_name": "Dairy Individual Commodity Report"
16  },
17  {
18    "slug_id": "1084",
19    "slug_name": "MD_DA810",
20    "report_name": "Dairy Individual Commodity Report"
21  },
22  {
23    "slug_id": "1095",
24    "slug_name": "MD_DA953",
25    "report_name": "Cold Storage Weekly Report"
26  },
27  {
28    "slug_id": "1605",
29    "slug_name": "dybretail",
30    "report_name": "National Retail Dairy"
31  },
32  {
33    "slug_id": "1591",
34    "slug_name": "MD_DA199",
35    "report_name": "Dairy International Dairy Market News Worksheet"
36  }
37 ]
```

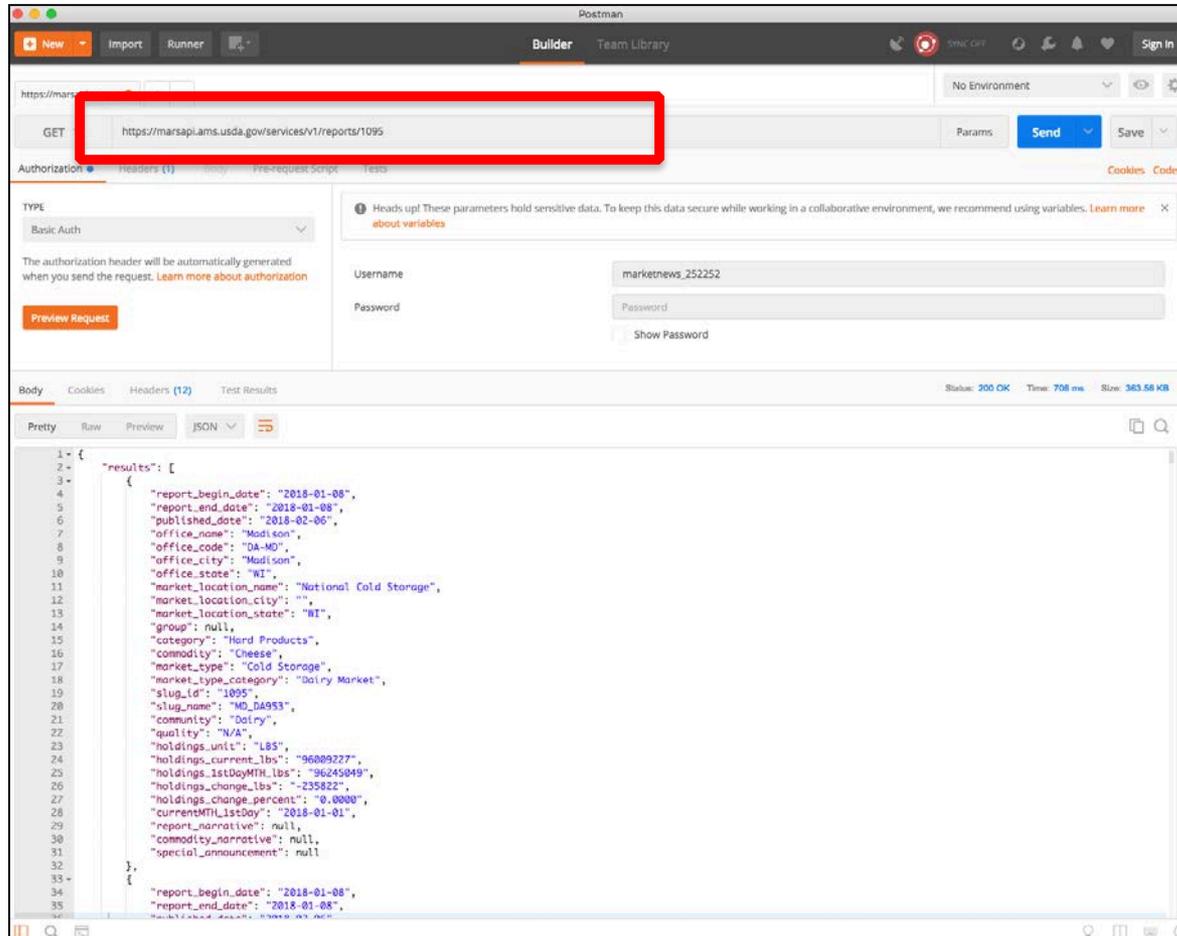
Example 2 (curl)

```
 sakiri — -bash — 80x24
Last login: Tue Feb  6 17:08:53 on ttys003
DML-MBP-SAKIRI:~ sakiri$ curl https://marsapi.ams.usda.gov/services/v1/reports/
-u mars_test_343343
Enter host password for user 'mars_test_343343':
[{"slug_id": "1352", "slug_name": "MV_S0105", "report_name": "Auction Report"}, {"slug_id": "1034", "slug_name": "MD_DA105", "report_name": "Dairy Individual Commodity Report"}, {"slug_id": "1045", "slug_name": "MD_DA530", "report_name": "Dairy Individual Commodity Report"}, {"slug_id": "1084", "slug_name": "MD_DA810", "report_name": "Dairy Individual Commodity Report"}, {"slug_id": "1095", "slug_name": "MD_DA953", "report_name": "Cold Storage Weekly Report"}, {"slug_id": "1605", "slug_name": "dybretail", "report_name": "National Retail Dairy"}, {"slug_id": "1591", "slug_name": "MD_DA199", "report_name": "Dairy International Dairy Market News Worksheet"}]DML-MBP-SAKIRI:~ sakiri$ █
```

Report Data

- To access data for each of the report the following fields are used
 - slug_id
 - slug_id is a unique identifier which is generated by MARS for all the reports which are generated in MARS
 - slug_name is a name picked by the report owner
- Access data using slug_id
 - Syntax
 - `/reports/<<slug_id>>`
 - `/reports/id/<<slug_id>>`
- Access data using slug_name
 - Syntax
 - `/reports/<<slug_name>>`
- *Access data via the slug_id is the preferred way since it never changes for the life of the report in an environment*

Example 1 (Postman)



Report Data - Response

```
1- {
2-   "results": [
3-     {
4-       "report_begin_date": "2018-01-08",
5-       "report_end_date": "2018-01-08",
6-       "published_date": "2018-02-06",
7-       "office_name": "Madison",
8-       "office_code": "DA-MD",
9-       "office_city": "Madison",
10-      "office_state": "WI",
11-      "market_location_name": "National Cold Storage",
12-      "market_location_city": "",
13-      "market_location_state": "WI",
14-      "group": null,
15-      "category": "Hard Products",
16-      "commodity": "Cheese",
17-      "market_type": "Cold Storage",
18-      "market_type_category": "Dairy Market",
19-      "slug_id": "1095",
20-      "slug_name": "MD_DA953",
21-      "community": "Dairy",
22-      "quality": "N/A",
23-      "holdings_unit": "LBS",
24-      "holdings_current_lbs": "96009227",
25-      "holdings_1stDayMTH_lbs": "96245049",
26-      "holdings_change_lbs": "-235822",
27-      "holdings_change_percent": "0.0000",
28-      "currentMTH_1stDay": "2018-01-01",
29-      "report_narrative": null,
30-      "commodity_narrative": null,
31-      "special_announcement": null
32-    },
33-    {
34-      "report_begin_date": "2018-01-08",
35-      "report_end_date": "2018-01-08",
```

Example 2 (curl)

```
sakiri ~ -bash - 74x24
DML-MBP-SAKIRI:~ sakiri$ curl https://marsapi.ams.usda.gov/services/v1/reports/1095 -u mars_test_343343
Enter host password for user 'mars_test_343343':
{"results":[{"report_begin_date":"2018-01-08","report_end_date":"2018-01-08","published_date":"2018-02-06","office_name":"Madison","office_code":"DA-MD","office_city":"Madison","office_state":"WI","market_location_name":"National Cold Storage","market_location_city":"","market_location_state":"WI","group":null,"category":"Hard Products","commodity":"Cheese","market_type":"Cold Storage","market_type_category":"Dairy Market","slug_id":"1095","slug_name":"MD_DA953","community":"Dairy","quality":"N/A","holdings_unit":"LBS","holdings_current_lbs":"96009227","holdings_1stDayMTH_lbs":"96245049","holdings_change_lbs":"-235822","holdings_change_percent":"0.0000","currentMTH_1stDay":"2018-01-01","report_narrative":null,"commodity_narrative":null,"special_announcement":null},{"report_begin_date":"2018-01-08","report_end_date":"2018-01-08","published_date":"2018-02-06","office_name":"Madison","office_code":"DA-MD","office_city":"Madison","office_state":"WI","market_location_name":"National Cold Storage","market_location_city":"","market_location_state":"WI","group":null,"category":"Soft Product","commodity":"Butter","market_type":"Cold Storage","market_type_category":"Dairy Market","slug_id":"1095","slug_name":"MD_DA953","community":"Dairy","quality":"N/A","holdings_unit":"LBS","holdings_current_lbs":"8799346","holdings_1stDayMTH_lbs":"8950345","holdings_change_lbs":"-150999","holdings_change_percent":"-2.0000","currentMTH_1stDay":"2018-01-01","report_narrative":null,"commodity_narrative":null,"special_announcement":null}]}
{"report_begin_date":null,"report_end_date":null,"published_date":null,"office_name":null,"office_code":null,"office_city":null,"office_state":null,"market_location_name":null,"market_location_city":null,"market_location_state":null,"group":null,"category":null,"commodity":null,"market_type":null,"market_type_category":null,"slug_id":null,"slug_name":null,"community":null,"quality":null,"holdings_unit":null,"holdings_current_lbs":null,"holdings_1stDayMTH_lbs":null,"holdings_change_lbs":null,"holdings_change_percent":null,"currentMTH_1stDay":null,"report_narrative":null,"commodity_narrative":null,"special_announcement":null}
```

Authentication

- MARS APIs use Basic Authentication to authenticate the account.
 - API key as the user name to access the public data
- To get access to an API key, the users need to login to the MMN portal <https://mymarketnews.ams.usda.gov>
- Once you register/login to the MMN the user can click on the My Profile to access the profile of the user.
- Use the Show API key button to get access to the API key.
- Do not share your secret API keys, these are unique to each account.

Request for API Key

The screenshot shows the user profile page for Akiri Srihari. The page includes a navigation bar with links for Home, Commodities, Help, Return To AMS, and a welcome message. A search bar is located in the top right. The main content area is divided into several sections: User Preferences (empty), User saved queries (listing 'Cheese - MD_DA530'), User's Content Subscription List (listing 'Joplin Regional Stockyards - Joplin, MO'), and User's Content Favorites (empty). The API Key section is highlighted with a red box and contains a 'Show API key' button.

USDA United States Department of Agriculture
Agricultural Marketing Service

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Advanced Search | A-Z Glossary & Index

Home | Commodities | Help | Return To AMS | Welcome Akiri, Srihari

Home / 28042015090201415250681

MARS Your Source for Ag Data Stay connected: [Facebook] [Twitter] [YouTube] [Email] [Flickr] [RSS] [Instagram]

eAuth ID: 28042015090201415250681

First Name: Srihari

Last Name: Akiri

Roles:

- authenticated
- administrator
- super_administrator

API KEY:

Show API key

User Preferences

There is no content here.

User saved queries

Cheese - MD_DA530

More queries »

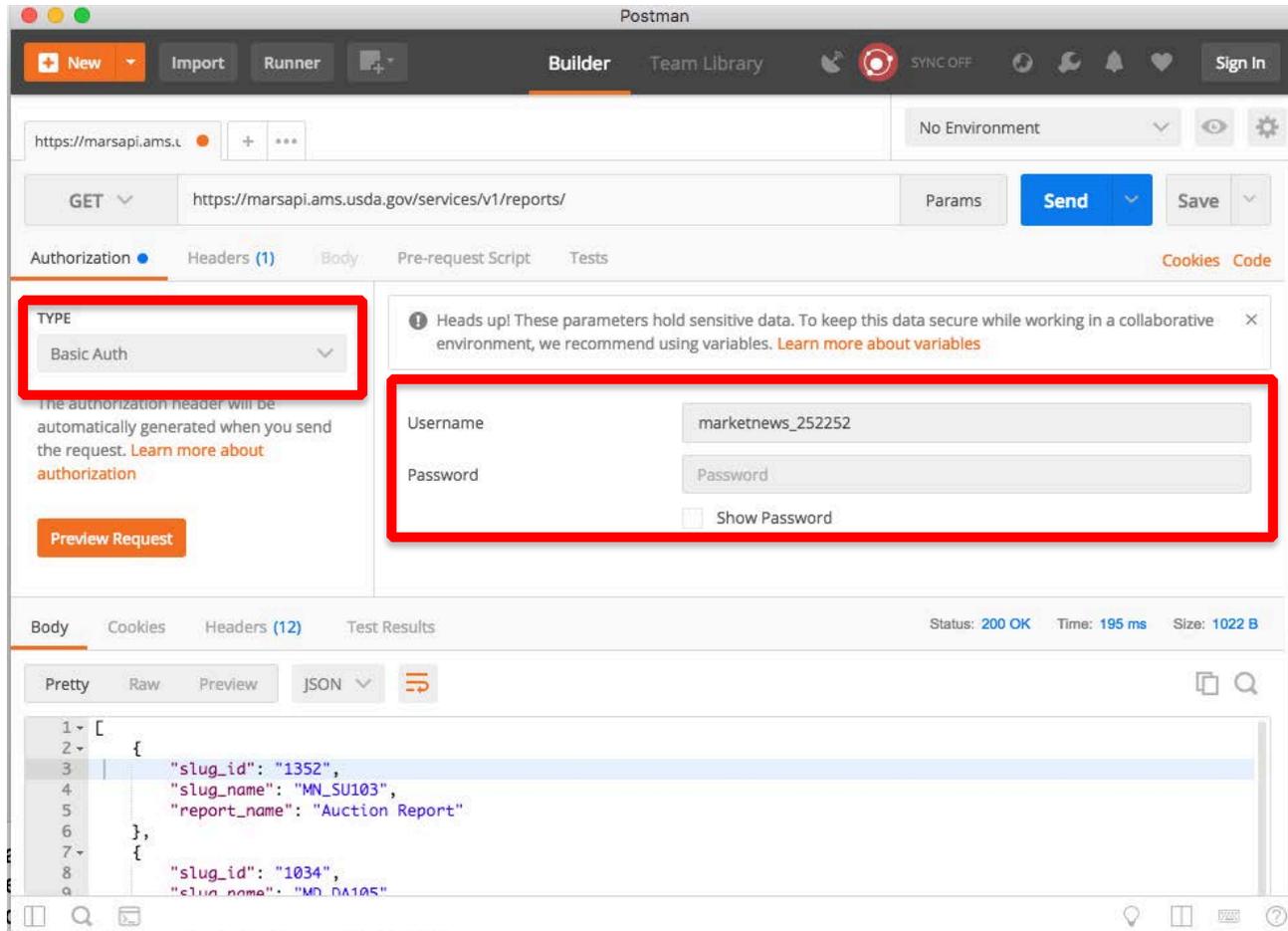
User's Content Subscription List

Joplin Regional Stockyards - Joplin, MO

User's Content Favorites

There is no content in your favorites yet

Authentication Example 1



Authentication Example 2

```
 sakiri — -bash — 80x24
Last login: Tue Feb  6 17:08:53 on ttys003
DML-MBP-SAKIRI:~ sakiri$ curl https://marsapi.ams.usda.gov/services/v1/reports/
-u mars_test_343343
Enter host password for user 'mars_test_343343':
[{"slug_id":"1352","slug_name":"MN_S0103","report_name":"Auction Report"}, {"slug_id":"1034","slug_name":"MD_DA105","report_name":"Dairy Individual Commodity Report"}, {"slug_id":"1045","slug_name":"MD_DA530","report_name":"Dairy Individual Commodity Report"}, {"slug_id":"1084","slug_name":"MD_DA810","report_name":"Dairy Individual Commodity Report"}, {"slug_id":"1095","slug_name":"MD_DA953","report_name":"Cold Storage Weekly Report"}, {"slug_id":"1605","slug_name":"dybretail","report_name":"National Retail Dairy"}, {"slug_id":"1591","slug_name":"MD_DA199","report_name":"Dairy International Dairy Market News Worksheet"}]
DML-MBP-SAKIRI:~ sakiri$
```

Sorting Response Data

- The default sort order is *report_begin_date* DESC to show the latest data on the top
 - The request parameter “*sort*” can be used to sort data
 - Syntax
 - ***sort=<<field_name>>***
 - The <<field_name>> should be the fields which are available in the response data
 - Response will be sorted based on the *field_name* in the ASC order
 - To sort in the descending order
 - Syntax
 - ***sort=-<<field_name>>***
 - the prefix “-” is used
 - Response will be sorted based on the *field_name* in the DESC order

Sorting ASC - Example

The screenshot shows the Postman interface. The URL bar is highlighted with a red box and contains the text: `https://marsapi.ams.usda.gov/services/v1/reports/1095?sort=quality`. The request method is set to GET. The Params tab is active, showing a Username of `marketnews_252252` and a Password field. A warning message states: "Heads up! These parameters hold sensitive data. To keep this data secure while working in a collaborative environment, we recommend using variables. Learn more about variables". The response status is 200 OK, with a time of 663 ms and a size of 363.61 KB. The response body is displayed in JSON format:

```
12  "market_location_city": null,  
13  "market_location_state": null,  
14  "group": null,  
15  "category": "Hard Products",  
16  "commodity": "Cheese",  
17  "market_type": "Cold Storage",  
18  "market_type_category": "Dairy Market",  
19  "slug_id": "1095",  
20  "slug_name": "MD_DA953",  
21  "community": "Dairy",  
22  "quality": "Edible",  
23  "holdings_unit": "LBS",
```

Sorting DESC - Example

The screenshot shows the Postman interface with a REST client request. The URL `https://marsapi.ams.usda.gov/services/v1/reports/1095?sort=quality` is highlighted with a red box. The request is a GET method. The response status is 200 OK, with a time of 536 ms and a size of 363.67 KB. The response body is shown in JSON format, containing the following data:

```
12  "market_location_city": "",
13  "market_location_state": "WI",
14  "group": null,
15  "category": "Hard Products",
16  "commodity": "Cheese",
17  "market_type": "Cold Storage",
18  "market_type_category": "Dairy Market",
19  "slug_id": "1095",
20  "slug_name": "MD_DA953",
21  "community": "Dairy",
22  "quality": "N/A",
23  "holdings_unit": "LBS",
```

Sorting - 2

- To enable sorting by multiple fields
 - Syntax
 - ***sort=[-]<<field_name1>>,[-]<<field_name2>>***
 - ***“,” as the field separator***
 - The <<field_name1>> and <<field_name2>> should be the fields which are available in the response data
 - Response will be sorted based on the *field_name1* and on *field_name2*

Sorting 2 - Example

The screenshot shows the Postman interface with a REST client request. The URL `https://marsapi.ams.usda.gov/services/v1/reports/1095?sort=quality,commodity` is highlighted with a red box. The request is a GET request with Basic Auth authorization. The response is a JSON object with the following structure:

```
12  {"market_location_city": null,  
13  "market_location_state": null,  
14  "group": null,  
15  "category": "Soft Product",  
16  "commodity": "Butter",  
17  "market_type": "Cold Storage",  
18  "market_type_category": "Dairy Market",  
19  "slug_id": "1095",  
20  "slug_name": "MD_DA953",  
21  "community": "Dairy",  
22  "quality": "Edible",  
23  "holdings_unit": "LBS",
```

Filtering Response Data

- Response can be filtered to pull specific data
 - The request parameter “*q*” can be used to filter data
 - Syntax
 - ***q=*<<field_name>>=<<value>>**
 - The <<field_name>> should be the fields which are available in the response data
 - All the record matching the *field_name=value* will be returned
 - Since the sort order is not available, the response data will be sorted in the default sort order.

Filtering Example



The screenshot shows the Postman interface with a REST client request. The URL is `https://marsapi.ams.usda.gov/services/v1/reports/1095?q=commodity=Cheese`, which is highlighted with a red box. The request is a GET method. The response status is 200 OK, with a time of 728 ms and a size of 364.05 KB. The response body is shown in JSON format:

```
12  "market_location_city": "",
13  "market_location_state": "WI",
14  "group": null,
15  "category": "Hard Products",
16  "commodity": "Cheese",
17  "market_type": "Cold Storage",
18  "market_type_category": "Dairy Market",
19  "slug_id": "1095",
20  "slug_name": "MD_DA953",
21  "community": "Dairy",
22  "quality": "N/A",
23  "holdings_unit": "LBS",
```

Filtering - 2

- Filter data using **multiple values for the same field**
 - The request parameter “q” can be used to filter data
 - Syntax
 - ***q=<<field_name>>=<<value1>>,<<value2>>***
 - “,” is the value separator
 - The <<field_name>> should be the fields which are available in the response data
 - Records matching the condition *field_name in (‘value1’, ‘value2’)* will be returned
 - Default sort order will be applied

Filtering - 2 Example

The screenshot shows the Postman interface. The URL bar is highlighted with a red box and contains the following text: `https://marsapi.ams.usda.gov/services/v1/reports/1095?q=commodity=Cheese,Butter`. The request method is set to GET. Below the URL bar, the 'Params' tab is active, showing a 'Username' field with the value 'marketnews_252252' and a 'Password' field with the value 'Password'. A warning message is displayed: 'Heads up! These parameters hold sensitive data. To keep this data secure while working in a collaborative environment, we recommend using variables. Learn more about variables'. The 'Body' tab is selected, showing a JSON response in 'Pretty' format. The response is as follows:

```
12  "market_location_city": "",
13  "market_location_state": "WI",
14  "group": null,
15  "category": "Hard Products",
16  "commodity": "Cheese",
17  "market_type": "Cold Storage",
18  "market_type_category": "Dairy Market",
19  "slug_id": "1095",
20  "slug_name": "MD_DA953",
21  "community": "Dairy",
22  "quality": "N/A",
23  "holdings_unit": "LBS",
```

The status bar at the bottom indicates: Status: 200 OK, Time: 1039 ms, Size: 363.56 KB.

Filtering - 3

- Filter data using a **between** values
 - The request parameter “q” can be used to filter data
 - Syntax
 - ***q=<<field_name1>>=<<value1>>:<<value2>>***
 - “.” is the between separator
 - The <<field_name>> should be the fields which are available in the response data
 - Records matching the condition *field_name between ('value1', 'value2')* will be returned
 - Default sort order will be applied

Filtering - 3 Example

The screenshot shows the Postman interface. At the top, the URL bar contains `https://marsapi.ams.usda.gov/services/v1/reports/1095?q=report_begin_date=01/01/2018:01/08/20...` and the 'Params' tab is selected. A red box highlights the URL and the 'Params' tab. Below the URL bar, the 'Authorization' tab is active, showing 'Basic Auth' with a warning message: 'Heads up! These parameters hold sensitive data. To keep this data secure while working in a collaborative environment, we recommend using variables. Learn more about variables'. The 'Username' field is filled with 'marketnews_252252' and the 'Password' field is filled with 'Password'. The 'Show Password' checkbox is unchecked. Below the authorization section, the 'Body' tab is active, showing a JSON response in 'Pretty' format. The response is a list of results with the following structure:

```
1 {
2   "results": [
3     {
4       "report_begin_date": "2018-01-08",
5       "report_end_date": "2018-01-08",
6       "published_date": "2018-02-06",
7       "office_name": "Madison",
8       "office_code": "DA-MD",
9       "office_city": "Madison",
10      "office_state": "WI",
11      "market_location_name": "National Cold Storage",
12      "market_location_city": ""
    }
  ]
}
```

The status bar at the bottom indicates 'Status: 200 OK', 'Time: 193 ms', and 'Size: 3.37 KB'.

Filtering - 4

- Filter data using **multiple fields**
 - The request parameter “q” can be used to filter data
 - Syntax
 - ***q=<<field_name1>>=<<value1>>;<<field_name2>>=<<value2>>***
 - “;” is the field condition separator
 - The *<<field_name1>>* and *<<field_name2>>* should be the fields which are available in the response data
 - Records matching the condition *field_name1* in (*‘value1’*) and *field_name 2* in (*‘value2’*) will be returned
 - Default sort order will be applied

Filtering - 4 Example

The screenshot shows the Postman interface. The URL bar is highlighted with a red box, containing the URL: `https://marsapi.ams.usda.gov/services/v1/reports/1095?q=commodity=Cheese;holdings_unit=LBS`. The request is a GET method with parameters. The response body is shown in JSON format, containing the following data:

```
12  "market_location_city": "",
13  "market_location_state": "WI",
14  "group": null,
15  "category": "Hard Products",
16  "commodity": "Cheese",
17  "market_type": "Cold Storage",
18  "market_type_category": "Dairy Market",
19  "slug_id": "1095",
20  "slug_name": "MD_DA953",
21  "community": "Dairy",
22  "quality": "N/A",
23  "holdings_unit": "LBS",
```

Filtering & Sorting

- Filter and sort the data
 - The request parameter “q” can be used to filter data
 - And the request parameter “sort” can be combined to sort data
 - Syntax
 - ***q=<<field_name1>>=<<value1>>;<<field_name2>>=<<value2>>&sort=<<field_name3>>***
 - “&” request parameters separator
 - The *<<field_name1>>*, *<<field_name2>>* and *<<field_name3>>* should be the fields which are available in the response data
 - Records matching the condition *field_name1* in (*‘value1’*) and *field_name 2* in (*‘value2’*) will be returned
 - The response data will be sorted by *<<field_name3>>* ASC order.

Filtering & Sorting Example

The screenshot shows the Postman interface. The URL bar is highlighted with a red box, containing the following text:

```
https://marsapi.ams.usda.gov/services/v1/reports/1095?  
q=commodity=Cheese;holdings_unit=LBS&sort=quality
```

The interface also shows a 'Params' button, a 'Send' button, and a 'Save' button. Below the URL bar, there are tabs for 'Authorization', 'Headers (1)', 'Body', 'Pre-request Script', and 'Tests'. The 'Authorization' tab is selected, showing 'Basic Auth' and a warning message: 'Heads up! These parameters hold sensitive data. To keep this data secure while working in a collaborative environment, we recommend using variables. Learn more about variables'. The 'Username' field is filled with 'marketnews_252252' and the 'Password' field is filled with 'Password'. There is a 'Show Password' checkbox.

The 'Body' tab is selected, showing the response in 'JSON' format. The response is a JSON object with the following structure:

```
{  
  "market_location_city": null,  
  "market_location_state": null,  
  "group": null,  
  "category": "Hard Products",  
  "commodity": "Cheese",  
  "market_type": "Cold Storage",  
  "market_type_category": "Dairy Market",  
  "slug_id": "1095",  
  "slug_name": "MD_DA953",  
  "community": "Dairy",  
  "quality": "Edible",  
  "holdings_unit": "LBS",  
}
```

The status bar at the bottom indicates 'Status: 200 OK', 'Time: 662 ms', and 'Size: 364.1 KB'.

Additional information

- MARS API documentation is available on MyMarketNews
 - <https://mymarketnews.ams.usda.gov/mars-api-documentation>
 - We will be updating it frequently to keep in sync with latest features
- cUrl is a command line tool
 - Curl is available in most of the UNIX flavors
 - It can be installed to the Windows machine
- PostMan is a third party UI tool
 - Tool is available at <https://www.getpostman.com/>
 - Get the free trail version