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.

# Model Specifications

# 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

### **Figure 2** – POST Request Example

### **Figure 3** – POST Response Example

**Figure 4** – GET request example

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**\"**:[[[-100.953840994,38.5946753571],[-100.953832008,38.5948720599],[-100.953876941,38.5952162884],[-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],[-100.954982299,38.5970287299],[-100.954982299,38.5970427797],[-100.955359739,38.5973378239],[-100.955377712,38.5973378239],[-100.955629338,38.5975134449],[-100.956042724,38.5977312143],[-100.956357257,38.5978646856],[-100.956707736,38.5979911318],[-100.957175042,38.598110553],[-100.957615388,38.5981878255],[-100.958055734,38.598229974],[-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],[-100.961560528,38.5972113765],[-100.961578502,38.5972113765],[-100.961848101,38.5969865806],[-100.961982901,38.5968390579],[-100.962018848,38.5968179832],[-100.962189594,38.5966283107],[-100.962315407,38.5964526876],[-100.962405274,38.5964526876],[-100.962405274,38.5963894631],[-100.962369327,38.5963894631],[-100.962369327,38.5963754133],[-100.962513113,38.5961716896],[-100.96262994,38.5959539155],[-100.962800686,38.5955324152],[-100.962908526,38.595054712],[-100.962926499,38.5948580097],[-100.962890553,38.5948509846],[-100.962962446,38.5948650348],[-100.963025352,38.5947947839],[-100.962998393,38.5947877588],[-100.962989406,38.5947666835],[-100.962917513,38.5947526333],[-100.962935486,38.5947245329],[-100.962926499,38.5946894073],[-100.962881566,38.5947034575],[-100.962665886,38.5946823822],[-100.958541013,38.5946753571],[-100.9584152,38.5947175077],[-100.958316347,38.5947175077],[-100.958298374,38.5947034575],[-100.958154587,38.5946753571],[-100.953840994,38.5946753571]]]}}",  "ScalarVariables": {"CropSeason": "2018"},  "ModelType":"NN"} |
|  |

Figure 3

*POST Response – application/json*

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Figure 4.

*GET Request Example - URL*

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| 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

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