# Mapping Agricultural Data Using Excel® 2016

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### Objectives

Describe benefits of mapping Agriculture and related industry data

Highlight Excel 2016 Data Mapping Tools Explain how to use data maps with USDA agricultural data sets

#### Agricultural Data Mapping

Data

Visualization

Action

Insightful Resource on Value of Mapping in Agriculture: **Agricultural Data Visualization for Prescriptive Crop Planning.** Harshitha, et al. (2017) http://www.ijcttjournal.org/2017/Volume49/number-3/IJCTT-V49P129.pdf

#### Benefits of Mapping

- Visualize Agricultural trends (production, yield, planting, usage, etc.) among populations and possible influencing factors
- Identify critical industry/production needs and assets
- Identify and/or compare clusters or trends within a geographic region
- Demonstrate changes over time
- Compare statistics through symbols on maps

#### Visualizing Farming with Agriculture Maps

- Almost every bit of the food we eat is grown and gathered on farms.
- Humans have learned how to change the environment to efficiently grow crops – we have also learned to produce more crops with less land.
- But a number of issues threatens agriculture sustainability – population increase, climate change and water stress.
- Feast your eyes on these agriculture maps and learn what the future of farming holds.

#### Map 1: Agricultural Exposure to Water Stress Map

- The World Resources Institute mapped out where water stresses exist in the world.
- The Agriculture Exposure to Water Stress Map measures the ratio of local withdrawal (demand) over the available water (supply).
- Countries like India, Morocco, Spain and the Philippines face high cropland water stress.
- Major commodity crops are visualized like coffee, rice and cereals.



#### Map 2: Feeding the World Map

- Can Global Crop Production Meet Future Demands? The University of Minnesota is exploring current crop yields and solutions to the biggest problems in agriculture.
- The purpose of the Feeding the World Story Map, is to showcase the process to tackle this growing problem, we will have to:
  - Make croplands more productive
  - Increase water use efficiency
  - Change crop use & diet



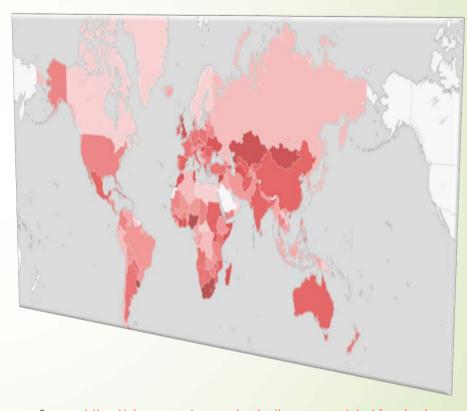
Source: <a href="https://gisgeography.com/agriculture-maps-global-farming/">https://gisgeography.com/agriculture-maps-global-farming/</a>

Map 3: World Bank Agricultural Land

(% of land area)

World Bank has a unique set of Agricultural Maps showing historical and future farming trends. The maps include:

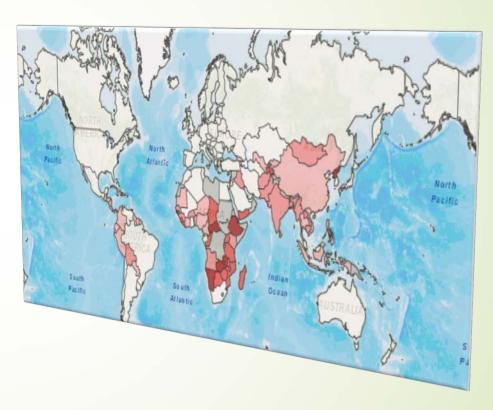
- Agricultural irrigated land (% of total agricultural land)
- Agricultural land (% of land area)
- Agricultural machinery (tractors per 100 sq km of arable land)
- Agriculture, value added (% of GDP)
- Agriculture, value added per worker (constant 2005 US\$)



# Map 4: FAO Hunger Map



- \* The United Nations is battling hunger with its Millennium Development Goal (MDG) program.
  - The UN has set a target to have in the developing world.
  - The interactive UN Hunger Map raises awareness about global hunger.



## Map 5: ISRIC<sup>1</sup> Soil Grids 1KM

- SRIC's 1km Global Soil Map helps with agricultural decisionmaking.
- Some of the greatest soil maps can be found with properties like taxonomy, organic carbon, pH in H<sub>2</sub>O, sand %, silt %, clay %, cation exchange capacity, bulk density and coarse fragments



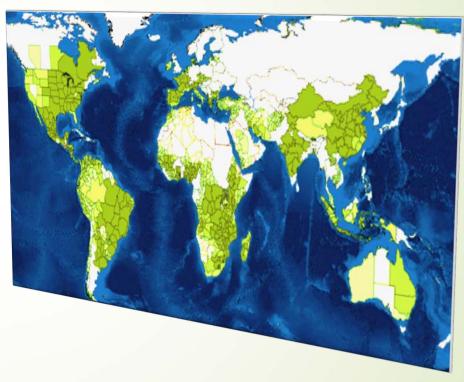
<sup>1</sup> International Soil Reference and Information Centre

Source: <a href="https://gisgeography.com/agriculture-maps-global-farming/">https://gisgeography.com/agriculture-maps-global-farming/</a>



# Map 6: FAO Global Spatial Database of Agricultural Land-use Statistics

- Agro-maps breaks down primary food crops by sub-national administrative districts.
- The information is aggregated by crop production, area harvested, and crop yields.
- About 40% of the global workforce is in agriculture (1.3 billion people) 
   this means that agriculture is the world's largest provider of jobs.
- In the FAO Global Spatial Database and Agricultural Landuse Interactive Map, you get a limited yet very important component of land use.

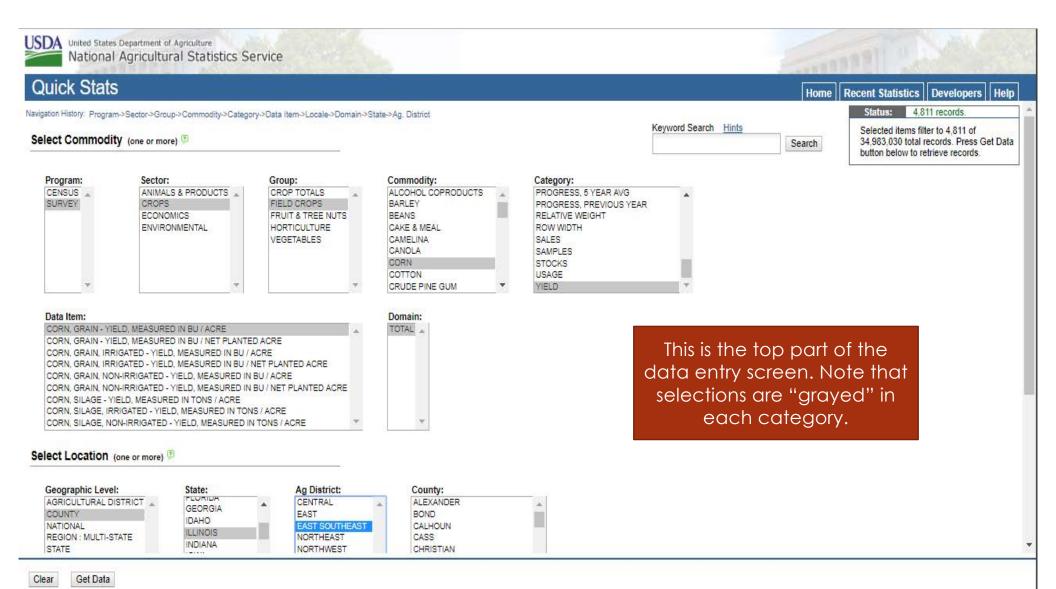


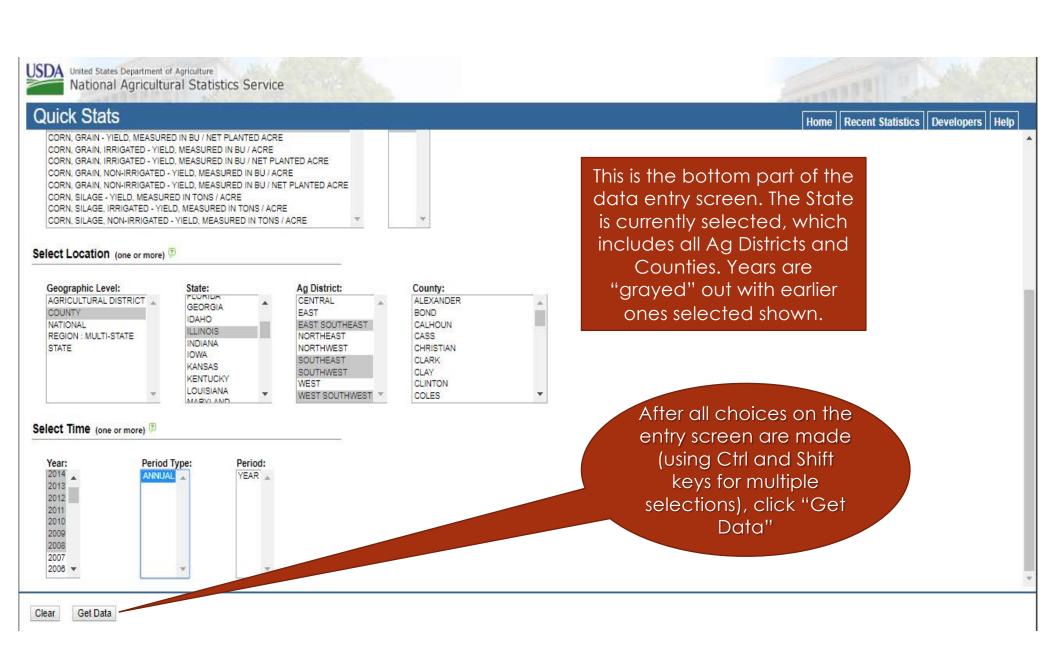
### The Digital Age Helps Transform Bulk Agricultural Data into Useable Maps

- Using the United States Department of Agriculture's National Agricultural Statistics Service (USDA NASS), data can be collected on county, regional, state, or national basis on nearly any crop, animal, or other agricultural enterprise.
- Using the "Quick Stats" data entry sheet, choices can be made of many combinations of either Agricultural Census or Agricultural Survey information.
- The choices are seen in the next three slides
  - 1. The blank data entry screen
  - 2. A partially completed top part of the data entry screen, and
  - 3. A partially completed bottom part of the same data entry screen.

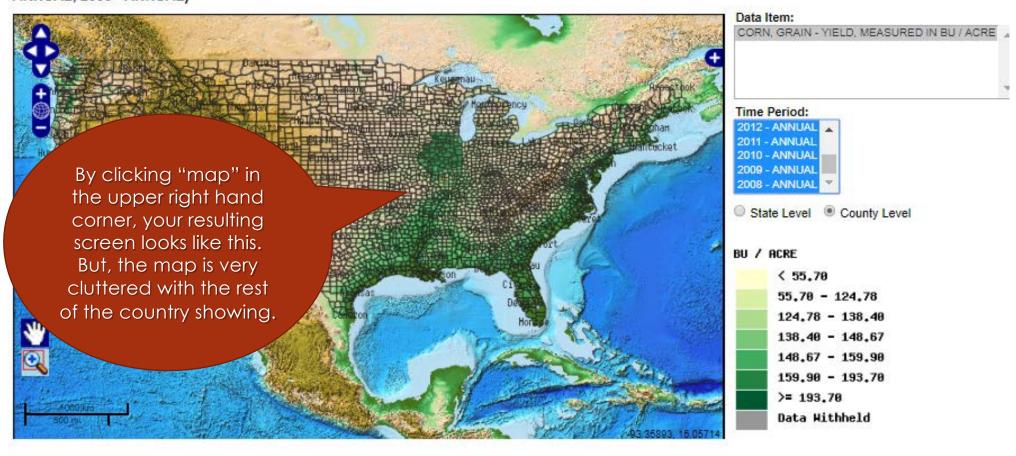
The website address is: NASS.USDA.GOV







CORN, GRAIN - YIELD, MEASURED IN BU / ACRE(AVERAGE -> 2017 - ANNUAL, 2016 - ANNUAL, 2018 - ANNUAL, 2013 - ANNUAL, 2012 - ANNUAL, 2011 - ANNUAL, 2010 - ANNUAL, 2009 - ANNUAL, 2008 - ANNUAL)





#### **Quick Stats**

Double click any cell below to filter the data

Your resulting screen looks like this. Click "Spreadsheet"

Home Recent Statistics Developers Help

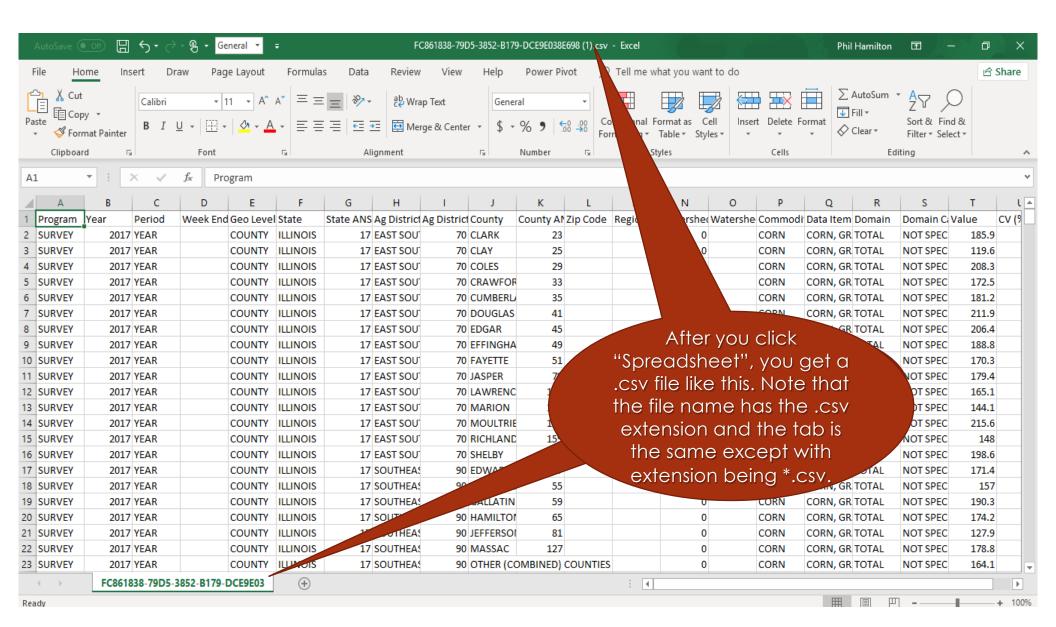
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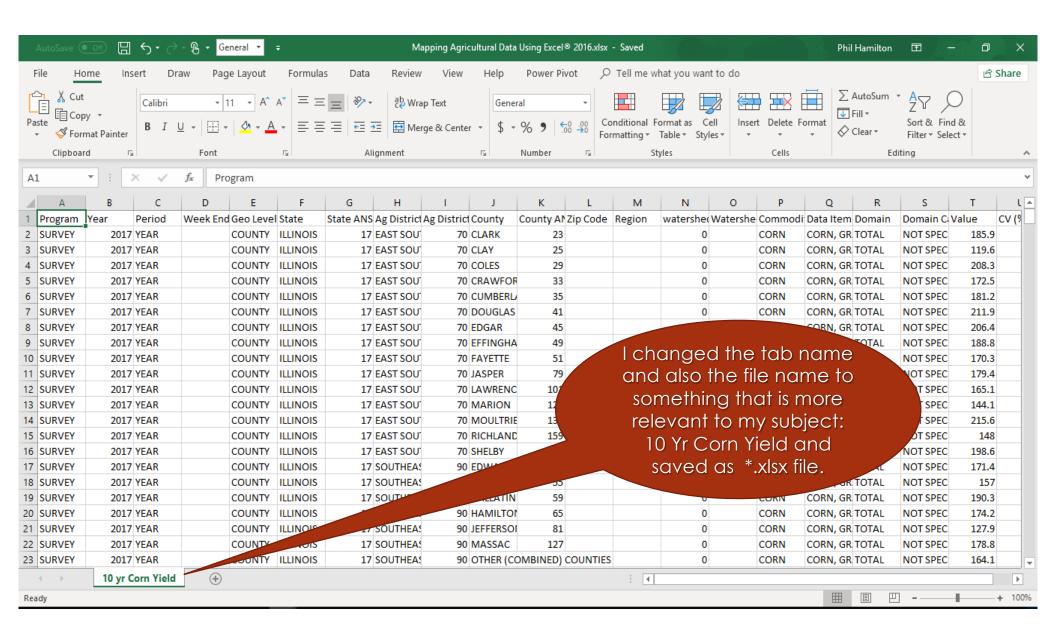
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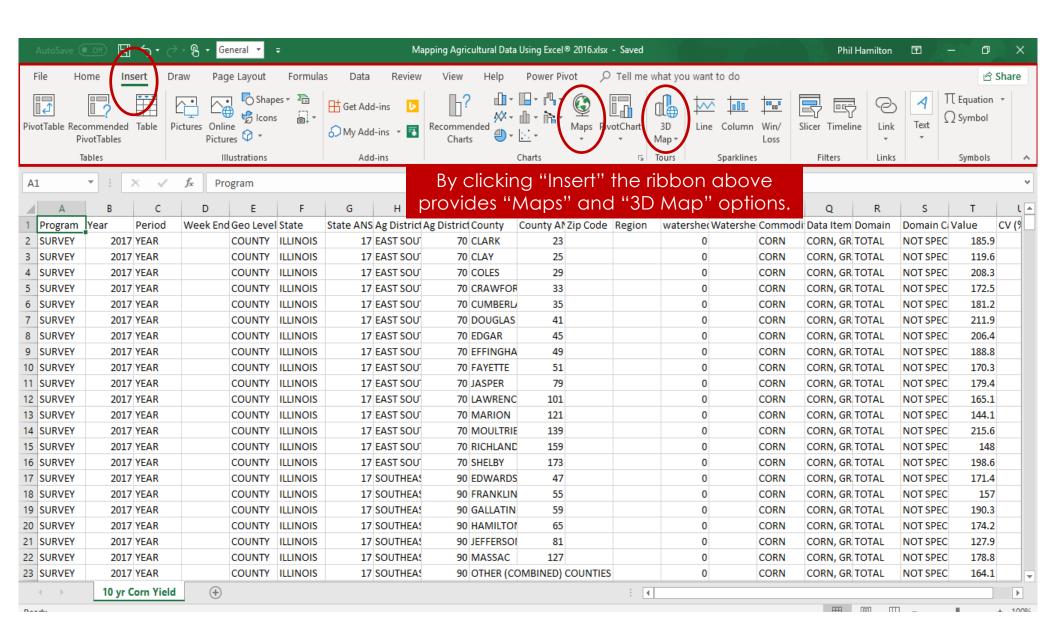
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SURVEY	2017	YEAR	COUNTY	ILLINOIS	17	EAST SOUTHEAST	70	DOUGLAS	041	00000000	CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	21
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SURVEY	2017	YEAR	COUNTY	ILLINOIS	17	EAST SOUTHEAST	70	MARION	121	00000000	CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	14
SURVEY	2017	YEAR	COUNTY	ILLINOIS	17	EAST SOUTHEAST	70	MOULTRIE	139	00000000	CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	21
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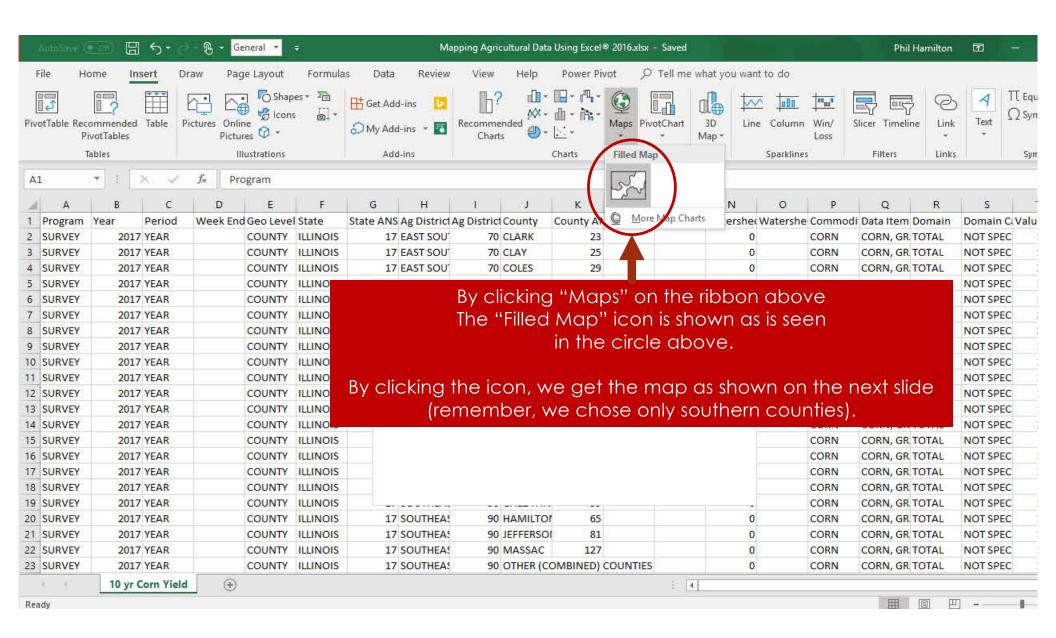
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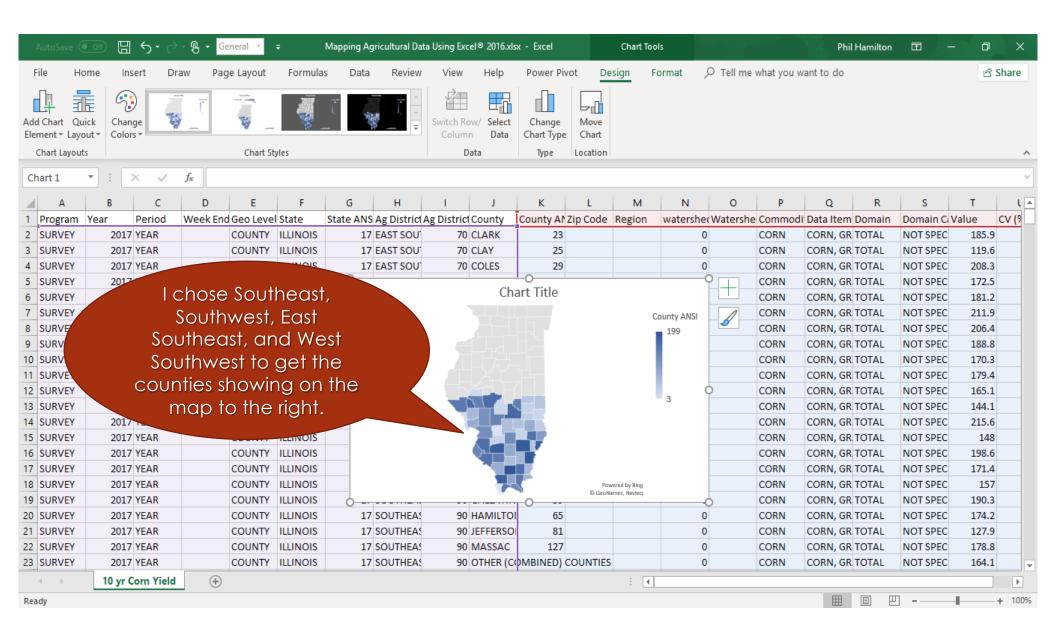
Abbreviations and Symbols

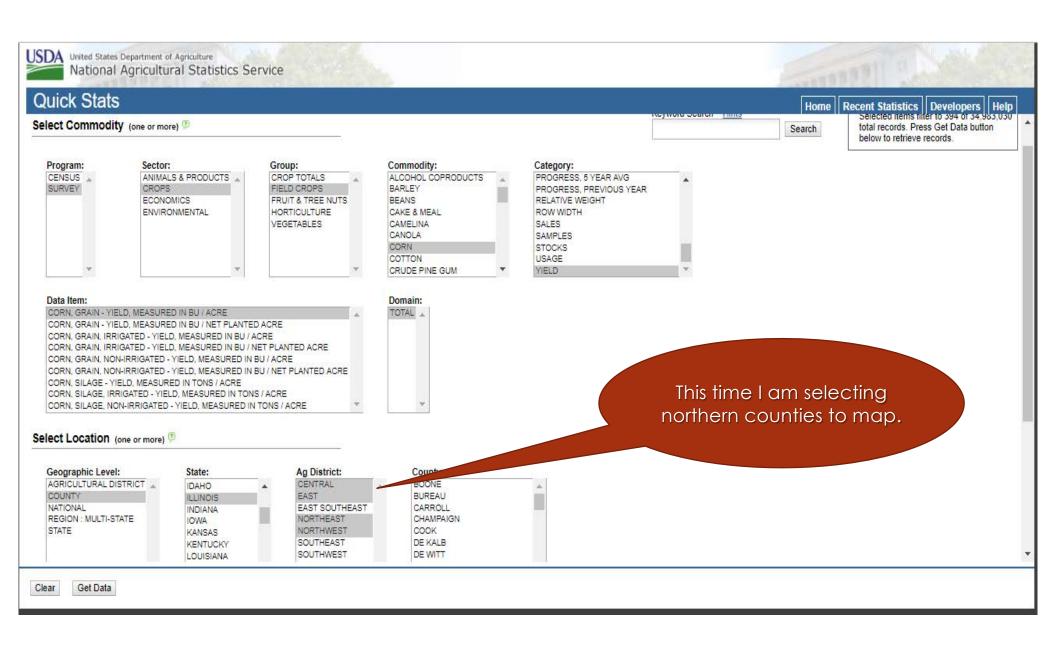












#### Quick Stats

Home Recent Statistics Developers Help

Double click any cell below to filter the data by that item. Right click on column heading to pivot or hide columns.

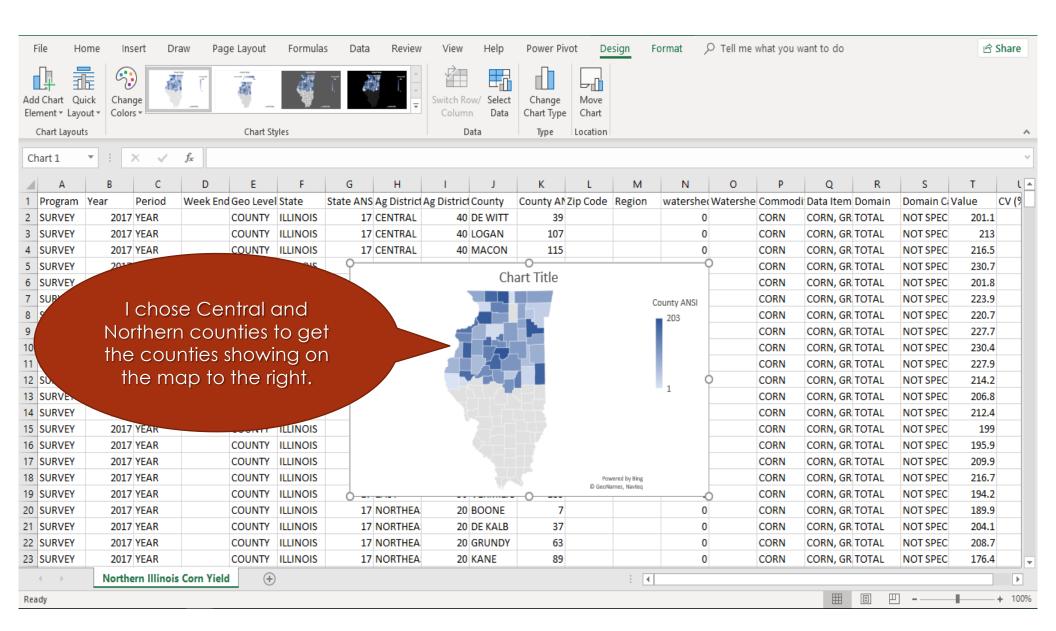
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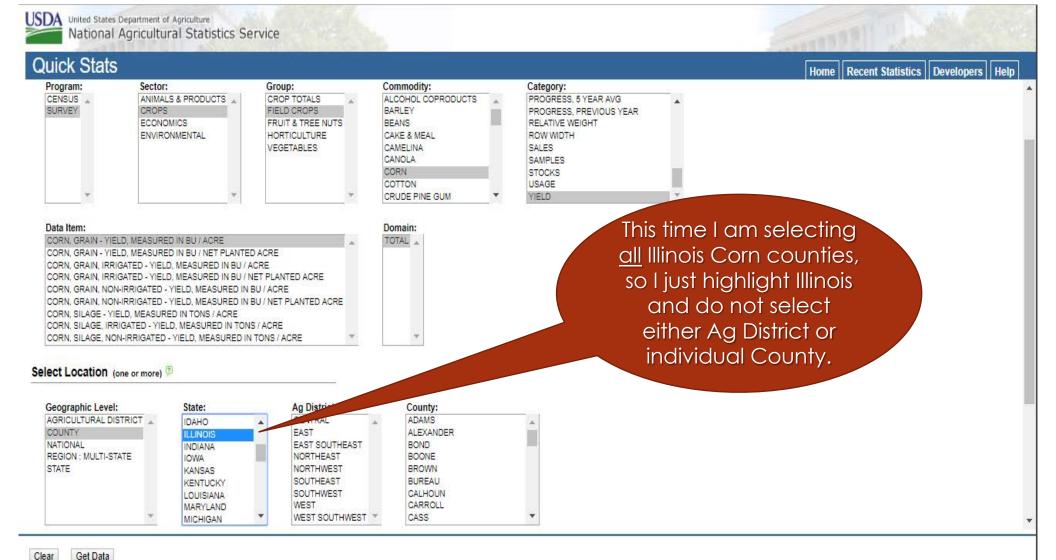
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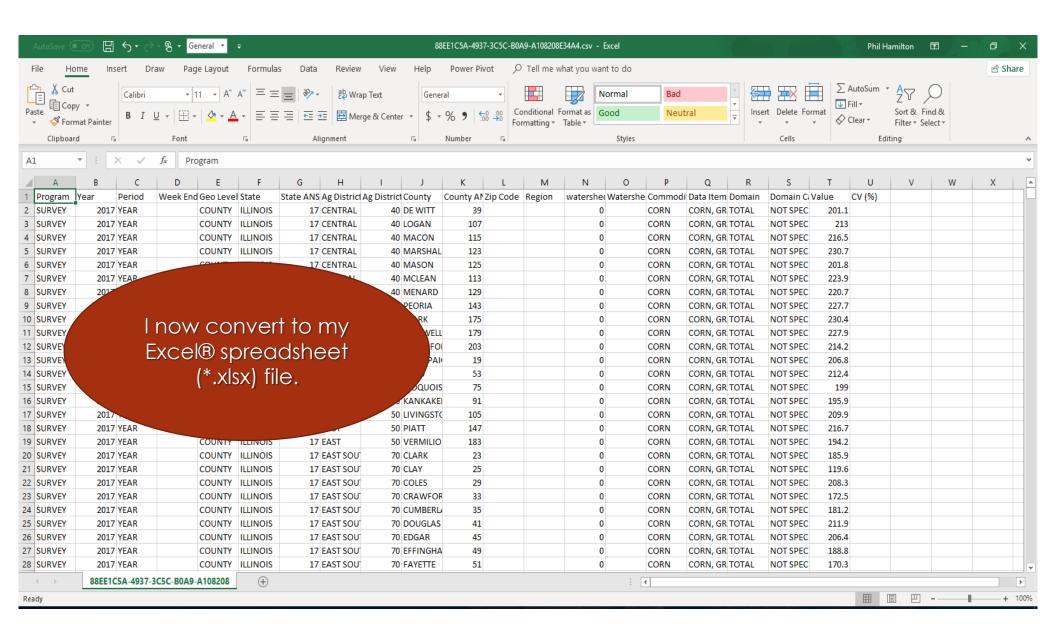
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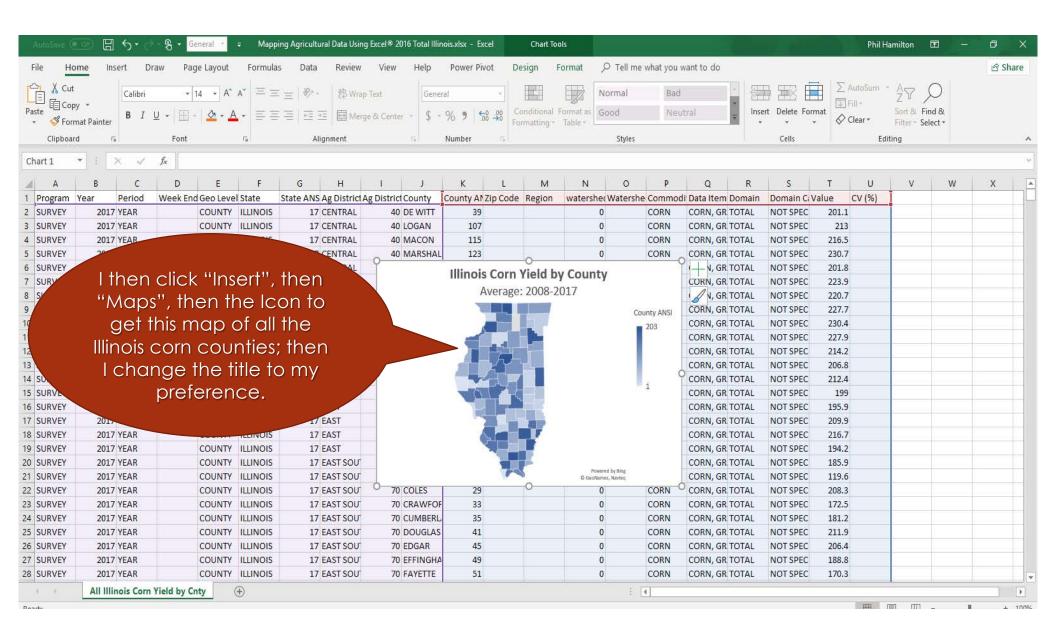
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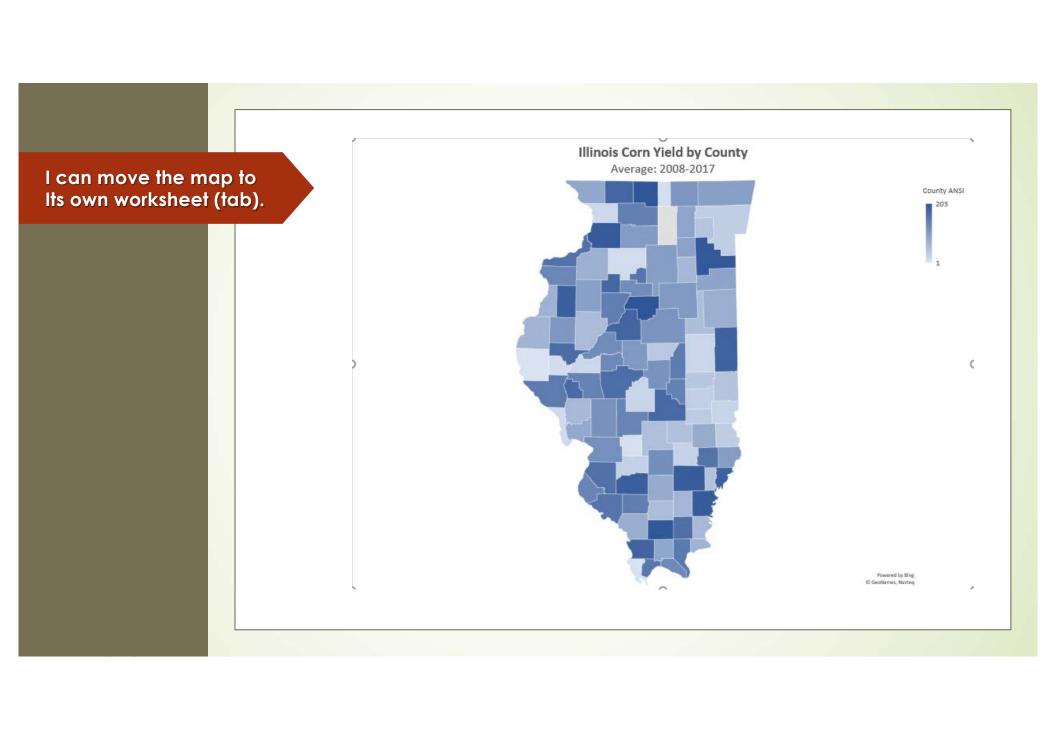
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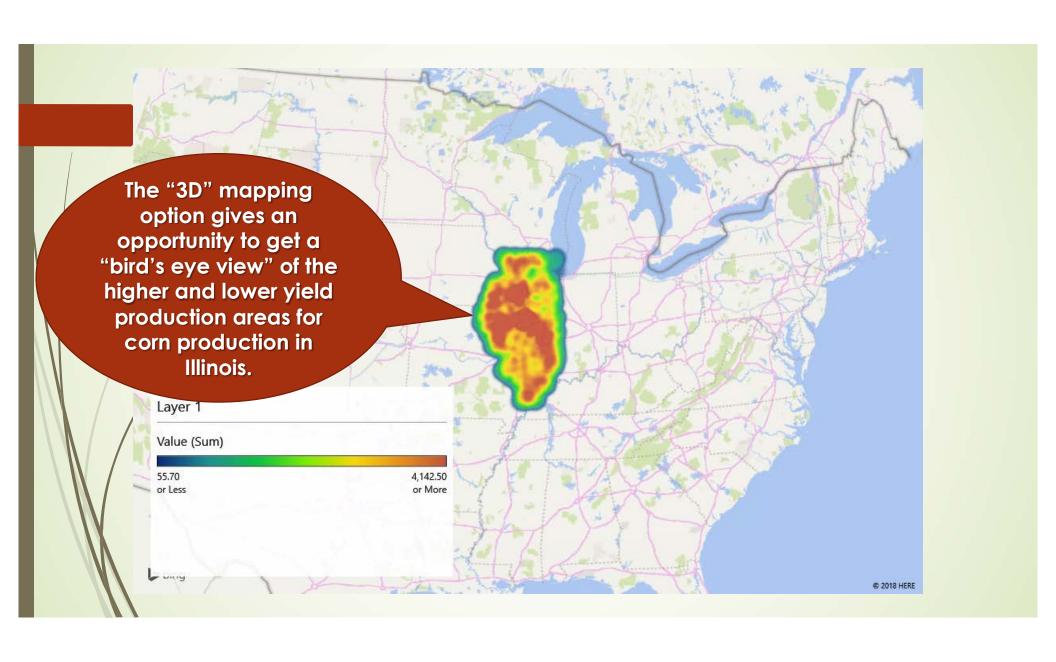
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Abbreviations and Symbols









#### Agricultural Maps for Decision Making

- Agriculture feeds the globe. We can see which crop types are suited for different environments in this list of agricultural maps.
- Farming also faces a number of problems population increase, climate change, hunger and water stress.
- Agricultural maps can convey this information to make knowledgeable decisions.
- Instantly, you have become more knowledgeable about agricultural issues with the agricultural maps showcased and your ability to use Excel 2016 Mapping.