

# *ISO 19131 Spatial Density of Major Crops – Data Product Specifications*

---

Revision: A

---

## Data product specifications: Spatial Density of Major Crops

### - Table of Contents-

- 1. Overview .....4
  - 1.1. Informal description .....4
  - 1.2. Data product specification - metadata .....4
  - 1.3. Terms and definitions.....4
  - 1.4. Abbreviations.....5
- 2. SPECIFICATION SCOPE .....5
- 3. DATA PRODUCT IDENTIFICATION .....5
  - 3.1. Data series identification .....5
  - 3.2. Data product identification .....6
    - 3.2.1. Spatial Density of Barley in Canada.....6
    - 3.2.2. Spatial Density of Canola in Canada .....7
    - 3.2.3. Spatial Density of Cereals in Canada .....8
    - 3.2.4. Spatial Density of Corn in Canada .....9
    - 3.2.5. Spatial Density of Flax in Canada .....10
    - 3.2.6. Spatial Density of Oats in Canada.....11
    - 3.2.7. Spatial Density of Pulses in Canada .....12
    - 3.2.8. Spatial Density of Soybean in Canada .....13
    - 3.2.9. Spatial Density of Wheat in Canada .....14
    - 3.2.10. Spatial Density of Oilseeds in Canada .....15
- 4. DATA CONTENT AND STRUCTURE .....16
  - 4.1. Feature-based application schema.....16
  - 4.2. Feature catalogue.....16
- 5. REFERENCE SYSTEMS .....16
  - 5.1. Spatial reference system .....16
  - 5.2. Temporal reference system .....16
- 6. DATA QUALITY .....16
  - 6.1. Completeness .....16
  - 6.2. Logical consistency .....16
  - 6.3. Positional accuracy .....16
  - 6.4. Temporal accuracy.....16
  - 6.5. Thematic accuracy .....16
  - 6.6. Lineage statement.....16

7. DATA CAPTURE.....17

8. DATA MAINTENANCE.....17

9. PORTRAYAL .....17

10. DATA PRODUCT DELIVERY .....17

11. METADATA.....17

# Data product specifications: Spatial Density of Major Crops

## 1. Overview

### 1.1. Informal description

Various mapping, modeling and reporting activities require knowing where certain crops are more expected than others within the agricultural regions of Canada. Spatial density of crops, as provided in these datasets, specify within the related time frame (2009-2019) in which regions a certain crop is more expected. Regions of high density represent higher temporal and spatial frequency of a certain crop within 2009-2019 time frame in the Prairies provinces and 2011-2019 for other regions of Canada.

### 1.2. Data product specification - metadata

This section provides metadata about the creation of this data product specification

Data product specification – title:	Spatial Density of Major Crops
Data product specification - reference date:	May 19, 2020
Data product specification - responsible party:	Earth Observation
Data product specification – language:	English, French
Data product specification - topic category:	farming, imageryBaseMapsEarthCover

### 1.3. Terms and definitions

- *Feature attribute*  
Characteristic of a feature
- *Class*  
Description of a set of objects that share the same attributes, operations, methods, relationships, and semantics [UML Semantics]  
NOTE: A class does not always have an associated geometry (e.g. the metadata class).
- *Feature*  
Abstraction of real world phenomena
- *Object*  
Entity with a well-defined boundary and identity that encapsulates state and behaviour [UML Semantics]  
NOTE: An object is an instance of a class.
- *Package*  
Grouping of a set of classes, relationships, and even other packages with a view to organizing the model into more abstract structures

## 1.4. Abbreviations

AAFC          Agriculture and Agri-Food Canada

## 2. SPECIFICATION SCOPE

This data specification has only one scope, the general scope.

NOTE: The term 'specification scope' originates from the International Standard ISO19131. 'Specification scope' does not express the purpose for the creation of a data specification or the potential use of data, but identifies partitions of the data specification where specific requirements apply.

## 3. DATA PRODUCT IDENTIFICATION

### 3.1. Data series identification

Title	Spatial Density of Major Crops
Alternate Title	
Abstract	These datasets show the areas where major crops can be expected within the agricultural regions of Canada. Results are provided as rasters with numerical values for each pixel indicating the level of spatial density calculated for a specific crop type in that location. Regions with higher spatial density for a certain crop have higher likelihood to have the same crop based on the previous years mapped crop inventories.
Purpose	
Topic Category	farming, imageryBaseMapsEarthCover
Spatial Representation Type	grid
Spatial Resolution	230 metres
Geographic Description	Canada
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data Licence : <a href="http://open.canada.ca">http://open.canada.ca</a>
Keywords	Crops, crop density, crop frequency
Scope identification	series

## 3.2. Data product identification

### 3.2.1. Spatial Density of Barley in Canada

Title	Spatial Density of Barley in Canada
Alternate Title	
Abstract	This data shows spatial density of Barley cultivation in Canada. Regions with higher calculated spatial densities represent agricultural regions of Canada in which Barley is more expected. Results are provided as rasters with numerical values for each pixel indicating the spatial density calculated for that location. Higher spatial density values represent higher likelihood to have Barley based on analysis of the 2009 to 2019 AAFC annual crop inventory data.
Purpose	
Topic Category	farming, imageryBaseMapsEarthCover
Spatial Representation Type	grid
Spatial Resolution	230 metres
Geographic Description	Canada
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data Licence : <a href="http://open.canada.ca">http://open.canada.ca</a>
Keywords	Crops, crop density, crop frequency
Scope Identification	dataset
Feature Attribute Names	

**3.2.2. Spatial Density of Canola in Canada**

Title	Spatial Density of Canola in Canada
Alternate Title	
Abstract	This data shows spatial density of Canola cultivation in Canada. Regions with higher calculated spatial densities represent agricultural regions of Canada in which Canola is more expected. Results are provided as rasters with numerical values for each pixel indicating the spatial density calculated for that location. Higher spatial density values represent higher likelihood to have Canola based on analysis of the 2009 to 2019 AAFC annual crop inventory data.
Purpose	
Topic Category	farming, imageryBaseMapsEarthCover
Spatial Representation Type	grid
Spatial Resolution	230 metres
Geographic Description	Canada
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data Licence : <a href="http://open.canada.ca">http://open.canada.ca</a>
Keywords	Crops, crop density, crop frequency
Scope Identification	dataset
Feature Attribute Names	

**3.2.3. Spatial Density of Cereals in Canada**

Title	Spatial Density of Cereals in Canada
Alternate Title	
Abstract	<p>This data shows spatial density of Cereals cultivation in Canada. Regions with higher calculated spatial densities represent agricultural regions of Canada in which Cereals are more expected. Results are provided as rasters with numerical values for each pixel indicating the spatial density calculated for that location. Higher spatial density values represent higher likelihood to have Cereals based on analysis of the 2009 to 2019 AAFC annual crop inventory data.</p> <p>Cereals consist of the following specific crop types from the AAFC annual crop inventory; Cereals, Barley (including Spring and Winter), Greenfeed / Mixed Cereals, Millet, Oats, Rye (including Spring and Winter), Spelt, Triticale (including Spring and Winter), Wheat (including Spring and Winter), and Other Cereal</p>
Purpose	
Topic Category	farming, imageryBaseMapsEarthCover
Spatial Representation Type	grid
Spatial Resolution	230 metres
Geographic Description	Canada
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data Licence : <a href="http://open.canada.ca">http://open.canada.ca</a>
Keywords	Crops, crop density, crop frequency
Scope Identification	dataset
Feature Attribute Names	



**3.2.4. Spatial Density of Corn in Canada**

Title	Spatial Density of Corn in Canada
Alternate Title	
Abstract	This data shows spatial density of Corn cultivation in Canada. Regions with higher calculated spatial densities represent agricultural regions of Canada in which Corn is more expected. Results are provided as rasters with numerical values for each pixel indicating the spatial density calculated for that location. Higher spatial density values represent higher likelihood to have Corn based on analysis of the 2009 to 2019 AAFC annual crop inventory data.
Purpose	
Topic Category	farming, imageryBaseMapsEarthCover
Spatial Representation Type	grid
Spatial Resolution	230 metres
Geographic Description	Canada
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data Licence : <a href="http://open.canada.ca">http://open.canada.ca</a> .
Keywords	Crops, crop density, crop frequency
Scope Identification	dataset
Feature Attribute Names	

**3.2.5. Spatial Density of Flax in Canada**

Title	Spatial Density of Flax in Canada
Alternate Title	
Abstract	This data shows spatial density of flax cultivation in Canada. Regions with higher calculated spatial densities represent agricultural regions of Canada in which flax is more expected. Results are provided as rasters with numerical values for each pixel indicating the spatial density calculated for that location. Higher spatial density values represent higher likelihood to have flax based on analysis of the 2009 to 2019 AAFC annual crop inventory data.
Purpose	
Topic Category	farming, imageryBaseMapsEarthCover
Spatial Representation Type	grid
Spatial Resolution	230 metres
Geographic Description	Canada
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data Licence : <a href="http://open.canada.ca">http://open.canada.ca</a>
Keywords	Crops, crop density, crop frequency
Scope Identification	dataset
Feature Attribute Names	

**3.2.6. Spatial Density of Oats in Canada**

Title	Spatial Density of Oats in Canada
Alternate Title	
Abstract	This data shows spatial density of oats cultivation in Canada. Regions with higher calculated spatial densities represent agricultural regions of Canada in which oats are more expected. Results are provided as rasters with numerical values for each pixel indicating the spatial density calculated for that location. Higher spatial density values represent higher likelihood to have oats based on analysis of the 2009 to 2019 AAFC annual crop inventory data.
Purpose	
Topic Category	farming, imageryBaseMapsEarthCover
Spatial Representation Type	grid
Spatial Resolution	230 metres
Geographic Description	Canada
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data Licence : <a href="http://open.canada.ca">http://open.canada.ca</a>
Keywords	Crops, crop density, crop frequency
Scope Identification	dataset
Feature Attribute Names	

### 3.2.7. Spatial Density of Pulses in Canada

Title	Spatial Density of Pulses in Canada
Alternate Title	
Abstract	<p>This data shows spatial density of pulses cultivation in Canada. Regions with higher calculated spatial densities represent agricultural regions of Canada in which pulses are more expected. Results are provided as rasters with numerical values for each pixel indicating the spatial density calculated for that location. Higher spatial density values represent higher likelihood to have pulses based on analysis of the 2009 to 2019 AAFC annual crop inventory data.</p> <p>Pulses consist of the following specific crops types from the AAFC annual crop inventory; Pulses, Beans, Black Beans, Cranberry Beans, Faba Beans, Great Northern Beans, Kidney Beans, Lima Beans, Pinto Beans, Navy Beans, Red Beans, White Beans, Other Beans, Lentils, Peas, Chick Peas, Field Peas, White Peas, Other Peas, and Other Pulse</p>
Purpose	
Topic Category	farming, imageryBaseMapsEarthCover
Spatial Representation Type	grid
Spatial Resolution	230 metres
Geographic Description	Canada
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data Licence : <a href="http://open.canada.ca">http://open.canada.ca</a>
Keywords	Crops, crop density, crop frequency
Scope Identification	dataset
Feature Attribute Names	

**3.2.8. Spatial Density of Soybean in Canada**

Title	Spatial Density of Soybean in Canada
Alternate Title	
Abstract	This data shows spatial density of Soybean cultivation in Canada. Regions with higher calculated spatial densities represent agricultural regions of Canada in which Soybeans are more expected. Results are provided as rasters with numerical values for each pixel indicating the spatial density calculated for that location. Higher spatial density values represent higher likelihood to have Soybeans based on analysis of the 2009 to 2019 AAFC annual crop inventory data.
Purpose	
Topic Category	farming, imageryBaseMapsEarthCover
Spatial Representation Type	grid
Spatial Resolution	230 metres
Geographic Description	Canada
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data Licence : <a href="http://open.canada.ca">http://open.canada.ca</a> .
Keywords	Crops, crop density, crop frequency
Scope Identification	dataset
Feature Attribute Names	

**3.2.9. Spatial Density of Wheat in Canada**

Title	Spatial Density of Wheat in Canada
Alternate Title	
Abstract	This data shows spatial density of Wheat cultivation in Canada. Regions with higher calculated spatial densities represent agricultural regions of Canada in which Wheat is more expected. Results are provided as rasters with numerical values for each pixel indicating the spatial density calculated for that location. Higher spatial density values represent higher likelihood to have Wheat based on analysis of the 2009 to 2019 AAFC annual crop inventory data. Wheat consists of all types of wheat including winter wheat from the AAFC annual crop inventory.
Purpose	
Topic Category	farming, imageryBaseMapsEarthCover
Spatial Representation Type	grid
Spatial Resolution	230 metres
Geographic Description	Canada
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data Licence : <a href="http://open.canada.ca">http://open.canada.ca</a>
Keywords	Crops, crop density, crop frequency
Scope Identification	dataset
Feature Attribute Names	

**3.2.10. Spatial Density of Oilseeds in Canada**

Title	Spatial Density of Oilseeds in Canada
Alternate Title	
Abstract	This data shows spatial density of oilseed cultivation in Canada. Regions with higher calculated spatial densities represent agricultural regions of Canada in which Oilseeds are more expected. Results are provided as rasters with numerical values for each pixel indicating the spatial density calculated for that location. Higher spatial density values represent higher likelihood to have Oilseeds based on analysis of the 2009 to 2019 AAFC annual crop inventory data. Oilseeds consists of all types of oilseeds including Borage, camelina, canola, flax, mustard, safflower, soybeans, sunflower and others (code 150) from the AAFC annual crop inventory.
Purpose	
Topic Category	farming, imageryBaseMapsEarthCover
Spatial Representation Type	grid
Spatial Resolution	230 metres
Geographic Description	Canada
Supplemental Information	
Constraints	Data are subject to the Government of Canada Open Data Licence : <a href="http://open.canada.ca">http://open.canada.ca</a>
Keywords	Crops, crop density, crop frequency
Scope Identification	dataset
Feature Attribute Names	

## 4. DATA CONTENT AND STRUCTURE

### 4.1. Feature-based application schema

Not applicable

### 4.2. Feature catalogue

Not applicable

## 5. REFERENCE SYSTEMS

### 5.1. Spatial reference system

Horizontal coordinate reference system: NAD83

Map projection: Canada\_Albers\_Equal\_Area\_Conic; WKID: 102001 Authority: Esri

### 5.2. Temporal reference system

Gregorian calendar

## 6. DATA QUALITY

The quality of the crops spatial density data depends on the quality of the input data (Annual Crop Inventory of Canada) and parameters of the applied methods to calculate the spatial density of each crop.

### 6.1. Completeness

### 6.2. Logical consistency

### 6.3. Positional accuracy

### 6.4. Temporal accuracy

### 6.5. Thematic accuracy

Thematic accuracy of each calculated crop spatial density depends on the identified location of each crop in each Earth Observation-based annual crop inventory map of Canada. The annual crop inventory data are created and published by Agriculture and Agri-Food Canada also on Open.Canada.ca.

### 6.6. Lineage statement

Lineage Statement	The series is complete for the 2009-2019 periods. It will be updated annually after releasing the new Agriculture and Agri-Food Canada Annual Crop Inventory data. This data is a derived product from Agriculture and Agri-Food Canada Annual Crop Inventory data.
Scope	Series, Dataset



## **7. DATA CAPTURE**

## **8. DATA MAINTENANCE**

## **9. PORTRAYAL**

Not applicable.

## **10. DATA PRODUCT DELIVERY**

TIF  
format name: Tag Interleaved File:  
version: 6.0  
specification: GeoTIFF is format extension for storing georeference and geocoding information in a TIFF 6.0 compliant raster file by tying a raster image to a known model space or map projection.  
languages: eng  
character set: utf8

## **11. METADATA**

The metadata requirements follow the Government of Canada's Treasury Board Standard on Geospatial Data (ISO 19115).