

# CROPLAND DATA LAYERS

API Documentation 2020

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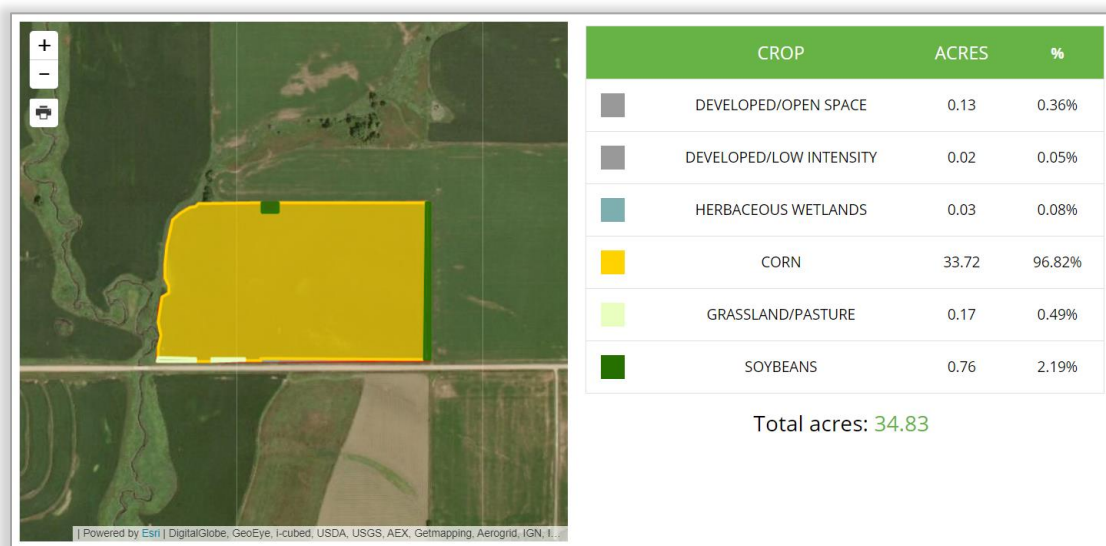
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## Service Overview

The Cropland Data Layer (CDL), produced by the USDA, provides a raster, geo-referenced, crop-specific land cover map for the continental United States. The CDL also includes a crop mask layer and planting frequency layers, as well as boundary, water and road layers. The Boundary Layer options provided are County, Agricultural Statistics Districts (ASD), State, and Region. The data is created annually using moderate resolution satellite imagery and extensive agricultural ground truth.

CDL Service provides an API for requesting CDL layer as a GeoTIFF of the area of interest (AOI) passed by the user and the summary of the major crops planted on the area of interest. To request the CDL layer, the user will pass the AOI as one of the following format: GeoJSON, Shapefile (.SHP, .shp), or GeoTIFF (.TIFF, tif) and the calendar year of the CDL layer as parameters in the POST request. The response of POST request includes the crop summary of the AOI and a file name of the GeoTIFF saved on the Ag-Analytics server. Then, user can send a GET request that includes the file name from POST request to download the GeoTIFF of the CDL layer.



*Cropland Data Layer API in FarmScope*


## POST Request

POST Request Example – application/json

```
{'years': "['2016']", 'Resolution':0.0001, 'Projection':'EPSG:4326'
'aoi':"{"type":"Feature","properties":{},"geometry":{"type":"Polygon",
\"coordinates\":[[-95.87676501448252,46.32607342778329],[ -
95.883447016556,46.326132083839006],[ -95.88358858439655,46.328282762449355],[ -
95.88313556730681,46.32898660253846],[ -95.88361689796466,46.3295144766618],[ -
95.88367352510087,46.33148907172884],[ -95.88293737233006,46.33180187232716],[ -
95.88353195726032,46.33240791839554],[ -95.88353195726032,46.33301395774819],[ -
95.87384871696737,46.333053056830664],[ -95.87350895415011,46.33270116408218],[ -
95.8734240134458,46.331606372162845],[ -95.8911766206495,46.3364545700018],[ -
95.89179951914785,46.33518391454985],[ -95.89188445985219,46.33338539790301],[ -
95.88893984876896,46.33324855182371],[ -95.88902478947328,46.33880031788281],[ -
95.89029890003815,46.338937150069626],[ -95.89131818849005,46.33960175867772],[ -
95.89145975633058,46.3404227346288],[ -95.8940646045965,46.3404227346288]]]}"}",
'product':['CultivatedLayer','CDL']" }
```

## Header Parameters

content-type: "x-www-form-urlencoded"

Ocp-Apim-Subscription-Key: Subscription keys are given upon purchase - [Purchase APIs](#) 

## Request Parameters

Parameter	Data Type	Required?	Default	Options	Description
<b>file</b>	GeoTiff or Shapfile in Zip	Yes (otherwise pass aoi)	--	--	A GeoTiff(.TIFF,.Tif,.etc) or a Shapefile in Zip (must include shp, shx, dbf, but others files such as .prj, .xml, .cpg are recommended for better processing)
<b>aoi</b>	GeoJSON String, .shp file, GeoTIFF	Yes (otherwise pass file)	--	--	Area of interest to return.



<b>Projection</b>	String	No	See Request Handling Table	EPSG code ("EPSG:4326") WKT	Output projection of result GeoTIFF.
<b>Resolution</b>	Float	No	See Request Handling Table	--	Output resolution of result GeoTIFF.
<b>years</b>	List of integers as String	Yes	--	"['2015','2016']"	Call will return CDL GeoTiffs from the given years.
<b>product</b>	List of string as String	No	'CDL'	"['CultivatedLayer','CDL']"	Get 'CultivatedLayer','CDL', or both in the response

## Request Handling

AOI Type	Projection Specified?	Resolution Specified?	Output Projection	Output Resolution
<b>Any</b>	Yes	Yes	Request projection	Request resolution
<b>GeoTIFF</b>	Yes	No	Request projection	GeoTIFF resolution
<b>GeoTIFF</b>	No	Yes	GeoTIFF projection	Request resolution
<b>GeoTIFF</b>	No	No	GeoTIFF projection	GeoTIFF resolution
<b>Shapefile</b>	Yes	No	Request projection	Native tile resolution
<b>Shapefile</b>	No	Yes	Shapefile projection	Request resolution
<b>Shapefile</b>	No	No	Shapefile projection	Native tile resolution
<b>GeoJSON</b>	Yes	No	Request projection	Native tile resolution
<b>GeoJSON</b>	No	Yes	GeoJSON projection	Request resolution
<b>GeoJSON</b>	No	No	GeoJSON projection	Native tile resolution



## POST Response

*POST Response Example (Snippet) – application/json*

```
{
  "CultivatedLayer": {
    "attributes": {
      "CellSize": [
        9.999999999999224e-05,
        -9.999999999999055e-05
      ],
      "CoordinateSystem": "GEOGCS[\"WGS 84\", DATUM[\"WGS_1984\", SPHEROID
        [\"WGS84\", 6378137, 298.257223563, AUTHORITY[\"EPSG\", \"7030\"]],
        AUTHORITY[\"EPSG\", \"6326\"]], PRIMEM[\"Greenwich\", 0], UNIT[\"degree\",
        0.0174532925199433], AUTHORITY[\"EPSG\", \"4326\"]]",
      "Cultivated_Percent": 0.9296,
      "Extent": "-95.8939742011846, 46.32608987564196, -95.8734742011846,
        46.34038987564196",
      "Legend": [
        {
          "Acres": 10.152944103446304,
          "Area": "7.04 %",
          "Count": 480,
          "CountAllPixels": 6816,
          "Cultivated": "No",
          "color": "#31adbc"
        },
        {
          "Acres": 134.0188621654912,
          "Area": "92.96 %",
          "Count": 6336,
          "CountAllPixels": 6816,
          "Cultivated": "Yes",
          "color": "#12d9cc"
        }
      ],
      "pngb64": "data:image/png;base64,
        iVBORw0KGgoAAAANSUHEUgAAAM0AAACPCAYAAABZLF80AAAEMU1EQVR4n03dMW4aWxSAYRx1AZE
        lakqa11hiCezA6I9oIEg0ECQaCBINBIKgkRDCfce/GxBNBakGggSDQT5qo0Czh+u8Z1PPmc4IW
        HSQNBvdrc8nX4IQrgAAAAASUVORK5CYII="
    },
    "filename":
      "result_raster_cdl_CultivatedLayer_epsg_4326_resolution_0.0001_92290.tif"
  },
  "status": "SUCCEED"
}
```



## Response Parameters

Parameter	Data Type	Description
<b>year</b>	Key	Request year of CDL layer
<b>file</b>	String	Result raster name. Can be used as request parameter for GET request
<b>attributes. extent</b>	--	Extents of the result raster. Specifies the bottom left and top right corners of the field raster in degrees.
<b>attributes. pngb64</b>	Link	Base64png image of the result raster with legend entries.
<b>attributes. Legend</b>	List	<p>Legend gives the following details for each range of values:</p> <ol style="list-style-type: none"> <li><b>color:</b> Hex color used for the crop type</li> <li><b>Area:</b> Area of certain crop(see CropCode) covered in percentage</li> <li><b>Count:</b> Number of pixels from the result raster of certain crop(see Value)</li> <li><b>CountAllPixels:</b> Total number of pixels in the result raster</li> <li><b>CropCode:</b> CDL code, ex: CDL code for corn is 1</li> <li><b>CropName:</b> Crop name based on NASS in string</li> <li><b>Acres:</b> Area of the crop in acres</li> </ol>

## GET Request

### Request Example

The GET request to retrieve the tif image using the file name from the POST response.

```
https://ag-analytics.azure-api.net/cdl-range-read/?filename=result_raster_cdl_2016_epsg_4326_resolution_0.0001_79133.tif
```

## Request Parameters

Parameter	Data Type	Required?	Default	Options	Description
<b>filename</b>	text	Yes	--	.tif file	file name returned by POST request



## Response Parameters

Parameter	Data Type	Description
<b>file</b>	.tif	Tiff file will be download to the computer of the caller with the name that was used to call the API.

## Citations:

- USDA Cropland Data Layer: <https://data.nal.usda.gov/dataset/cropscape-cropland-data-layer>
- Spatial Reference Information: World Geodetic System (WGS 84) - National Geospatial-Intelligence Agency – 1984



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