Mapping Census of Agriculture data

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Why Census of Agriculture?

- haven’t “played” with it at recent ACCOLEDS

- data has 9 digit codes for CCS (Consolidated Census Subdivisions) boundaries...

  ![Image 1](https://via.placeholder.com/150)

  ![Image 2](https://via.placeholder.com/150)

  ![Image 3](https://via.placeholder.com/150)

- while

- CCS geospatial boundary files are 7 digits

- “confidentiality constraints” and amalgamations of CCSs

- “agricultural ecumene...where significant agricultural activity is concentrated in Canada...”
Outline

Part A: “massage” / prepare raw data from Census of Agriculture

Part B: manipulate / prepare the geospatial map layers

Part C: make map(s)
November 17, 2014

All 2011 Farm and farm operator data are now available without charge in CANSIM: Tables 004-0200 to 004-0242.

Farm and farm operator data
Available without charge in CANSIM: Tables 004-0200 to 004-0242.

The Daily, May 16, 2014
Highlights and analyses

Selected livestock farm and operator data
Available without charge in CANSIM: tables 004-0301 to 004-0317.

Economic overview of the farm population data
The 2011 Census of Agriculture and the National Household Survey Linkage data are available without charge in CANSIM: tables 004-0100 to 004-0129.

The Daily, November 27, 2013
Highlights and analyses
Data quality

Canadian Agriculture at a Glance
Canadian Agriculture at a Glance - Main page
Demographic Change in Canadian Agriculture
The changing face of the Canadian fruit and vegetable sector: 1991 to 2011
Feeding the soil puts food on your plate
The changing face of the Canadian hog industry
Roses in Canada
Overview of livestock farm operating expenses

Boundary file
Census Agricultural Regions Boundary File
Census Agricultural Regions Boundary File — Reference Guide
Agricultural Boundaries Boundary File
Agricultural Boundaries Boundary File — Reference Guide

Maps
Reference maps
Thematic maps
Part A. Prepare the data

1. Navigate to RawData.xls and open it (note the intermingled text with CCS, CDs, Prov IDs)

   2. Highlight and right-click to delete top rows and add column headings: Geography & Organics

   3. (Notice the “notes”: “confidentiality constraints”… “amalgamated...”)

   Delete rows below Northern Rockies

   4. (Notice the “notes”: “confidentiality constraints”... “amalgamated...”)
5. Insert a column between Geography and Organic and call it PRCDCCS

6. Insert the following formula into cell B2 and drag it down to the end of the column:

\[ \text{=CONCATENATE(59,MID(A2,FIND("CCS",A2)+7,5))} \]

**Formula:** In column A, start with and grab 59(BCprovID); then from beginning of CCS, 7 spots forward and grab 5 digits

7. We need 7 digits to match CCS boundary file. (Need to drop CAR part of CCS & don’t need Prov or CARs or CDs)

8. Save the file as ProcessedData.xls
Part B. Prepare the Map Layers
1. Start ArcMap...
2. add Canada_CAR
3. Zoom to SW BC
4. Use select image and highlight/select Lower Mainland-SW BC
5. right-click Canada_CAR to export data
6. Save selected feature as SwBC_CAR.shp and add to map
7. Right-click Canada_CAR to remove it.
8. Navigate to Canada_CCS and add it.
9. Clip Canada_CCS using SwBC_CAR...
10. Clip Canada_CCS using SwBC_CAR... save as SwBC_CAR_CCS.shp
11. Right-click Canada_CSS to remove it
12. if not already activated, activate the Editor toolbar: Top menu: Customize - Toolbars - Editor).
13. Click on Editor to Start Editing.
14. Right-click on SwBC_CAR_CCS to open its Attribute Table
15. Sort Ascending CCSUID because we will change some CCSUIDs because some were amalgamated as per [http://www.statcan.gc.ca/ca-ra2011/201105/59-eng.htm](http://www.statcan.gc.ca/ca-ra2011/201105/59-eng.htm)
16. Change CCSUID numbers 5909014 & 5909048 to 5909016; change CCSUID number 5931017 to 5931021; change CCSUID number 5931032 to 5931034
17. on Editor, Stop Editing and Save the Changes; (close the attribute table)
18. Amalgamate the CCSUIDs with the Dissolve tool (to reflect the AgCensus amalgamations); save as SwBC_CAR_CCS_Amalgamated.shp ....
19. navigate to and Add ProcessedData.xls (processedData$ worksheet)
20. right-click on SwBC_CAR_CCS_Amalgamated to join...attributes from a table...
21. Join field CCSUID and ProcessedData field PRCDCCS
22. ProcessedData has been added to SwBC_CAR_CCS_Amalamated

<table>
<thead>
<tr>
<th>FID</th>
<th>Shape *</th>
<th>CCSUID</th>
<th>Geography</th>
<th>PRCDCCS</th>
<th>Organic</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>5909016</td>
<td>Fraser Valley B (CCS90209016)</td>
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<td>Fraser Valley E (CCS90209036)</td>
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<tr>
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<td>Polygon</td>
<td>5909052</td>
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<tr>
<td>5</td>
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<td>Fraser Valley G (CCS90209062)</td>
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<td>5915001</td>
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<td>8</td>
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<tr>
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<td>Polygon</td>
<td>5915020</td>
<td>Greater Vancouver A (CCS90215020)</td>
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<td>11</td>
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<td>5915022</td>
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<tr>
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<td>5915025</td>
<td>Burnaby (CCS90215025)</td>
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<td>Polygon</td>
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<td>Squamish-Lillooet B (CCS90231034)</td>
<td>5931034</td>
<td>3</td>
</tr>
</tbody>
</table>
23. right-click SwBC_CAR_CCS_Amalamated to export data...
24. save as SwBC_CAR_CCS_Organic.shp and add to map
SwBC_CAR_CCS_Organic farms symbolized by choropleth map: “Organic Farms by CCSs”...but...

Choropleth maps are usually better for relative numbers (ratios, percentages, etc) rather than absolute numbers...so...
Part C: Create Map(s)

1. double or right-click SwBC_CAR_CCS_Organic for Properties
2. in SwBC_CAR_CCS_Organic Layer Properties, click Symbology, Quantities, Dot Density, and move Organic...
3. (in SwBC_CAR_CCS_Organic Layer Properties) ...move Organic over to symbolize it

for display purposes, Dot size = 9 and Dot Value: 1 (1 dot = 1 farm); colour can be changed
Organic farms by CCS (by Dot Density within CCSs; dots do not indicate exact geographic location)...

...but this visualization assumes farms are randomly distributed throughout their CCS areas which is not the case... so Agricultural Ecumene Boundary File is useful...
AgricEcumene delineates areas of significant agricultural activity in Canada as indicated by the 2011 CensusAg

Most/much of Canada, and BC, does not have significant agricultural activity...
4. navigate to and Add AgEcumene file
Note the limited areas of significant agricultural activity in Sw BC...(only highlighted here for visualization)
Note the limited areas of significant agricultural activity in Sw BC...(mountainous terrain...)
5. Need to elect by Attributes (...“ECUMENE” = ‘1’...next slide...)

![Image of a map with layers turned on and a selection tool highlighted. The layers include AgriEcumene, SwBC_CAR_CCS_Organic, SwBC_CAR_CCS_Amalgamated, SwBC_CAR_CCS, and SwBC_CAR.]

This selects areas where there is significant agricultural activity to meet criteria of minimum agricultural land area or agricultural receipts.
“ECUMENE” = ‘1’ selected...

...now with above we will clip...
7. (under Geoprocessing use) Clip SwBC_CAR_CCS_Organic using AgriEcumene...

...save file as SwBC_CAR_CCS_OrganicAgEc...
8. un-click AgriEcumene and move SwBC_CAR_CCS_Organic to top of Table of Contents “Organic Farms in SwBC by CCS (by Dot Density within CCSs over AgriEcumene)”

Note how many/some of the organic farms in SwBC_CAR_CCS_Organic are outside the AgricEcumene areas...
9. un-click SwBC_CAR_CCS_Organic b/c we will now symbolize SwBC_CAR_CCS_OrganicAgEc...next slide...
10. symbolize SWBC_CAR_CCS_OrganicAgEc with dot density: Layer Properties–Symbology–Quantities–Dot Density, and move Organic to symbolize it by Dot Density

for display purposes, Dot size = 9 and Dot Value: 1 (1 dot = 1 farm); colour can be changed and...see next page...
11. ...set Background to No Colour; OK
Organic Farms in SwBC by Agricultural Ecumene (by Dot Density)

Compare to map on next slide 45
Organic Farms in SwBC by CCS (by Dot Density within CCSs over AgriEcumene)

Note: This is slide 40 with organic farms within CCSs