HARVEST DATE IDENTIFICATION BETA

API Documentation
2019

Service Overview

In the modern agriculture industry, people often use a crop calendar, Growing Degree Days (GDD), or self-reports to predict or trace back the crop harvest date for a given year. However, the information coming from the historical crop calendar or the estimated GDDs are known to be inaccurate for local regions and can be misleading, especially in a year with cooler or warmer spring. Therefore, there is an urgent need for a product can provide the estimated harvest date with higher accuracy and can be delivered to the public on time.

The Ag-Analytics Harvest Date API provides the service which can trace back within a given year when a crop was harvested on the field. This service is developed from our near real-time ground truth agriculture data, historical weather and soil data, and weekly high-resolution remote sensing imagery. It provides a near-real-time harvest date prediction within a given year with the spatial resolution at 8m. Users can provide a polygon of their field in specific formats and the year of interest to retrieve the estimated harvest date.

POST Request

Header Parameters
Execute Type: POST
content-type: "application/json"

API Specifications

Request Parameters

Parameter	Data Type	Required?	Default	Options	Description
SHAPE	Geometry, file/text	Yes	-	Geojson, JSON	Desired area-of-interest. See Fig. 1 for example.
CropSeason	Text String	Yes	-	Year. Ex. “2018”	The desired year of interest to retrieve harvest date information.
ModelType	Text String	Yes	-	Decision Tree (‘TREE”) and Neural Network (‘NN’)	Desired classification algorithm.

Response Parameters

Parameter	Data Type	Description
feature_averages	Dictionary	Average value of each input used to predict tillage.
raster_filename	String	URL to use in GET request to retrieve predicted raster file.
rasterinfo	List of Dictionaries	Container for the features and metadata information for the raster.
attributes	Dictionary	Container for specific features regarding the tillage prediction raster.

CellSize	List	Size of a single cell in the raster in degrees. (0.0001, -0.0001) roughly corresponds to an 8 meter by 8 meter square on the Earth's equator. (i.e., 0.0001 degrees ~= 8 meters)
CoordinateSystem	String	Information about the coordinate system being used for calculations.
Extent	String	Specifies the left bottom corner and right top corner in longitude and latitude respectively.
Legend	List of Dictionaries	List of the metadata features for the areas of the field that returned as till or no-till or both.
Area	String	Specifies a percentage of the field that returned either till or no-till. For example, if 50% of the field is "till", then Area is 50%.
Area(ac)	Float	Specifies the number of acres that were till or no-till for a given field.
Count	Integer	Number of pixels that returned as till or no-till. Used to calculate area.
CountAllPixels	Integer	Total number of pixels that make up the field in the predicted tillage raster.
Till	String	Specifies whether the given section (or entire area) of the field has been tilled. Returns "Yes" for tillage and "No" for tillage not detected.
Value	Integer	Binary value for tillage detected or not. Tillage detected = 1, Tillage not detected = 0.

color	String	Color that can be used to display the feature when plotting in a GIS application. (Hexadecimal)
pngb64	String	PNG image of the tillage raster encoded as base64. Actual raster file can be obtained with a GET request to the service.

GET Request

Header Parameters
Execute Type: GET
content-type: "application/json”

API Specifications

Request Parameters

Parameter	Data Type	Required	Default	Options	Description
Filename	Text	Yes	-	.tif file	Filename that is returned by the initial POST request. Ex: "result_tillageraster_20191126_175158_3291.tif"

Response Parameters

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

Appendix

Figure 1.

Shape Example - GeoJSON


```
"{\"type\":\"Feature\",\"geometry\":{\"type\":\"Polygon\",\"coordinates\":[
[[-89.199484,40.972729],[-89.199773,40.97258],[-89.200135,40.972415],[-
89.20034,40.972318],[-
89.200445,40.972177],[89.200439,40.972001]]]},\"properties\":{\"OBJECTID\":
5134895,\"CALCACRES\":122.651351,\"CALCACRES2\":null},\"id\":4861522}"
```


Figure 2

POST Request Example – application/json

application/json


```
{
    "SHAPE": "{\"type\":\"Feature\",\"properties\":{},\"geometry\
":{\"type\":\"Polygon\",\"coordinates\":[[[-100.953840994,38.5946
753571],[-100.953832008,38.5948720599],[-100.953876941,38.5952162
884],[-100.953957821,38.5955324152],[-100.953984781,38.5955745654
],[-100.954029714,38.5957361407],[-100.954245394,38.5961716896],[
-100.954452087,38.5964807873],[-100.95473966,38.5968179832],[-100
.954910406,38.596965506],[-100.954910406,38.5969795557],[-100.954
982299,38.5970287299],[-100.954982299,38.5970427797],[-100.955359
739,38.5973378239],[-100.955377712,38.5973378239],[-100.955629338
,38.5975134449],[-100.956042724,38.5977312143],[-100.956357257,38
.5978646856],[-100.956707736,38.5979911318],[-100.957175042,38.59
8110553],[-100.957615388,38.5981878255],[-100.958055734,38.598229
974],[-100.958514053,38.5982369988],[-100.958963386,38.5982088998
],[-100.959412719,38.5981456769],[-100.959906984,38.5980332805],[
-100.96023949,38.5979279087],[-100.960598957,38.5977874128],[-100
.960976396,38.5976047676],[-100.961281942,38.597422122],[-100.961
560528,38.5972113765],[-100.961578502,38.5972113765],[-100.961848
101,38.5969865806],[-100.961982901,38.5968390579],[-100.962018848
,38.5968179832],[-100.962189594,38.5966283107],[-100.962315407,38
.5964526876],[-100.962405274,38.5964526876],[-100.962405274,38.59
63894631],[-100.962369327,38.5963894631],[-100.962369327,38.59637
54133],[-100.962513113,38.5961716896],[-100.96262994,38.595953915
5],[-100.962800686,38.5955324152],[-100.962908526,38.595054712],[
-100.962926499,38.5948580097],[-100.962890553,38.5948509846],[-10
```

```
0.962962446,38.5948650348],[-100.963025352,38.5947947839],[-100.9
62998393,38.5947877588],[-100.962989406,38.5947666835],[-100.9629
17513,38.5947526333],[-100.962935486,38.5947245329],[-100.9629264
99,38.5946894073],[-100.962881566,38.5947034575],[-100.962665886,
38.5946823822],[-100.958541013,38.5946753571],[-100.9584152,38.59
47175077],[-100.958316347,38.5947175077],[-100.958298374,38.59470
34575],[-100.958154587,38.5946753571],[-100.953840994,38.59467535
71]]]}}",
    "ScalarVariables": {"CropSeason": "2018"},
    "ModelType":"NN"}
```

Figure 3

POST Response – application/json

Figure 4.

GET Request Example - URL

```
https://ag-analytics.azure-api.net/Tillage_Model?filename=result_tillageraster_20191126_175158_3291.tif
```

Citation

Spatial Reference Information:

Universal Transverse Mercator (UTM) Dominant Zone, North American Datum 1983

Please contact **support@analytics.ag**, **josh@ag-analytics.org**, or **woodardjoshua@gmail.com** with any comments or questions.