USDA NASS Geospatial Products
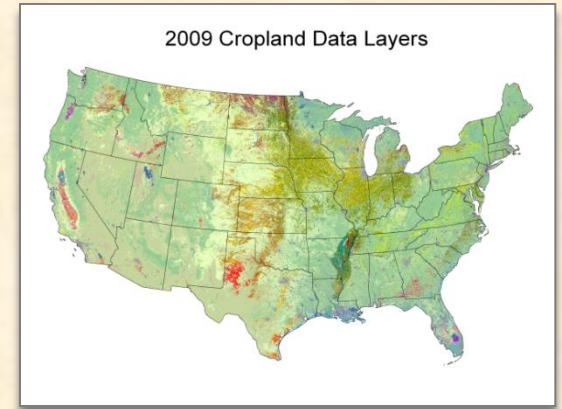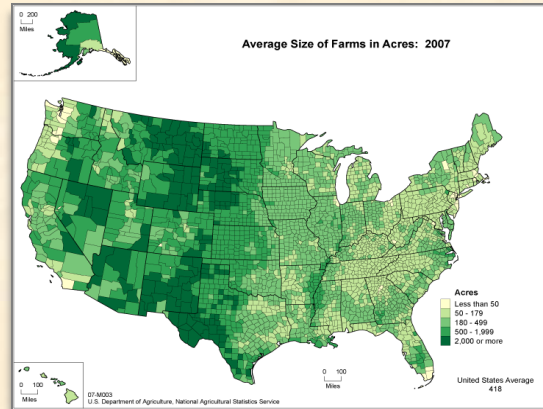
National Agricultural Statistics Service
Zhengwei Yang
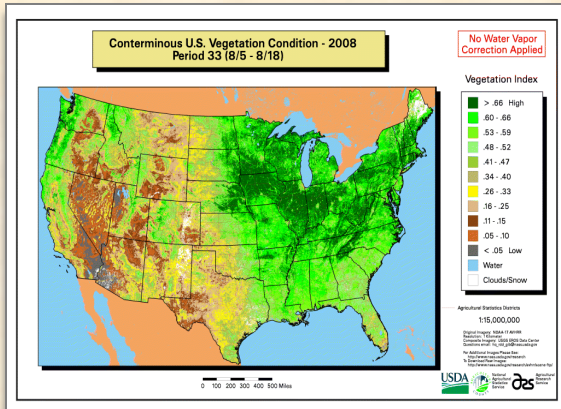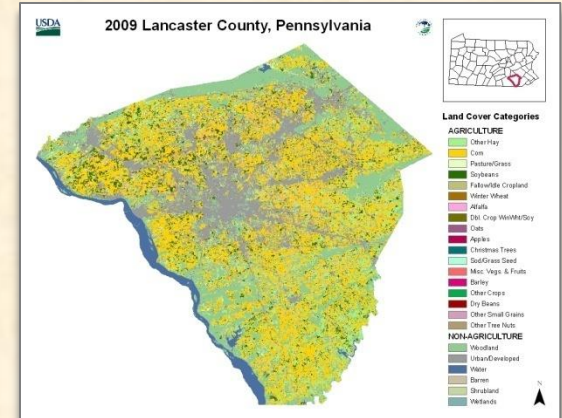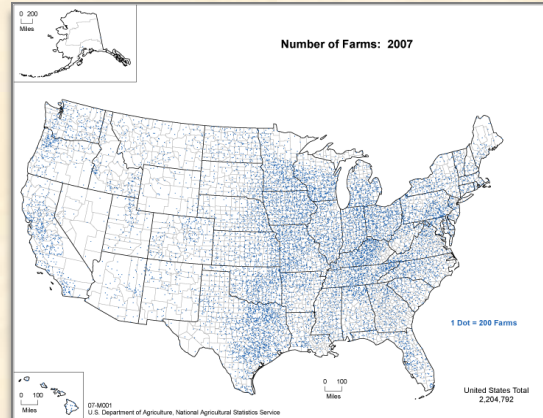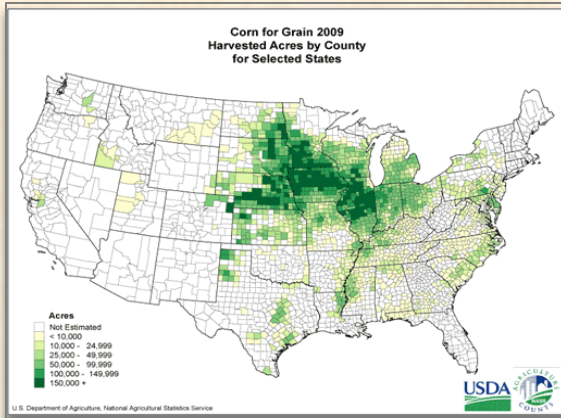Zhengwei.yang@nass.usda.gov

September12, 2013

= USDA Remote Sensing Agencies
10 of 19 Agencies
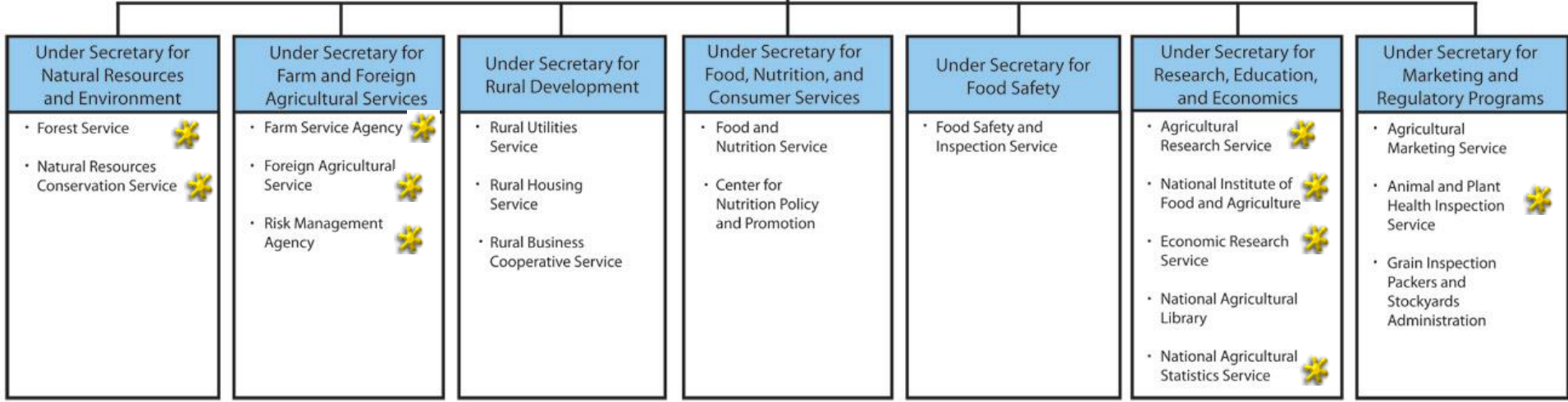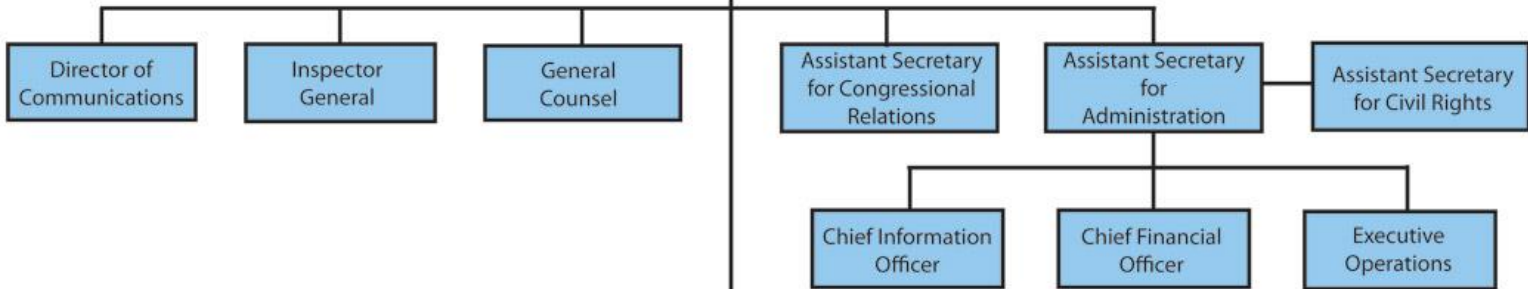
USDA has over 65,000 ESRI desktop licenses

Research, Education and Economics (REE) Mission Area

Agricultural Research Service	Economic Research Service	National Agricultural Statistics Service	National Institute of Food and Agriculture

NASS MISSION:

To provide timely, accurate, and useful statistics in service to U.S. agriculture

http://www.nass.usda.gov/

National Agricultural Statistics Service

▸ Agency in U.S. Department of Agriculture

- Non-policymaking

- Non-political -- career staff

- Independent, objective, unbiased appraisers of Nation's agriculture

NASS Regional Offices

12 regional offices

Eastern Mountain	Upper Midwest	Northwest	Northern Plains
Northeastern	Great Lakes	Pacific	Southern Plains
Southern	Heartland	Delta	Mountain

What does NASS do?

- ◦ Administer USDA's Statistical Estimating Program
- ◦ Conduct the 5-year Census of Agriculture
- ◦ Coordinate Federal/State agricultural statistical needs
- ◦ Provide statistical consulting for Federal/State governments, universities, and other countries
- ◦ Collect and summarize agricultural data under reimbursable agreements
- ◦ Conduct statistical research

NASS issues about 500 statistical reports each year and about 9,000 reports and news releases

Reports Are Scheduled

❏ A release schedule provides the dates for when the data is available

County Data Release Schedule

When Does NASS Publish Annual County Data?

NASS begins preparing year-end county crop production estimates immediately after publishing the annual *Crop Production Summary* in January. State totals for some commodities are published in the monthly *Crop Production* report (April, May and June) and other reports. NASS expects data to be available in the Quick Stats database at 3 p.m. ET on the dates listed below. However, circumstances may sometimes prevent this. Therefore, final dates will be added to the "All States Available" column when all data are available.

2009 Release Schedule for Preliminary 2008 County Crop Estimates		
Commodity	**Anticipated Release**	**All States Available**
Barley	February 20	February 20
Oats	February 20	February 20
Rye	February 20	February 20
All Wheat	February 25	February 27
Durum Wheat	February 25	February 27
Other Spring Wheat	February 25	February 27
Winter Wheat	February 25	February 27
Sorghum	March 2	March 2
Sunflower, All, Non-Oil & Oil	March 2	March 2
Corn for Grain & Silage	March 2	March 9
Soybeans	March 2	March 9
Canola	March 4	March 4
Dry Edible Peas	April 8	April 13
Lentils	April 8	April 13
All Hay, Alfalfa & Other	April 17	April 20
Forage - All, Alfalfa	April 17	April 17

Major Geospatial Products and Programs

- Survey Based State/County Estimates

- Census of Agriculture

- Vegetation Condition

- Cropland Data Layer

- Area Sampling Frame

Survey based estimates

Data Available Publically

- Both estimates and census data can be accessed using *Quick Stats* interactive statistical database.

- Survey and census statistical tabulate data were represented in county level charts and maps.

- Data & Maps accessible at: www.nass.usda.gov

Planted Acres

Corn for All Purposes 2007
Planted Acres by County

Acres
Not Estimated
< 10,000
10,000 - 24,999
25,000 - 49,999
50,000 - 99,999
100,000 - 149,999
150,000 +

U.S. Department of Agriculture, National Agricultural Statistics Service
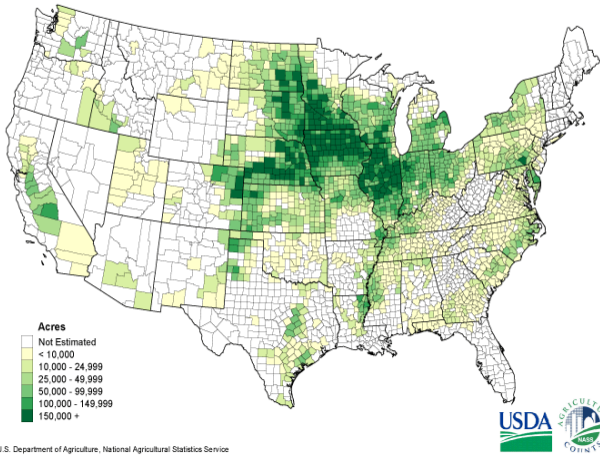
Corn for All Purposes 2008
Planted Acres by County

Acres
Not Estimated
< 10,000
10,000 - 24,999
25,000 - 49,999
50,000 - 99,999
100,000 - 149,999
150,000 +

U.S. Department of Agriculture, National Agricultural Statistics Service
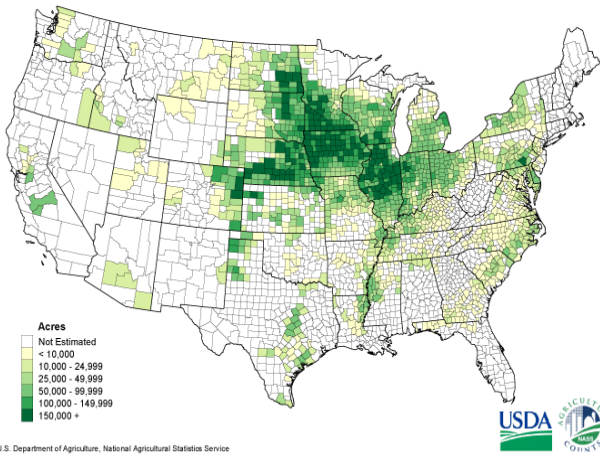
Corn for All Purposes 2009
Planted Acres by County
for Selected States

Acres
Not Estimated
< 10,000
10,000 -   24,999
25,000 -   49,999
50,000 -   99,999
100,000 - 149,999
150,000 +

U.S. Department of Agriculture, National Agricultural Statistics Service
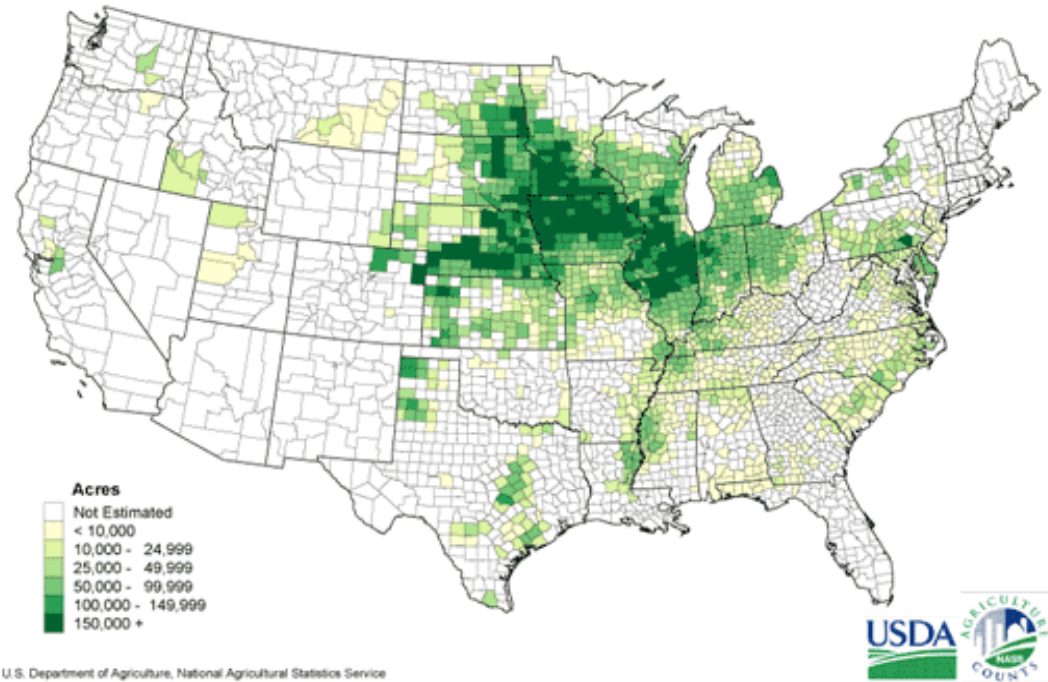
Harvested Acres

Corn for Grain 2007
Harvested Acres by County
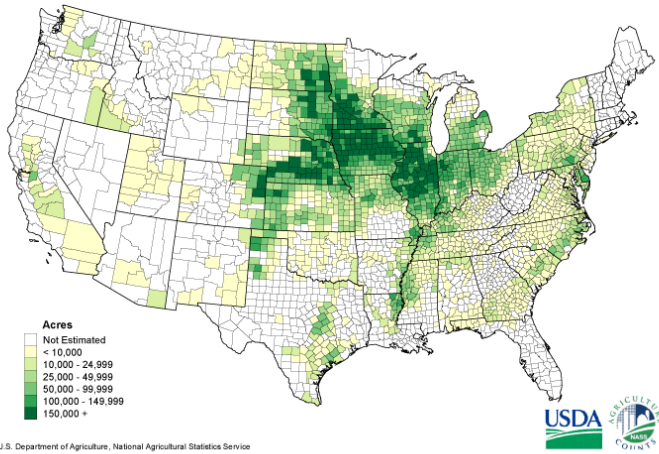
Corn for Grain 2008
Harvested Acres by County
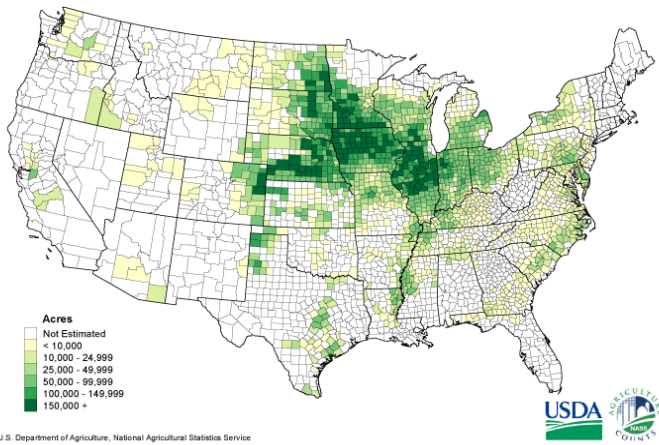
Corn for Grain 2009
Harvested Acres by County
for Selected States
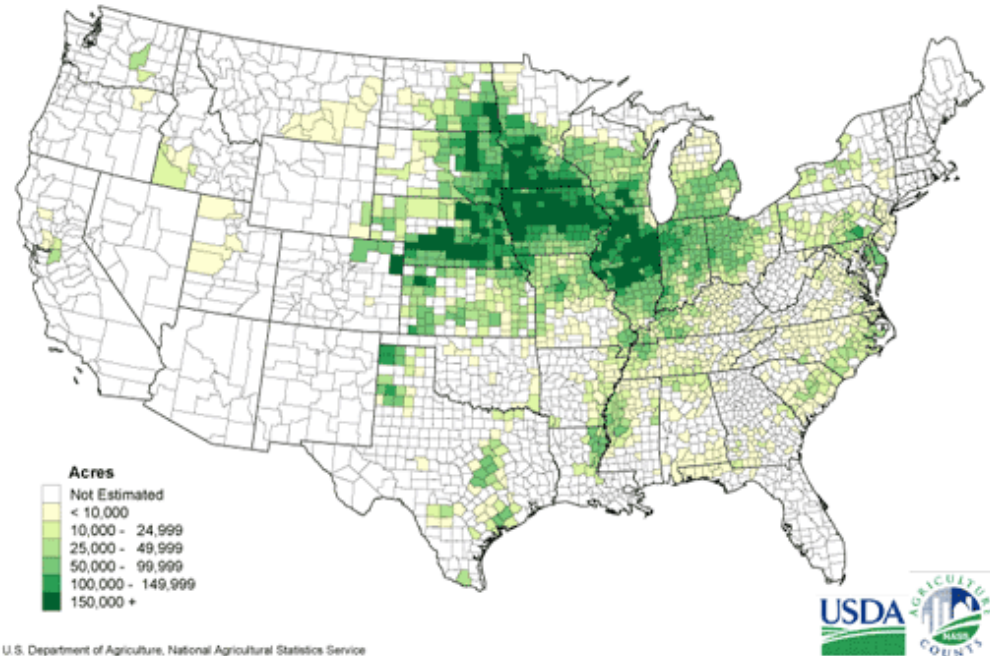
Yield Per Harvested Acre

Corn for Grain 2007
Yield Per Harvested Acre by County

Bushels Per Acre
Not Estimated
< 75
75 - 99.9
100 - 124.9
125 - 149.9
150 - 174.9
175 +

USDA

U.S. Department of Agriculture, National Agricultural Statistics Service
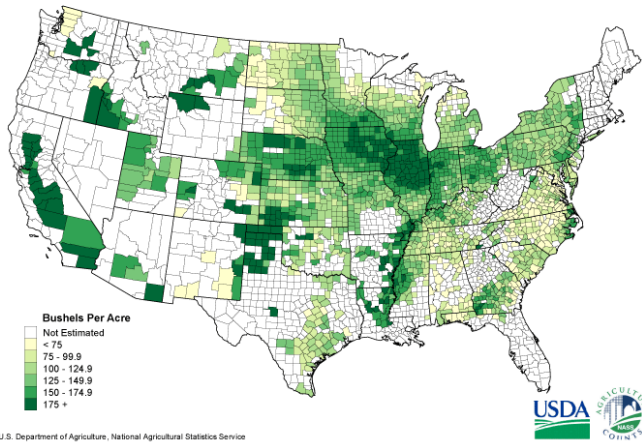
Corn for Grain 2008
Yield Per Harvested Acre by County

Bushels Per Acre
Not Estimated
< 75
75 - 99.9
100 - 124.9
125 - 149.9
150 - 174.9
175 +

USDA

U.S. Department of Agriculture, National Agricultural Statistics Service
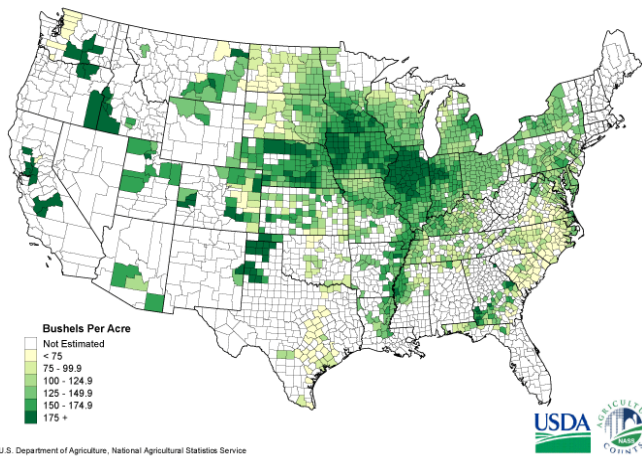
Corn for Grain 2009
Yield Per Harvested Acre by County
for Selected States

Bushels Per Acre
Not Estimated
< 75
75 - 99.9
100 - 124.9
125 - 149.9
150 - 174.9
175 +

USDA

U.S. Department of Agriculture, National Agricultural Statistics Service

Production

Corn for Grain 2007
Production by County

Corn for Grain 2008
Production by County

Corn for Grain 2009
Production by County
for Selected States
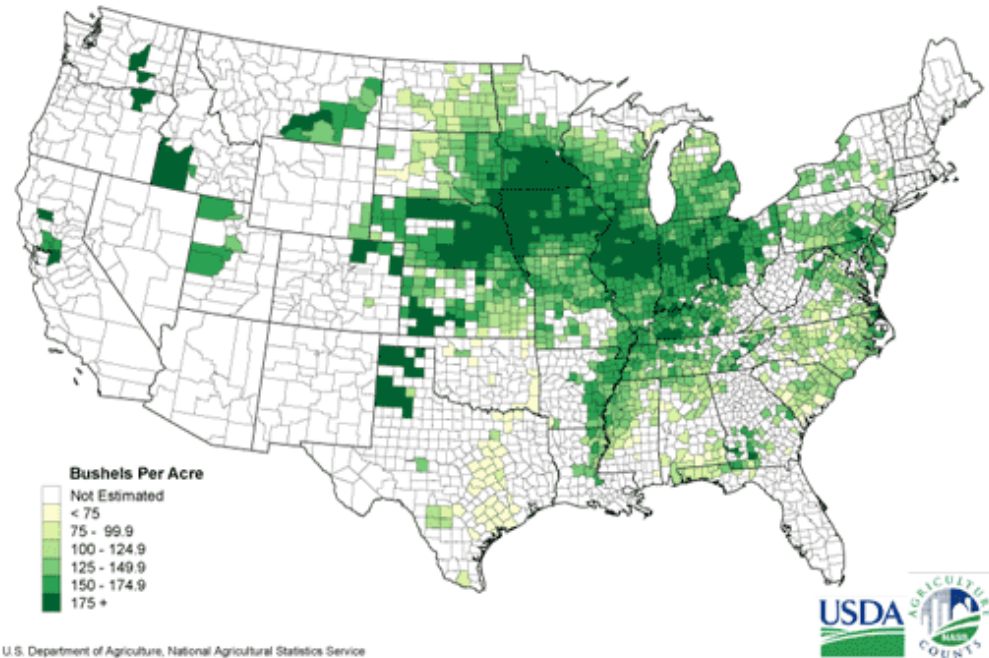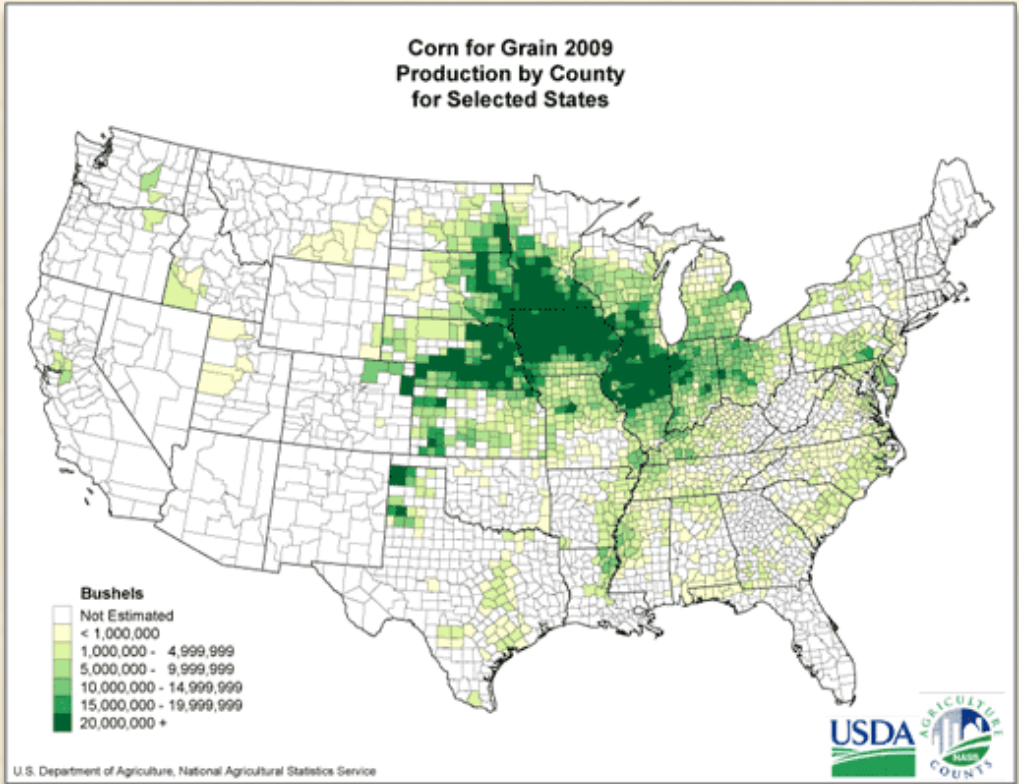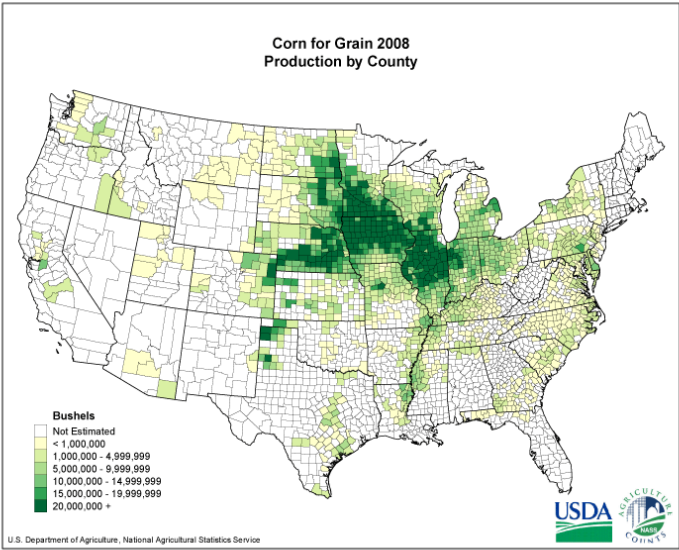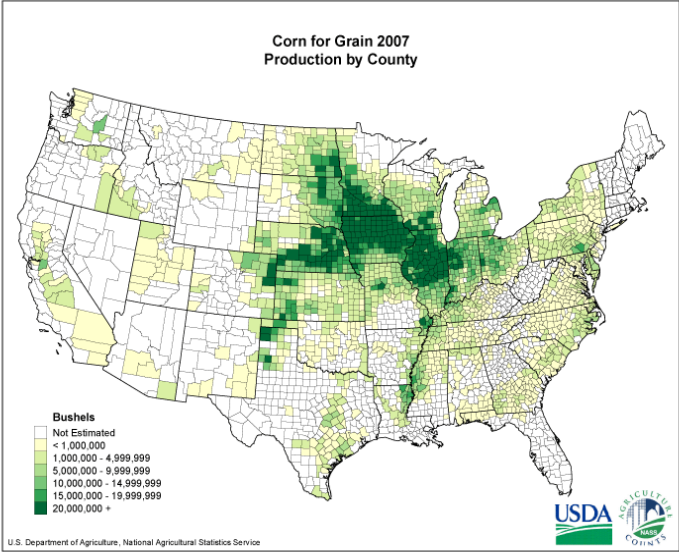
Ethanol Plants and Corn Production by County

Corn for Grain 2009
Production by County and Location of Ethanol Plants
As of January 19, 2010

Ohio Corn for Grain 2009
Production by County and Location of Ethanol Plants
As of January 19, 2010

Pennsylvania Corn for Grain 2009
Production by County and Location of Ethanol Plants
As of January 19, 2010
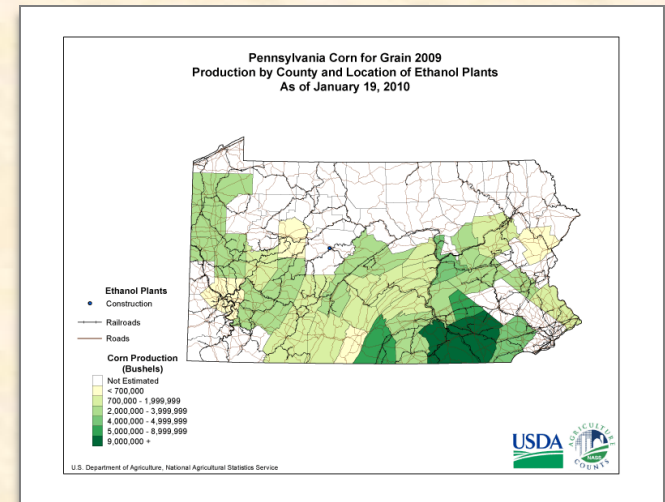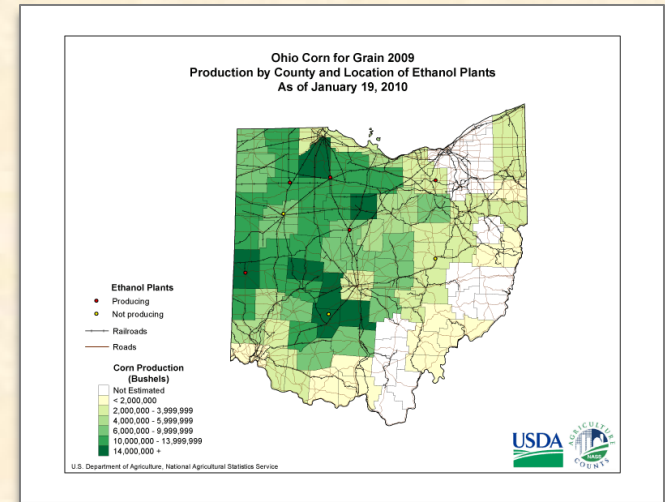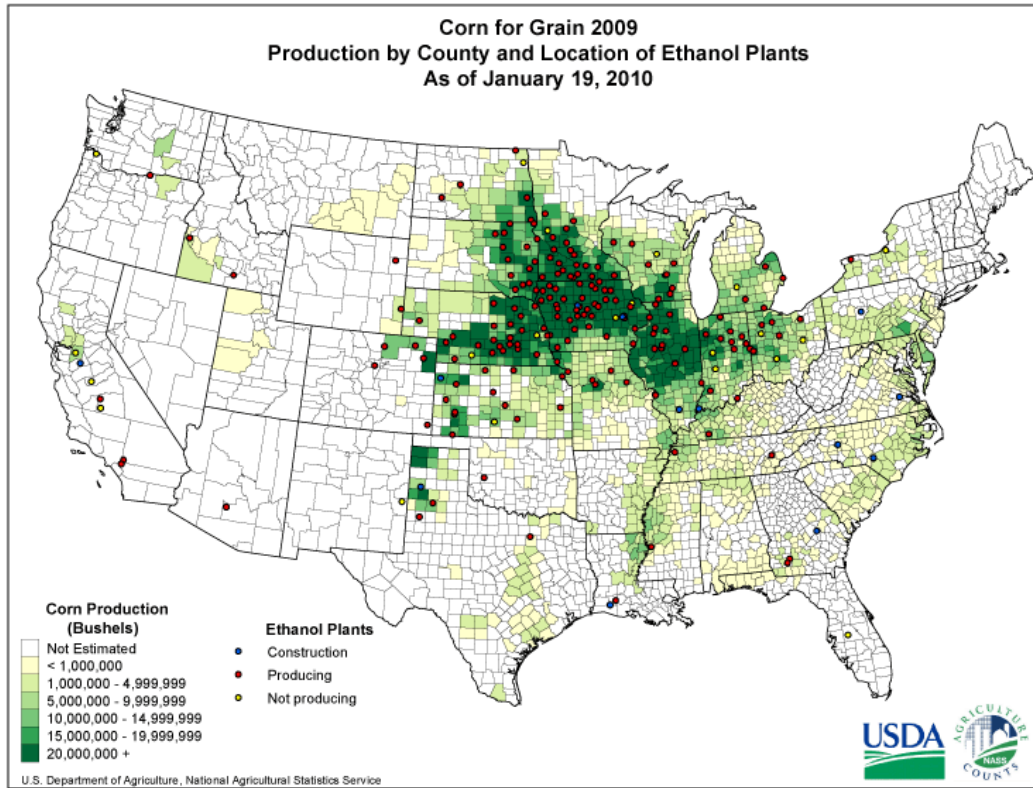
Census of Agriculture

- Census of Agriculture is conducted every 5 years
  - A complete accounting of crops and livestock on all farms
  - Collects information on operator characteristics, demographics, income and expenses

- The 2007 Census of Agriculture Guide to Census Products can be accessed by selecting 2007 Census from www.agcensus.usda.gov
  - The 2012 Census of Agriculture is in processing and will be available soon.

- Users can view, query, print or download Census tablea and *static maps.*

- Data can be downloaded as csv files for use in a spreadsheet or in a GIS

250 Static Atlas Maps for each census are available in the following areas

- Crops and Plants
- Economics
- Farms
- Livestock and Animals
- Operators

Ag Atlas Maps, Livestock and Animals

Note: These documents are in Adobe Acrobat's Portable Document Format (PDF). If you need the Acrobat Reader, it is available for free from the Adobe web site.

Click here for more information on how these ma

Ag Atlas Maps, Crops and Plants

Note: These documents are in Adobe Acrobat's Portable Document Format (PDF). If you need the Acrobat Reader, it is available for free from the Adobe web site.

Click here for more information on how these maps were created.

Map Number	Livestock, Poultry, and Other Ani...
07-M134	Cattle and Calves - Inventory: 200
07	
07	

Ag Atlas Maps, Economics

Note: These documents are in Adobe Acrobat's Portable Document Format (PDF). If you need the Acrobat Reader, it is available for free from the Adobe web site.

Click here for more information on how these maps were created.

		Format	
7		PDF	GIF
cres: 2007		PDF	GIF
Percent of Harvested		PDF	GIF

Ag Atlas Maps, Operators

Note: These documents are in Adobe Acrobat's Portable Document Format (PDF). If you need the Acrobat Reader, it is available for free from the Adobe web site.

Click here for more information on how these maps were created.

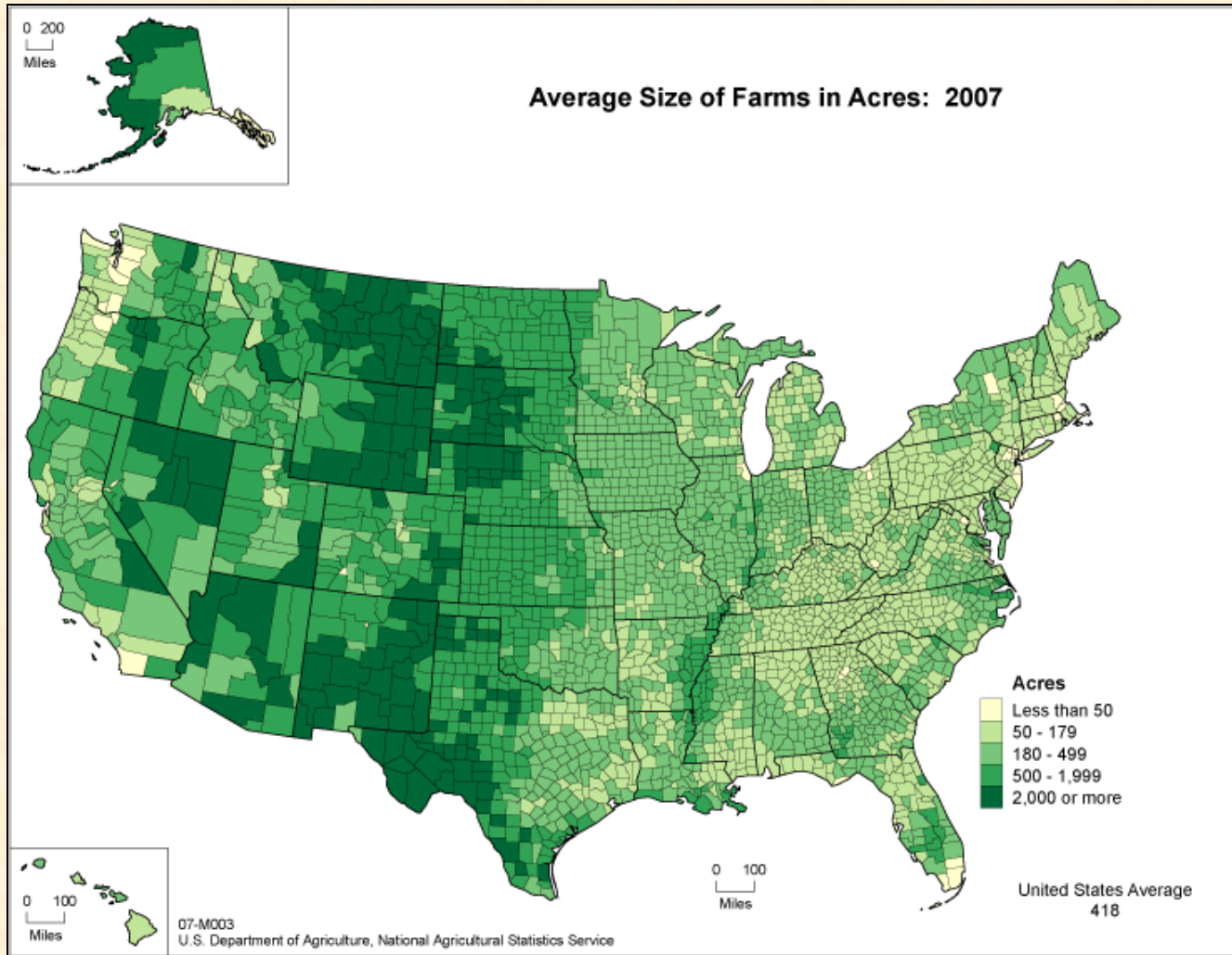| Map Number	Hired Farm Labor	Format	
07-M075	Hired Farm Workers Working Less Than 150 Days: 2007	PDF	GIF
07-M076	Hired Farm Workers Working 150 Days or More: 2007	PDF	GIF
Map Number	Tenure of Farm Operators and Farm Operations	Format	
07-M111	Percent of Farms Operated by Full Owners: 2007	PDF	GIF
07-M112	Percent of Land in Farms Operated by Full Owners: 2007	PDF	GIF
07-M113	Percent of Farms Operated by Part Owners: 2007	PDF	GIF
07-M114	Percent of Land in Farms Operated by Part Owners: 2007	PDF	GIF
07-M115	Percent of Farms Operated by Tenants: 2007	PDF	GIF
07-M116	Percent of Land in Farms Operated by Tenants: 2007	PDF	GIF
07-M117	Percent of Land in Farms Rented or Leased: 2007	PDF	GIF
Map Number	Farms by Type of Organization	Format	
07-M118	Percent of Farms Operated by Family or Individual: 2007	PDF	GIF
07-M119	Percent of Farms Operated by Partnership: 2007	PDF	GIF
07-M120	Percent of Farms Operated by Corporation: 2007	PDF	GIF
Map Number	Principal Occupation of Operator	Format	
07-M121	Percent of Principal Farm Operators Reporting Primary Occupation	PDF	GIF

Ag Atlas Maps, Farms

Note: These documents are in Adobe Acrobat's Portable Do... the Acrobat Reader, it is available for free from the Adobe

Click here for more information on how these maps were cr

Map Number	Farms
07-M001	Number of Farms: 2007
07-M002	Change in Number of Farms: 2002 to 2007
07-M251	Percent of Farms with Internet Access
07-M252	Percent of Farms with High-Speed Internet A
Map Number	Farms by Size
07-M003	Average Size of Farms in Acres: 2007
07-M004	Change in Number of Farms with Less Than ... 2007
07-M005	Change in Number of Farms with 50 to 179 A
07-M006	Change in Number of Farms with 180 to 499
07-M007	Change in Number of Farms with 500 to 1,99... 2007
07-M008	Change in Number of Farms with 2,000 Acres... 2007
Map Number	Land in Farms and Land Use
07-M077	Acres of Land in Farms: 2007
07-M078	Land in Farms - Change in Acreage: 2002 to 2007
07-M079	Acres of Land in Farms as Percent of Land Area in Acres: 2007

Choropleth (shaded) Maps
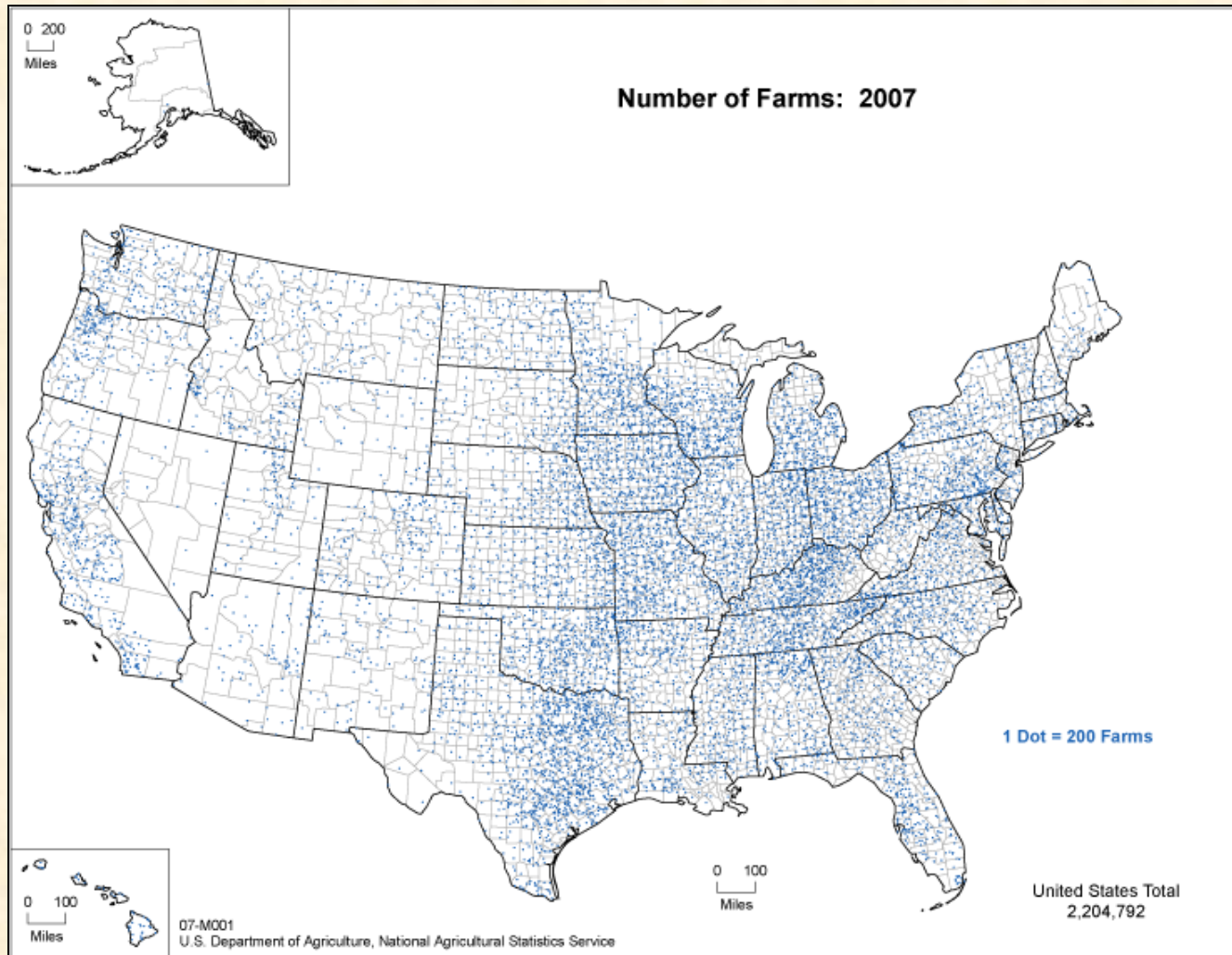

Average Size of Farms in Acres: 2007

Dot Density Maps

Number of Farms: 2007

1 Dot = 200 Farms

United States Total
2,204,792

07-M001
U.S. Department of Agriculture, National Agricultural Statistics Service

Dot Density Change Maps

Change in Number of Farms: 2002 to 2007

1 Dot = 20 Farms Increase
1 Dot = 20 Farms Decrease

United States Net Increase
+75,810

07-M002
U.S. Department of Agriculture, National Agricultural Statistics Service

Farms

Average Size of Farms in Acres: 2007

Acres
Less than 50
50 - 179
180 - 499
500 - 1,999
2,000 or more

United States Average
418

07-M003
U.S. Department of Agriculture, National Agricultural Statistics Service

Farms

Acres of Land in Farms as Percent of Land Area in Acres: 2007

Percent
- Less than 10
- 10 - 29
- 30 - 49
- 50 - 69
- 70 - 89
- 90 or more

United States
40.8 Percent

07-M079
U.S. Department of Agriculture, National Agricultural Statistics Service

Farms

Percent of Farms with Internet Access

Percent
Less than 40
40 - 49
50 - 59
60 - 69
70 or more

United States
56.5 Percent

07-M251
U.S. Department of Agriculture, National Agricultural Statistics Service

Economics

Total Farm Production Expenses: 2007

1 Dot = $20,000,000

United States Total
$241,113,666,000

07-M049
U.S. Department of Agriculture, National Agricultural Statistics Service

Economics

Expenses for Gasoline, Fuels, and Oils
as Percent of Total Farm Production Expenses: 2007

Operators

Average Age of Principal Farm Operators: 2007

Operators

Percent of Farms with Female Principal Operator: 2007

Percent
- Less than 10
- 10 - 14
- 15 - 19
- 20 - 24
- 25 or more

07-M127
U.S. Department of Agriculture, National Agricultural Statistics Service

United States
13.9 Percent

Crops

Corn for Grain, Harvested Acres: 2007

1 Dot = 10,000 Acres

United States Total
86,248,542

07-M163
U.S. Department of Agriculture, National Agricultural Statistics Service

Crops

Soybeans for Beans, Harvested Acres: 2007

1 Dot = 10,000 Acres

United States Total
63,915,821
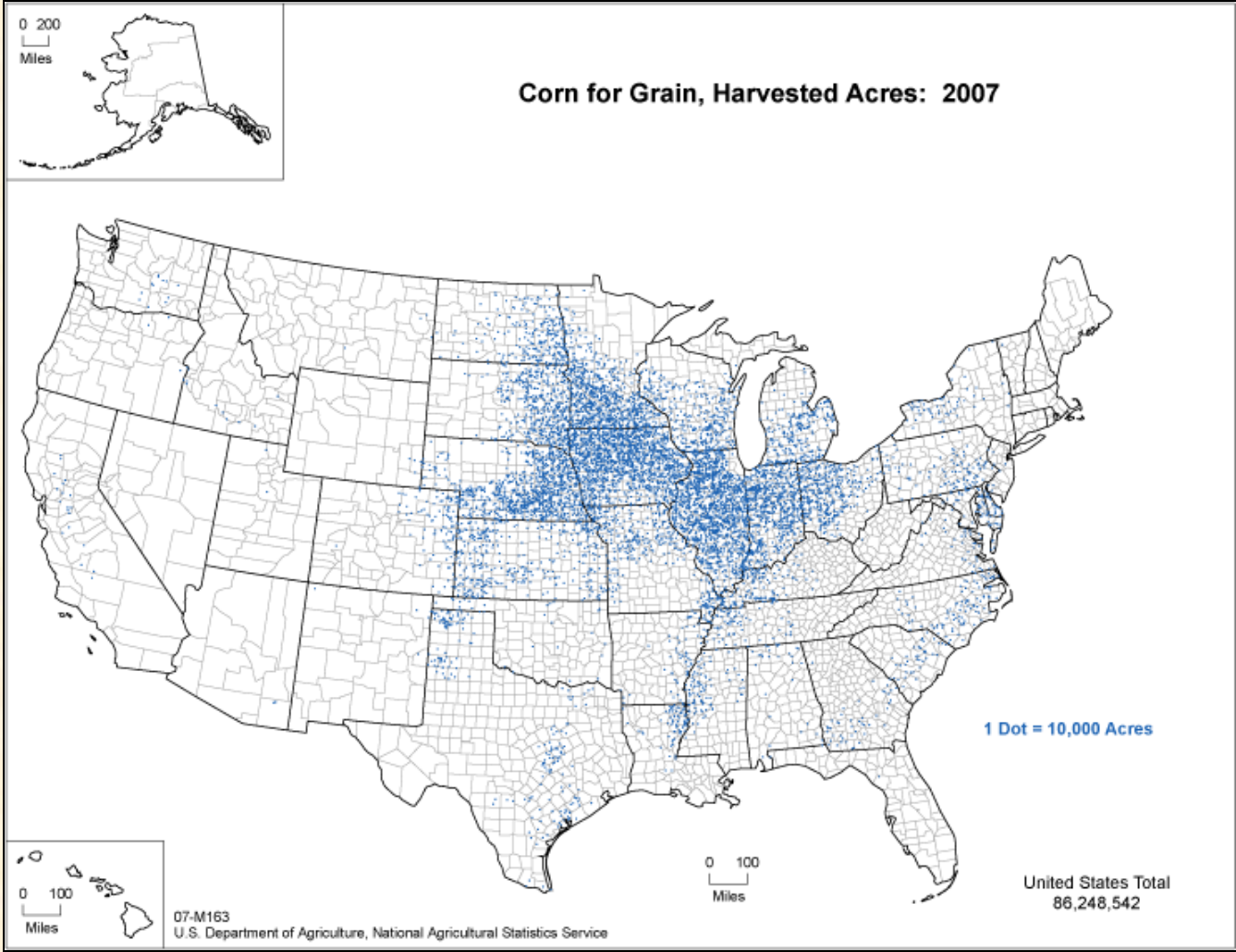
07-M193
U.S. Department of Agriculture, National Agricultural Statistics Service
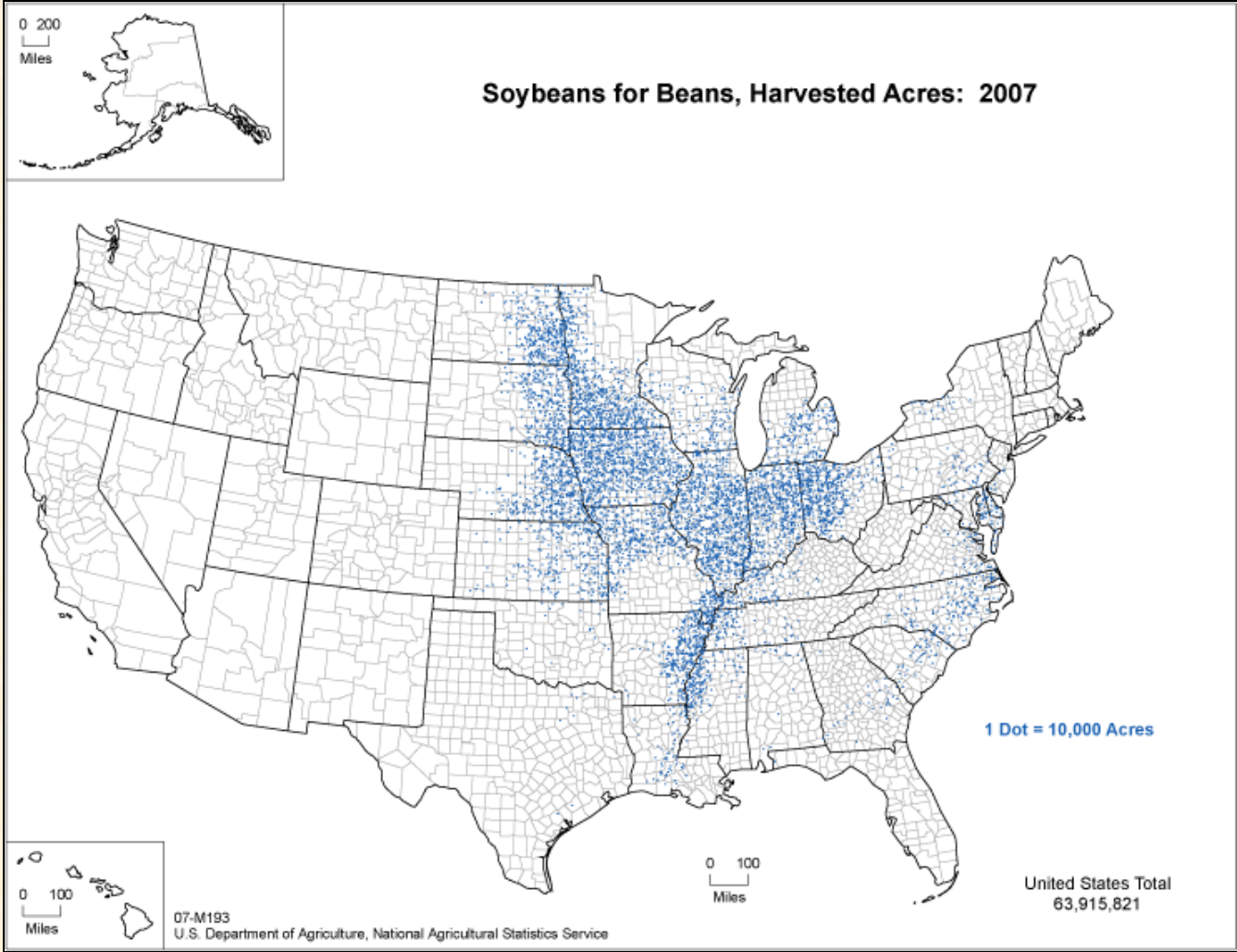
▸ County profiles

Profiles and Rankings

Summary reports that combine narrative and data from the 2007 Census of Agriculture. These reports give an insight into State, County, and Congressional District agricultural information, as well as the agriculture products ranking reports sorted by market value.

Regional Studies

- State & County Profiles
- Race, Ethnicity and Gender Profiles (updated 10/30/09) PDF | CSV
- 2007 Congressional Distric
- ZIP Code Tabulations

Rankings

- Ranking: Market Value Ag Products
- Congressional District Rankings

2007 Census Publications

State and County Profiles

Pennsylvania

Statewide Summary

Adams	Clinton	Lackawanna	Pike
Allegheny	Columbia	Lancaster	Potter
Armstrong	Crawford	Lawrence	Schuylkill
Beaver	Cumberland	Lebanon	Snyder
Bedford	Dauphin	Lehigh	Somerset
Berks	Delaware	Luzerne	Sullivan
Blair	Elk	Lycoming	Susquehanna
Bradford	Erie	McKean	Tioga
Bucks	Fayette	Mercer	Union
Butler	Forest	Mifflin	Venango
Cambria	Franklin	Monroe	Warren
Cameron	Fulton	Montgomery	Washington
Carbon	Greene	Montour	Wayne
Centre	Huntingdon	Northampton	Westmoreland
Chester	Indiana	Northumberland	Wyoming
Clarion	Jefferson	Perry	York
Clearfield	Juniata	Philadelphia	

2007 CENSUS OF AGRICULTURE
County Profile
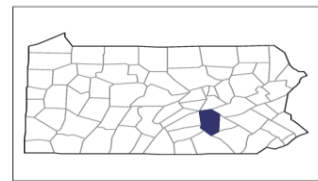
Dauphin County
Pennsylvania

	2007	2002	% change
Number of Farms	836	852	- 2
Land in Farms	89,533 acres	94,983 acres	- 6
Average Size of Farm	107 acres	111 acres	- 4
Market Value of Products Sold	$82,887,000	$46,487,000	+ 78
Crop Sales $16,348,000 (20 percent) Livestock Sales $66,539,000 (80 percent)			
Average Per Farm	$99,148	$54,562	+ 82
Government Payments	$857,000	$948,000	- 10
Average Per Farm Receiving Payments	$2,985	$4,493	- 34
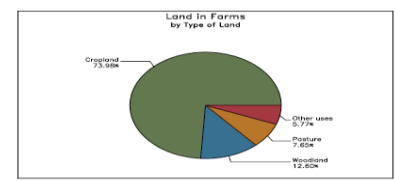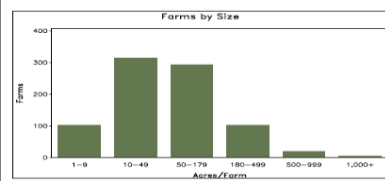
Dauphin County – Pennsylvania

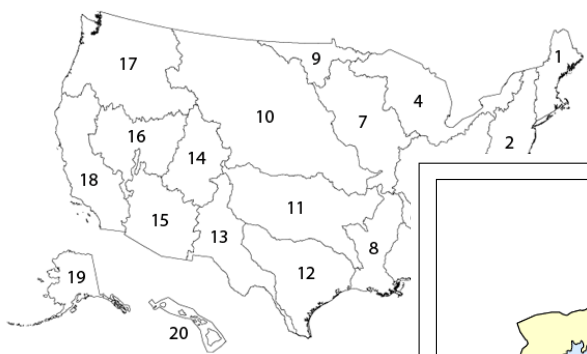Ranked items among the 67 state counties and 3,079 U.S. counties, 2007

Item	Quantity	State Rank	Universe [1]	U.S. Rank	Universe [1]
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD ($1,000)					
Total value of agricultural products sold	82,887	21	67	1,070	3,076
Value of crops including nursery and greenhouse	16,348	27	67	1,581	3,072
Value of livestock, poultry, and their products	66,539	21	67	618	3,069
VALUE OF SALES BY COMMODITY GROUP ($1,000)					
Grains, oilseeds, dry beans, and dry peas	10,109	16	67	1,223	2,933
Tobacco	(D)	15	19	(D)	437
Cotton and cottonseed	-	-	-	-	626
Vegetables, melons, potatoes, and sweet potatoes	1,208	33	67	749	2,796
Fruits, tree nuts, and berries	1,257	18	66	409	2,659
Nursery, greenhouse, floriculture, and sod	753	50	65	1,213	2,703
Cut Christmas trees and short rotation woody crops	(D)	51	66	(D)	1,710
Other crops and hay	2,977	18	66	565	3,054
Poultry and eggs	30,925	11	67	318	3,020
Cattle and calves	7,042	25	67	1,474	3,054
Milk and other dairy products from cows	21,118	25	65	287	2,493
Hogs and pigs	6,252	15	66	484	2,922
Sheep, goats, and their products	384	6	66	331	2,998
Horses, ponies, mules, burros, and donkeys	459	14	67	527	3,024
Aquaculture	220	39	59	526	1,498
Other animals and other animal products	139	39	67	844	2,875
TOP CROP ITEMS (acres)					
Forage - land used for all hay and haylage, grass silage, and greenchop	19,611	33	67	1,069	3,060
Corn for grain	17,599	22	66	975	2,634
Soybeans for beans	10,539	14	61	1,012	2,039
Corn for silage	3,919	31	64	403	2,263
Wheat for grain, all	3,759	13	60	1,106	2,481
TOP LIVESTOCK INVENTORY ITEMS (number)					
Layers	788,324	8	67	122	3,024
Broilers and other meat-type chickens	669,744	10	62	355	2,476
Pullets for laying flock replacement	226,273	8	65	140	2,627
Turkeys	127,231	8	63	151	2,371
Hogs and pigs	21,604	13	66	504	2,958

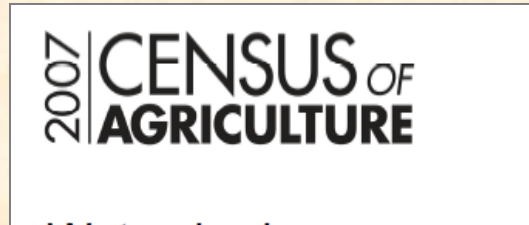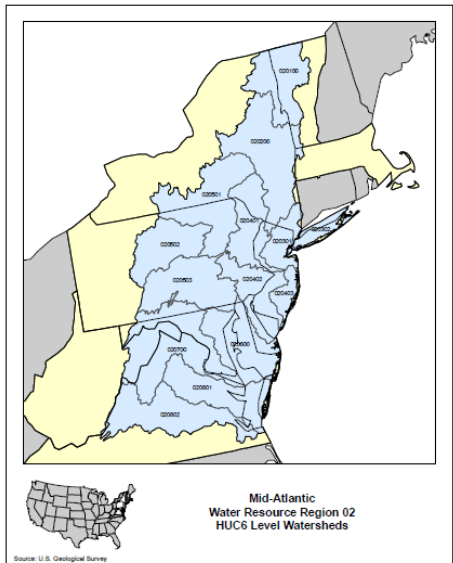Watershed data published at the 6 digit hydrologic unit code for 38 selected land use characteristics

Vegetation Condition Monitoring

▸ Vegetation condition from VegScape:
 http://nassgeodata.gmu.edu/VegScape/
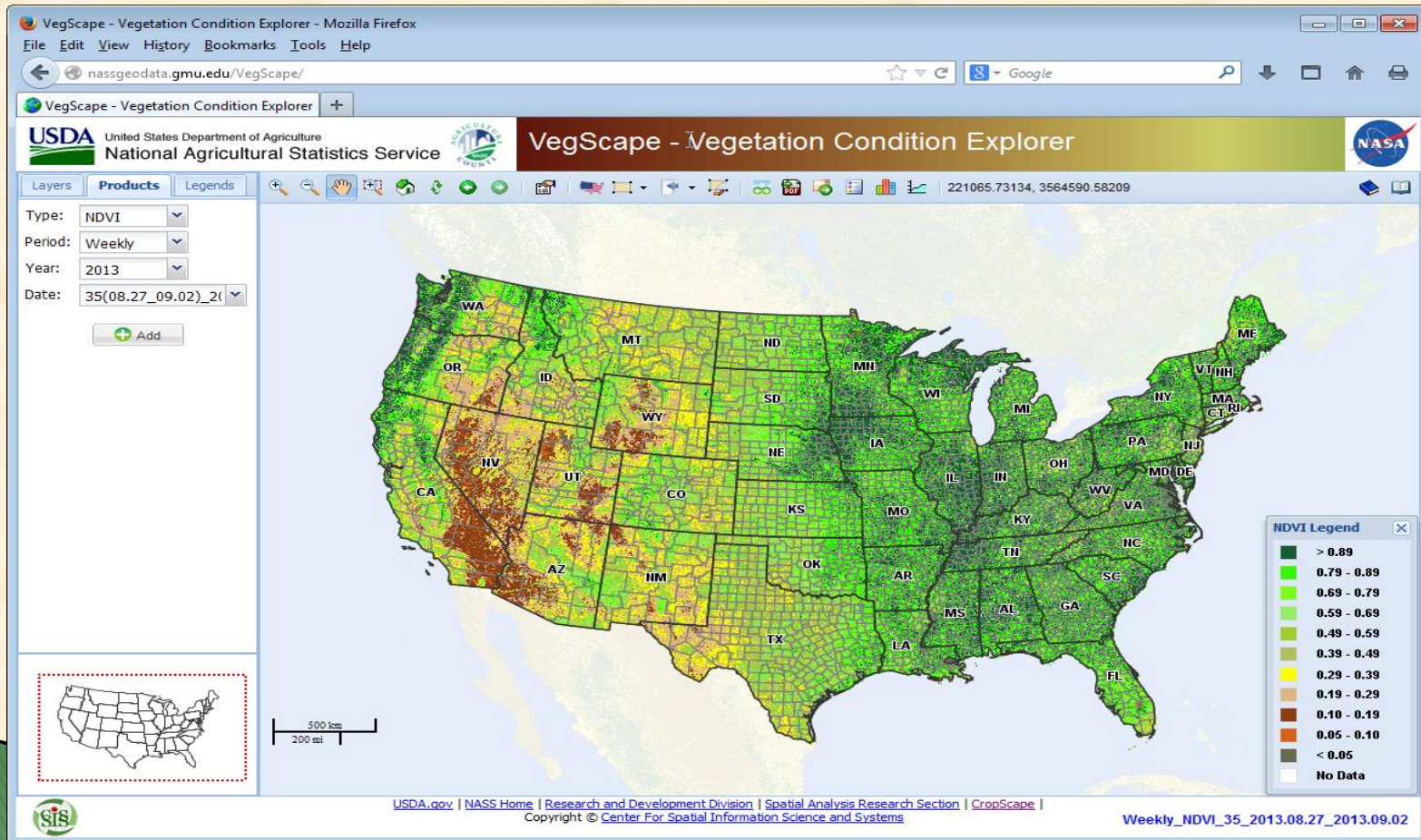
Vegetation Condition Monitoring

▸ Daily, weekly composited from MODIS daily reflectance data

▸ Vegetation condition are based on NDVI, which measures vegetation vigor (greenness) caused by "photosynthetic activity"
  ◦ Lower NDVI values are likely to show areas under stress due to
    · drought
    · excessive moisture
    · disease
  ◦ Higher NDVI values represent healthy vegetation

▸ NDVI based indices are used to monitor changing vegetation conditions throughout the growing season
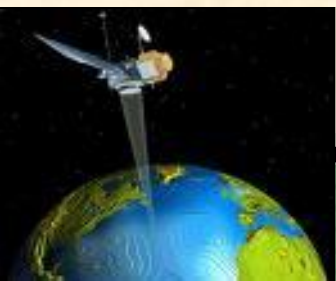
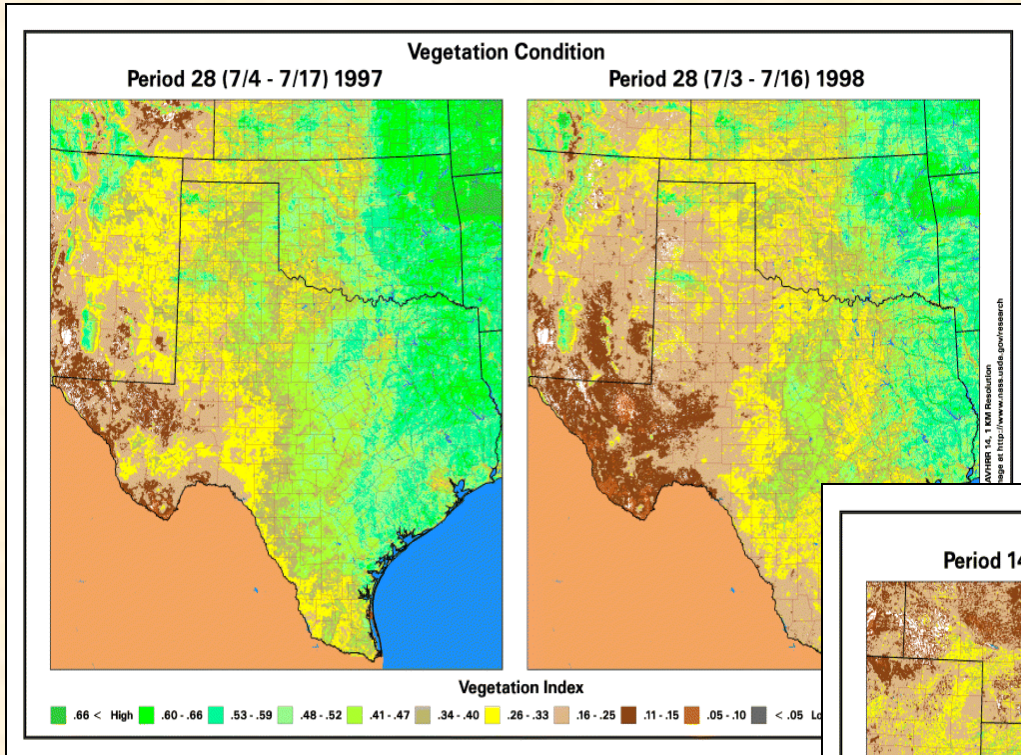# Vegetation Condition Indices

$$NDVI = (IR\text{-}R)/(IR\text{+}R)$$

$$MVCI = \frac{NDVI(x,y) - NDVI_m(x,y)}{NDVI_m(x,y)} \times 100$$

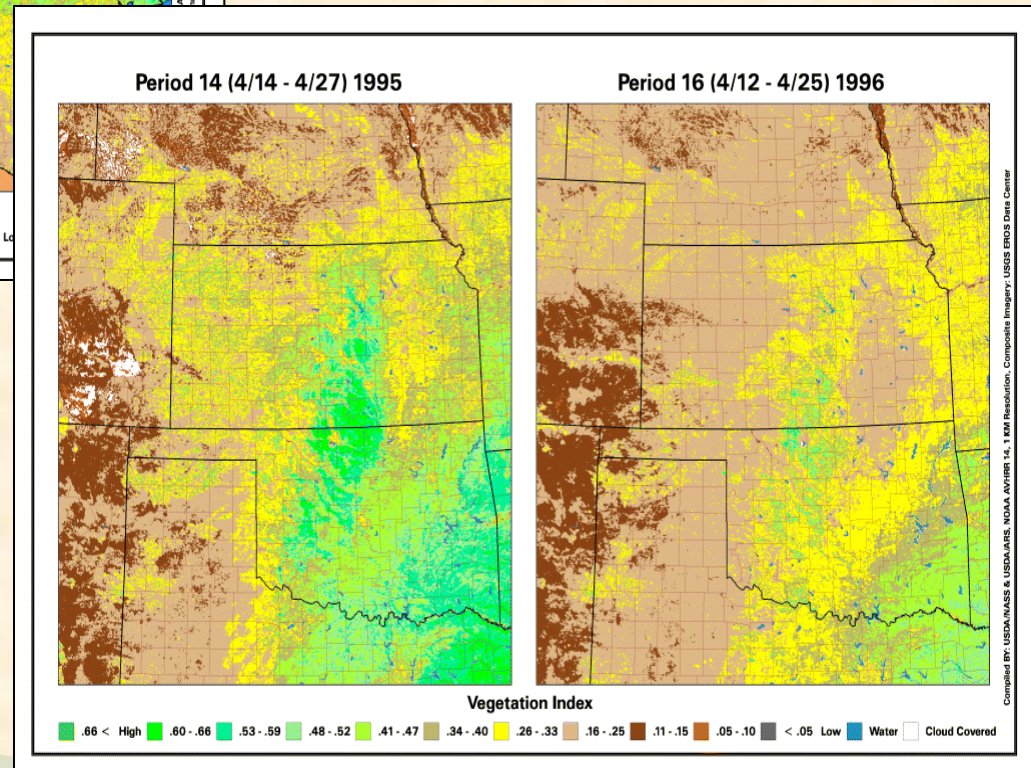$$RMVCI = \frac{NDVI_i(x,y) - NDVI_{med}(x,y)}{NDVI_{med}(x,y)} \times 100\%$$

$$RVCI = \frac{NDVI_i(x,y) - NDVI_{i-1}(x,y)}{NDVI_{i-1}(x,y)} \times 100\%$$

$$VCI = \frac{NDVI(x,y) - NDVI_{min}(x,y)}{NDVI_{max}(x,y) - NDVI_{min}(x,y)} \times 100\%$$

1998 Drought in Texas

1996 Drought in Winter Wheat Areas

Vegetation Condition

Period 28 (7/4 - 7/17) 1997   Period 28 (7/3 - 7/16) 1998

Vegetation Index

.66 < High | .60 - .66 | .53 - .59 | .48 - .52 | .41 - .47 | .34 - .40 | .26 - .33 | .16 - .25 | .11 - .15 | .05 - .10 | < .05 Lo

Period 14 (4/14 - 4/27) 1995   Period 16 (4/12 - 4/25) 1996

Vegetation Index

.66 < High | .60 - .66 | .53 - .59 | .48 - .52 | .41 - .47 | .34 - .40 | .26 - .33 | .16 - .25 | .11 - .15 | .05 - .10 | < .05 Low | Water | Cloud Covered

The USDA/NASS Cropland Data Layer Program

48 State Continental US Coverage

What is a Cropland Data Layer (CDL)?

Identifies agriculture type and location

Each pixel represents a type of crop or land cover
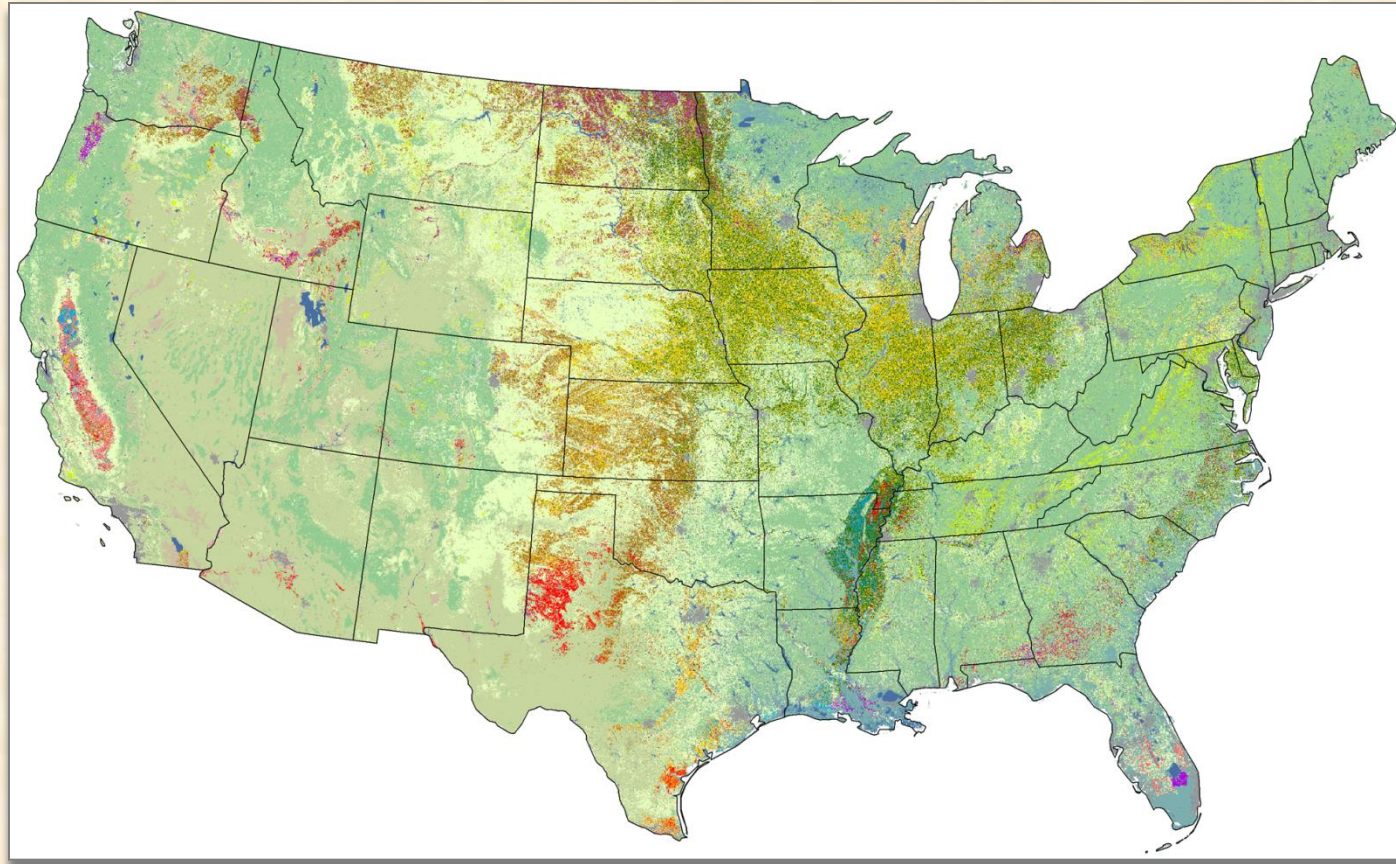
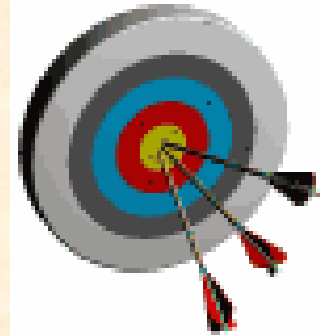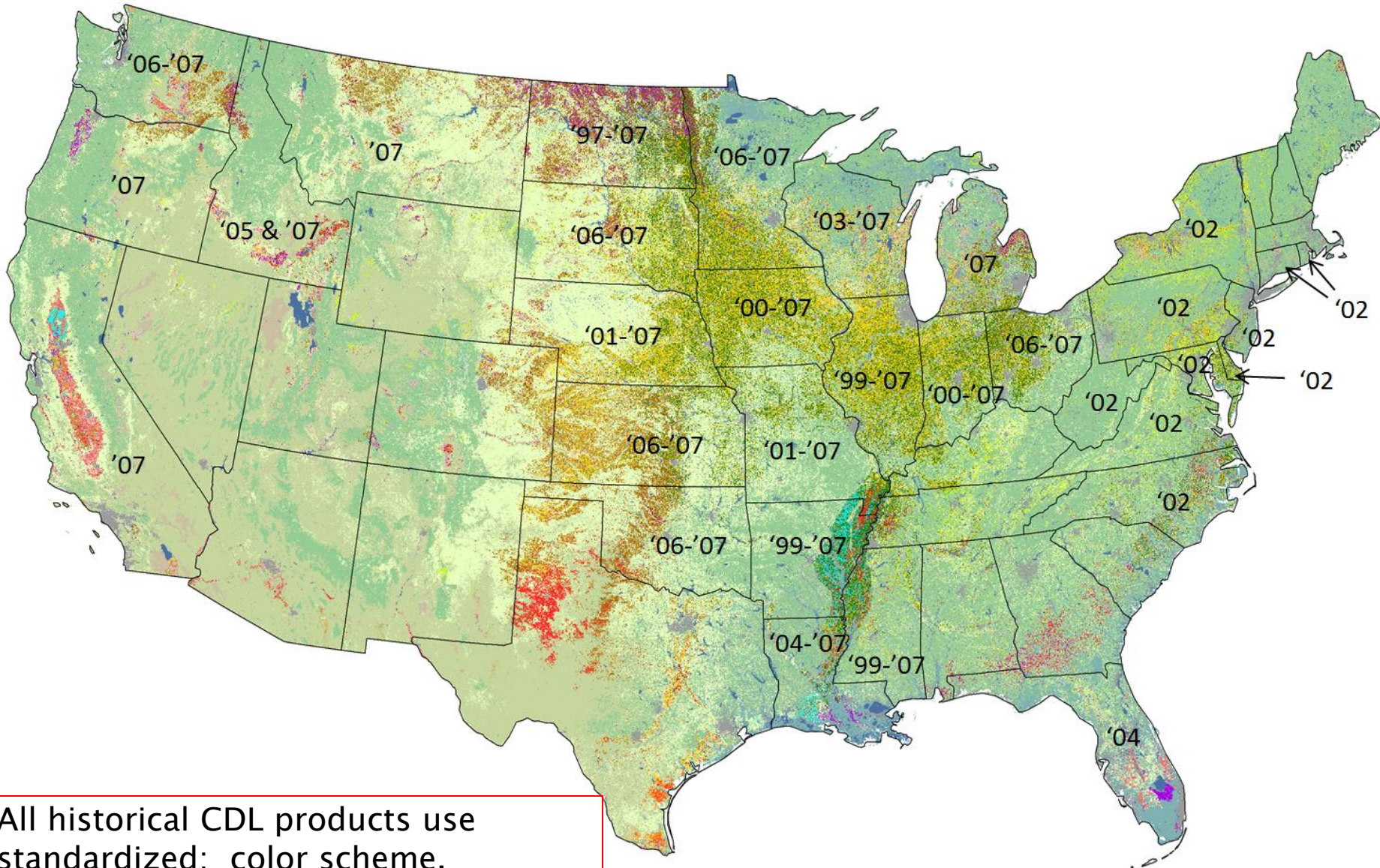|			
Corn	Winter Wheat	Rice	
Soybeans	Cotton	Alfalfa	

Cropland Data Layer (CDL) Objectives

- "Census by Satellite"
  - *Annually* cover major program crops and regions
  - Crops accurately geo-located

- Deliver in-season remote sensing acreage estimates
  - NASS Official Reports
  - Update planted area
  - Reduce respondent burden

- Provide timely, accurate, useful estimates
  - Measurable error
  - Unbiased/independent estimator
  - State, District, County

- Public domain crop specific crop classification
  - Available @ CropScape http://nassgeodata.gmu.edu/CropScape/ or
  - Google "Cropland Data Layer"

1997 – 2007 Coverage

'06-'07

'07

'97-'07

'06-'07

'07

'05 & '07

'06-'07

'03-'07

'02

'07

'06-'07

'00-'07

'02

'01-'07

'02

'06-'07

'02

'99-'07

'00-'07

'02

'07

'02

'02

'02

'06-'07

'01-'07

'02

'02

'06-'07

'99-'07

'04-'07

'99-'07

'04

All historical CDL products use standardized: color scheme, categories names and codes, projection, metadata.

2008 – 2012 Coverage
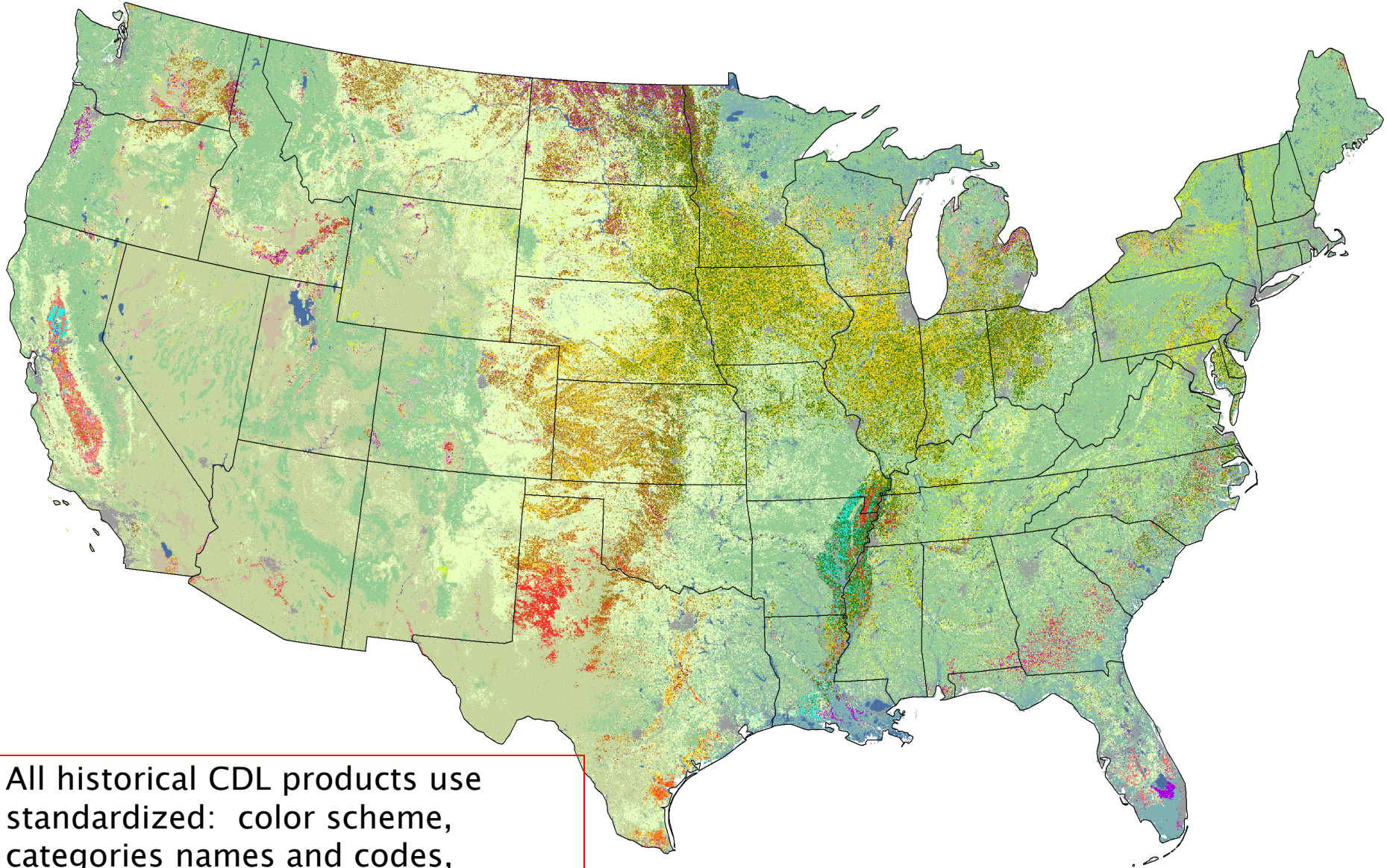
All historical CDL products use standardized: color scheme, categories names and codes, projection, metadata.

Cropland Data Layer Program Components

- Inputs
  - DMC Deimos-1, UK2 and Landsat imagery
  - Farm Service Agency – Common Land Unit
  - NASS June Ag Survey
  - Ancillary data –USGS NLCD & derivative products
- Outputs
  - Acreage Estimates
  - Cropland Data Layer
- Process
  - Supervised Classification – See 5
  - Crop Acreage Estimation using Linear Regression Model
  - Commercial software

Cropland Data Layer Inputs/Processes/Outputs

Satellite Imagery – Deimos-1, UK2 & Landsat 8

Ground Truth: Farm Service Agency Common Land Units

2006 NLCD & Derivative products

CLASSIFICATION

Cropland Data Layer

Major Land Cover Categories (by decreasing acreage)

Agriculture
- Pasture/Grass
- Corn
- Soybeans
- All Wheat
- Other Hay
- Fallow Cropland
- Alfalfa
- Cotton
- Other Crops
- Sorghum
- Vegetables/Fruits/Nuts
- Other Small Grains
- Rice

Non-Agriculture
- Woodland
- Shrubland
- Urban/Developed
- Wetlands
- Water
- Barren
- Ice/Snow

Source: USDA/NASS

$Reported = -2.6 + 1.02*Classified$
$r2 = 0.948$

- Reported=Classified
- Linear LS Fit
- 95% Pred Limits
- 95% Conf Limits

Outliers
- Deleted
- 4
- 3
- 2

180197

LINEAR REGRESSION

CROP ACREAGE ESTIMATES

Growing Season Satellite Images

April
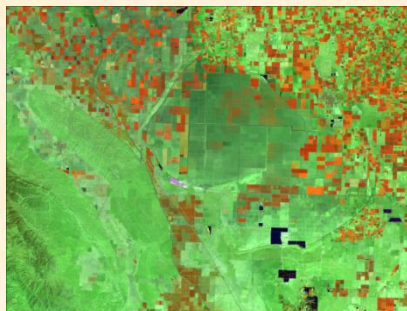
May
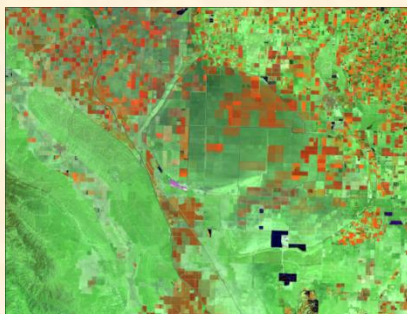
Jun
e
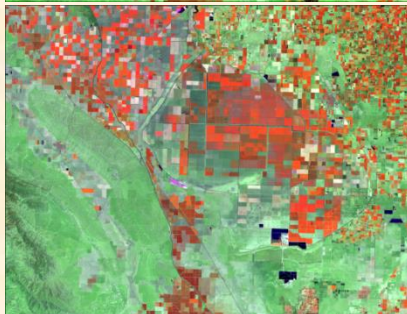
July
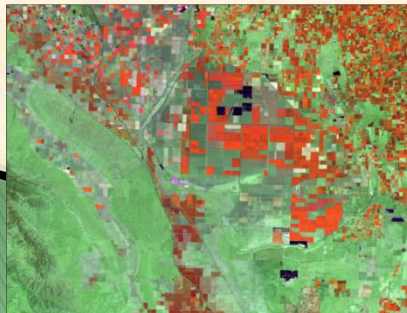
August
with farm data
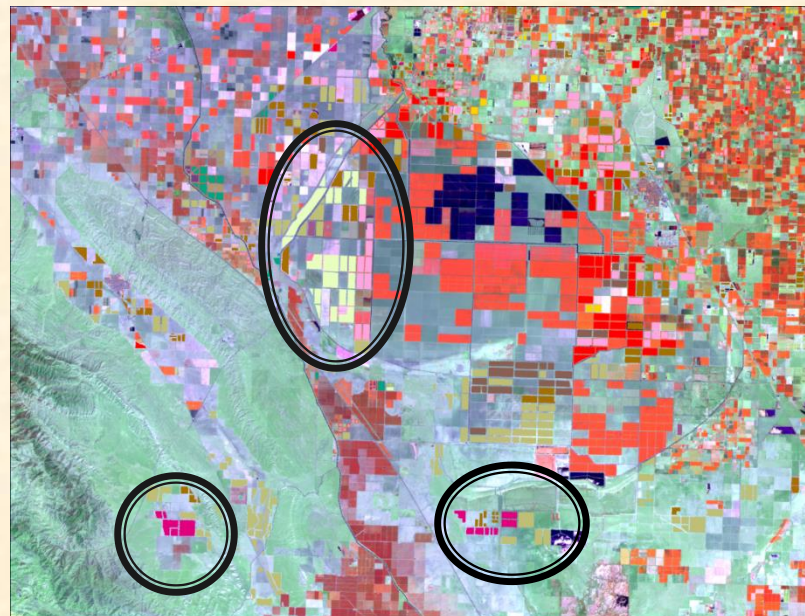
Final CDL

Land Cover Categories

Agriculture

	Pasture/Grass
	Alfalfa
	Fallow/Idle Cropland
	Winter Wheat
	Barley
	Cotton
	Almonds
	Corn
	Durum Wheat
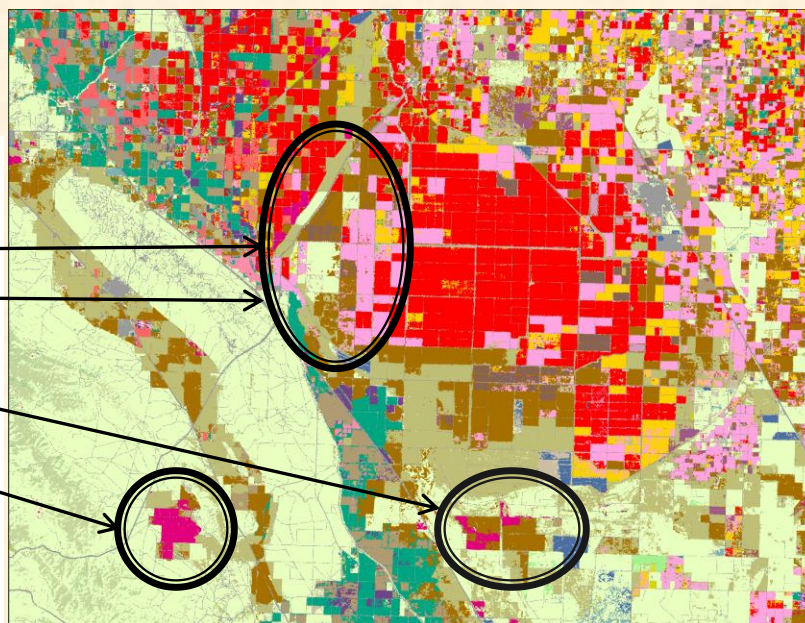
Ground Truth – Land Cover

Agriculture Ground Truth

- Provided by Farm Service Agency
  - Identifies known fields and crops
- Divide known fields into 2 sets
  - 70% used for training software
  - 30% used for validating results
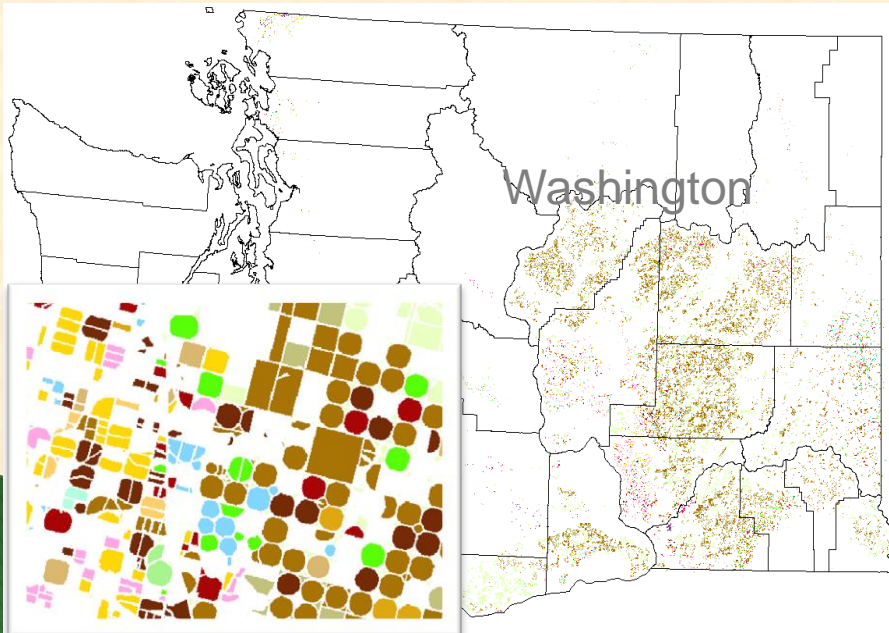
Non-Agriculture Ground Truth

- USGS National Land Cover Dataset

- Identifies urban infrastructure and non-agriculture land cover
  - Forest, grass, water, cities
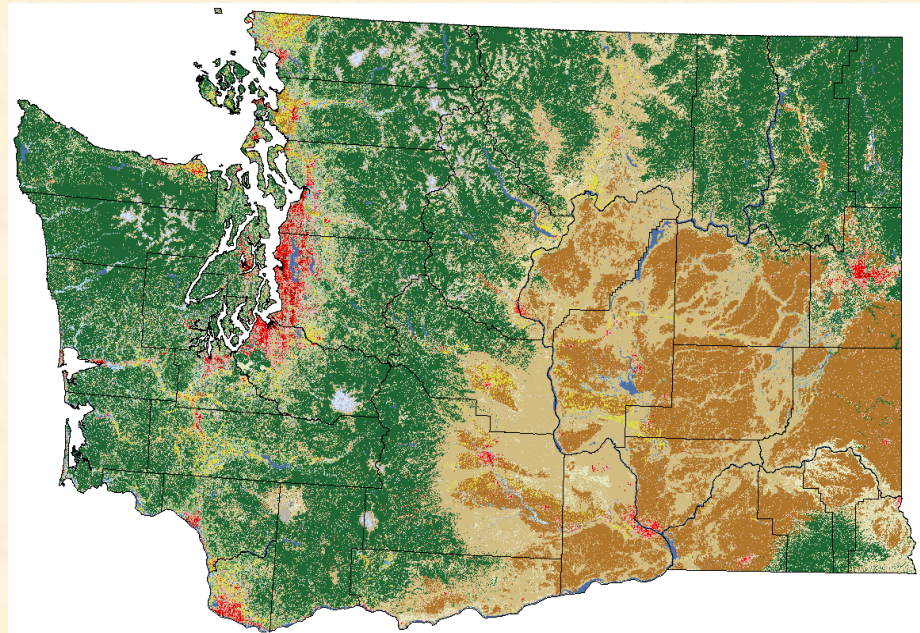
Processing a CDL
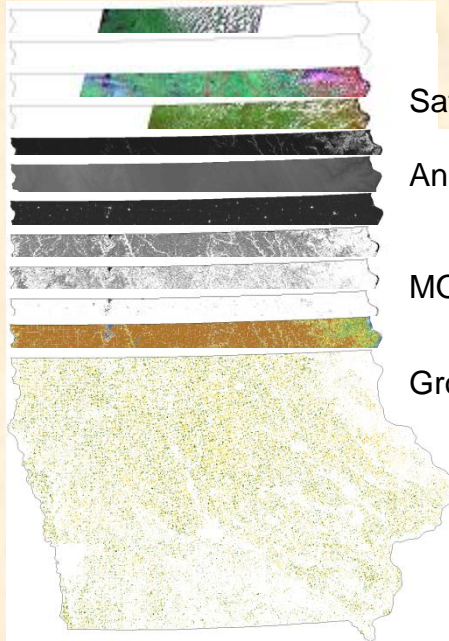
Satellite Imagery

Ancillary Data

MODIS Data

Ground Truth

Sampling

See5

Decision Tree

Classification

Iowa Cropland Data Layer

2009 Craighead County, Arkansas

Land Cover Categories

AGRICULTURE

- Pasture/Grass
- Soybeans
- Rice
- Cotton
- Fallow/Idle Cropland
- Corn
- W. Wht./Soy. Dbl. Crop
- Winter Wheat
- Sorghum
- Aquaculture
- Other Crops/Vegs. & Fruits
- Other Tree Nuts

NON-AGRICULTURE

- Woodland
- Wetlands
- Urban/Developed
- Shrubland
- Water
- Barren

N

2009 Arkansas Cropland Data Layer

Land Cover Categories (by decreasing acreage)

AGRICULTURE
- Pasture/Grass
- Soybeans
- Rice
- Cotton
- Fallow/Idle Cropland
- Corn
- W. Wht./Soy. Dbl. Crop
- Winter Wheat
- Sorghum
- Aquaculture
- Other Crops/Vegs. & Fruits
- Other Tree Nuts

NON-AGRICULTURE
- Woodland
- Wetlands
- Urban/Developed
- Shrubland
- Water
- Barren

0 10 20 30 40 50 Miles

2009 California Cropland Data Layer

**Land Cover Categories
(by decreasing acreage)**

AGRICULTURE

- Pasture/Grass
- Alfalfa
- Fallow/Idle Cropland
- Almonds
- Winter Wheat
- Rice
- Other Hays
- Corn
- Grapes
- Walnuts
- Oats
- Cotton
- Durum Wheat
- Oranges
- Tomatoes
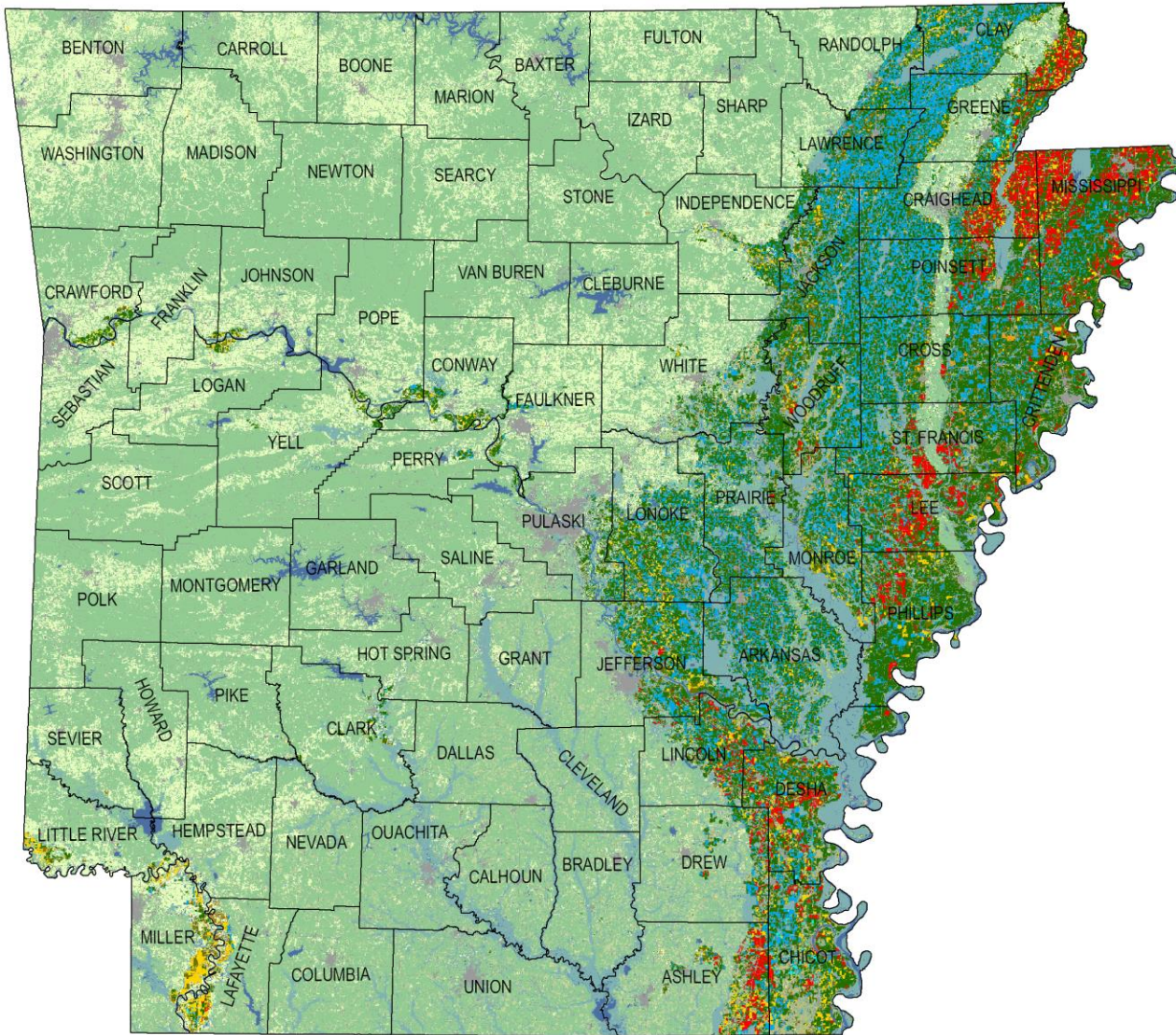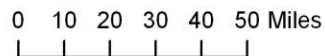- Other Tree Nuts & Fruits
- Olives
- Peaches/Plums/Apricots
- Barley
- Clover/Wildflowers
- Misc. Vegs. & Fruits
- Other Crops/Seed/Sod Grass
- Sunflowers
- Safflower
- Triticale
- Spring Wheat
- Cherry/Apple Orchard
- Melons
- Potatoes/Sweet Potatoes
- Rye

NON-AGRICULTURE

- Shrubland
- Woodland
- Urban/Developed
- Barren
- Water
- Wetlands
- Perennial Ice/Snow

0   50   100   150   200 Miles

N

2009 San Joaquin County, California

USDA

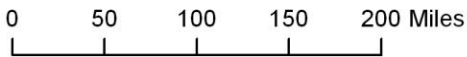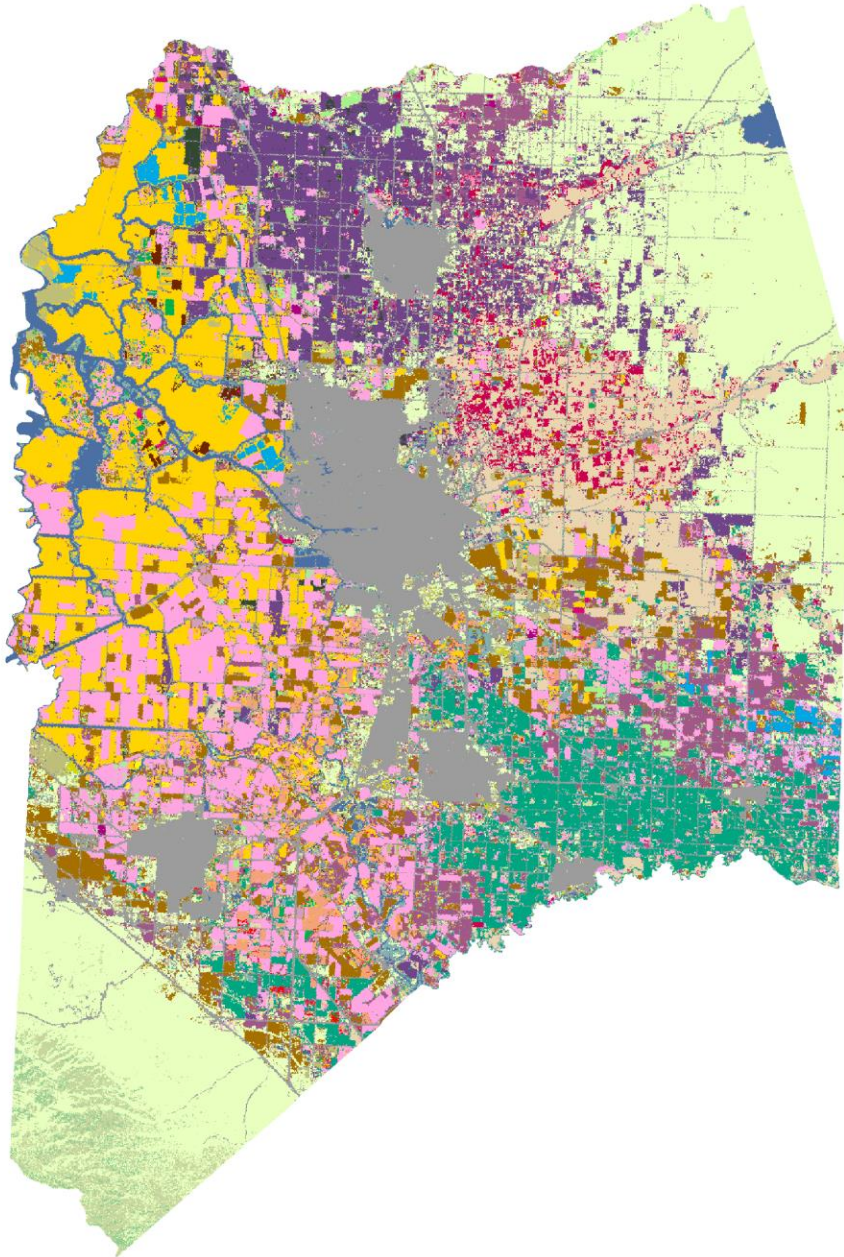## Land Cover Categories

AGRICULTURE

- Pasture/Grass
- Alfalfa
- Fallow/Idle Cropland
- Almonds
- Winter Wheat
- Rice
- Other Hays
- Corn
- Grapes
- Walnuts
- Oats
- Cotton
- Durum Wheat
- Oranges
- Tomatoes
- Other Tree Nuts & Fruits
- Olives
- Peaches/Plums/Apricots
- Barley
- Clover/Wildflowers
- Misc. Vegs. & Fruits
- Other Crops/Seed/Sod Grass
- Sunflowers
- Safflower
- Triticale
- Spring Wheat
- Cherry/Apple Orchard
- Melons
- Potatoes/Sweet Potatoes
- Rye

NON-AGRICULTURE

- Shrubland
- Woodland
- Urban/Developed
- Barren
- Water
- Wetlands
- Perennial Ice/Snow

N

California Individual Crop Maps
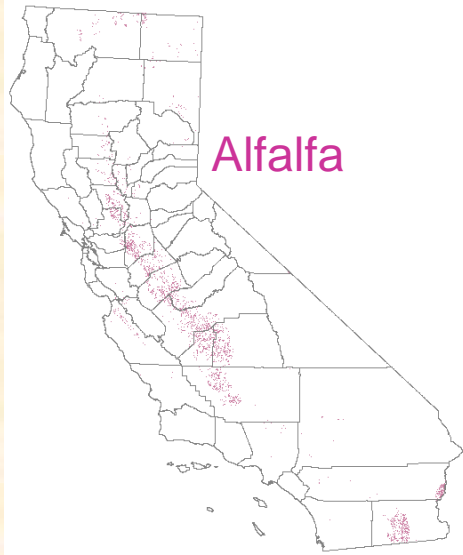
CDL Access, Visualization, Analysis and Dissemination Platform - CropScape


http://nassgeodata.gmu.edu/CropScape/

CDL Colors & Categories

- National scope
- Capture all major crops
- Unique categories & colors

Land Cover Categories (by decreasing acreage)

Agriculture

Other Hays	Carrots
Fallow/Idle Cropland	Dbl. Crop WinWht/Corn
Corn	Peas
Soybeans	Herbs
Winter Wheat	Barley
W. Wht./Soy. Dbl. Crop	Pumpkin
Pasture/Grass	Sorghum
Seed/Sod Grass	Eggplant
Rye	Watermelon
Blueberry	Dbl. Crop Barley/Corn
Other Crops	Turnip
Alfalfa	Christmas Trees
Tomatoes	Clover/Wildflowers
Peaches	Dbl. Crop Oats/Corn
Potatoes	Sunflowers
Squash	Mint
Sweet Corn	Grapes
Misc. Vegs. & Fruits	Dbl. Crop WinWht/Sorghum
Peppers	Dbl. Crop Soybeans/Oats
Dbl. Crop Barley/Soybeans	Triticale
Dry Beans	Cantaloupe
Oats	**Non-Agriculture**
Sweet Potatoes	Woodland
Apples	Urban/Developed
Cranberry	Wetlands
Asparagus	Water
Cabbage	Barren
	Shrubland

NASS Area Sampling Frame Program
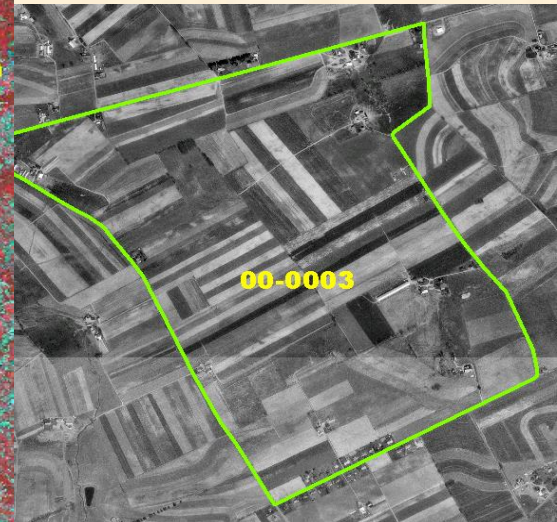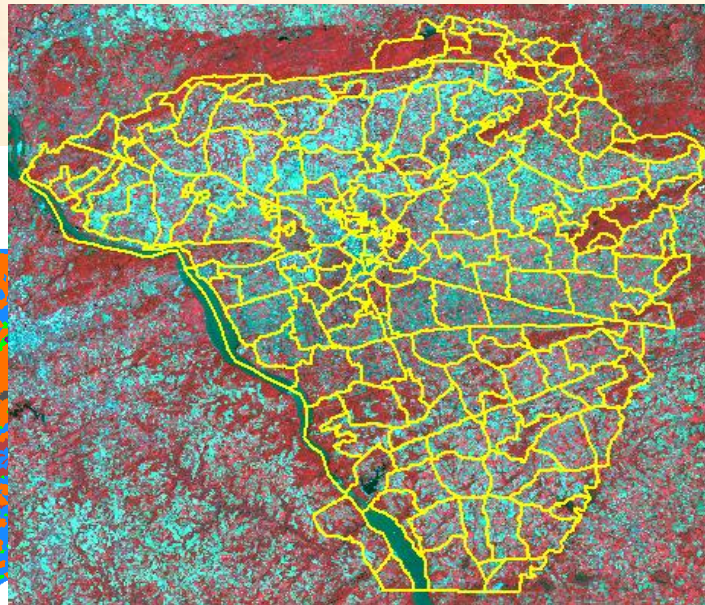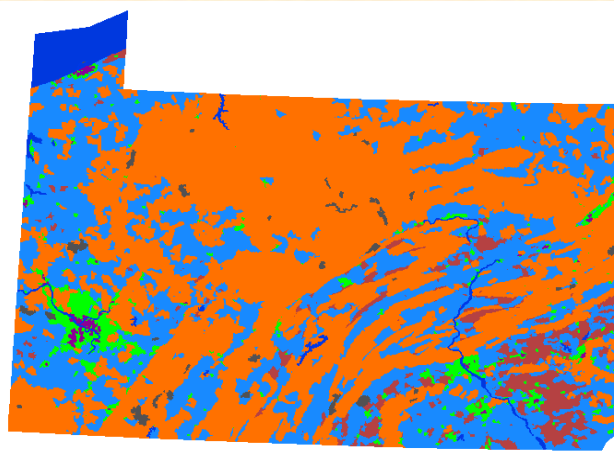
How Does Agricultural Statistics Collected at NASS?

- Agriculture Census every five years
- Estimates from Remote Sensing
- Agricultural surveys
  - Estimates from samples based on NASS area sampling frames(ASFs) and list frames

What Is An Area Sampling Frames?

- An area sampling frame is a collection of segmented land parcels for the area of interest, such as a state. A land parcel can be defined by its attributes, such as ownership, land usage, land cover, etc.

- NASS ASFs are based on a **stratification of land cover** in the U.S. defined by percent cultivated cropland, i.e. all land parcels are classified different land cover categories!

- NASS Area Sampling Frames have been used as the primary tool to conduct agricultural surveys since 1954.

- The NASS Area Sampling Frames are the basis for the annual June Area Survey in which approximately 11,000 segments are enumerated in early June to collect crop acreage and other agricultural information.
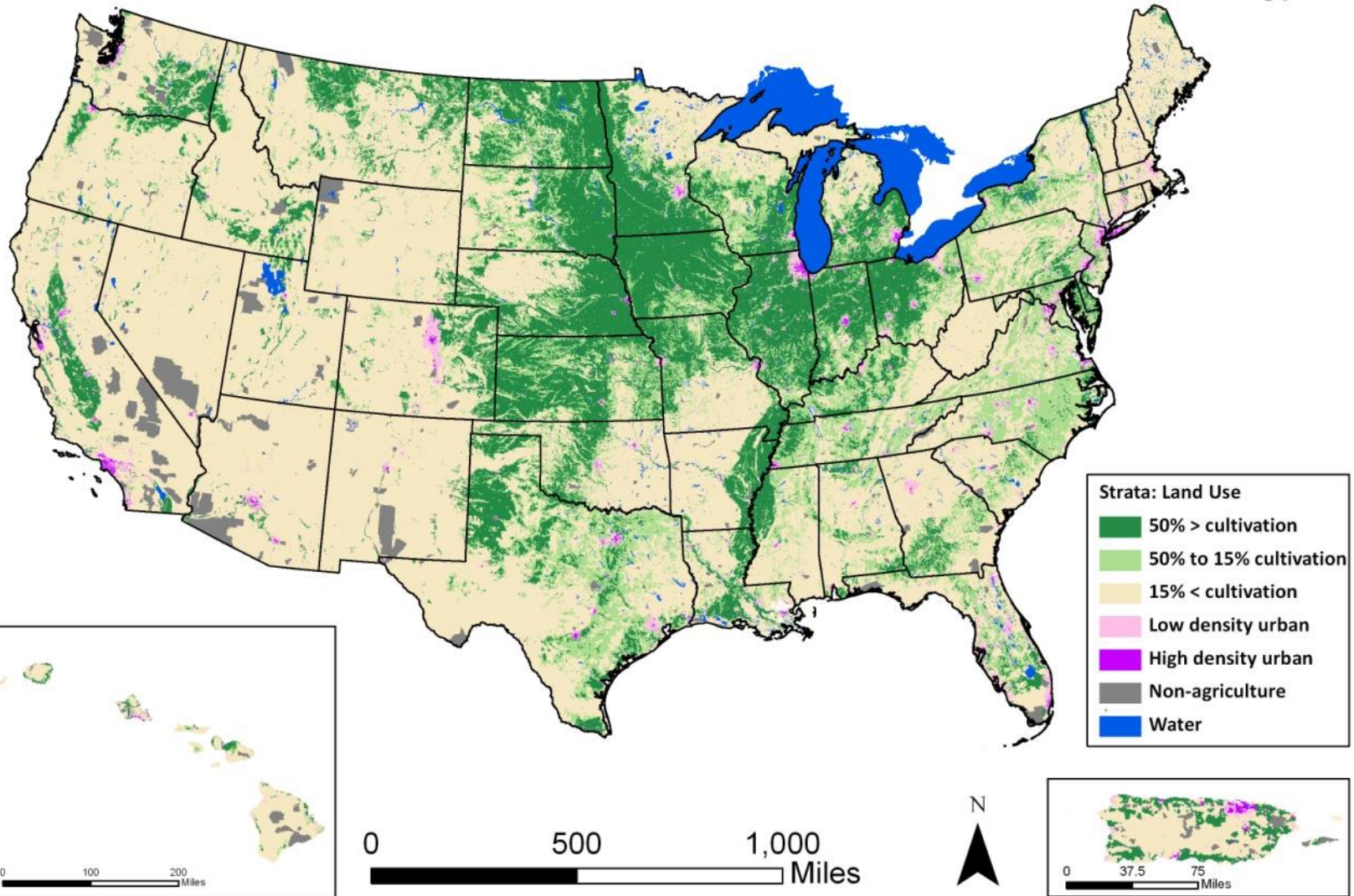
Why Area Sampling Frames

Pro:

- Multiple uses for sampling units
- Frame longevity for coverage
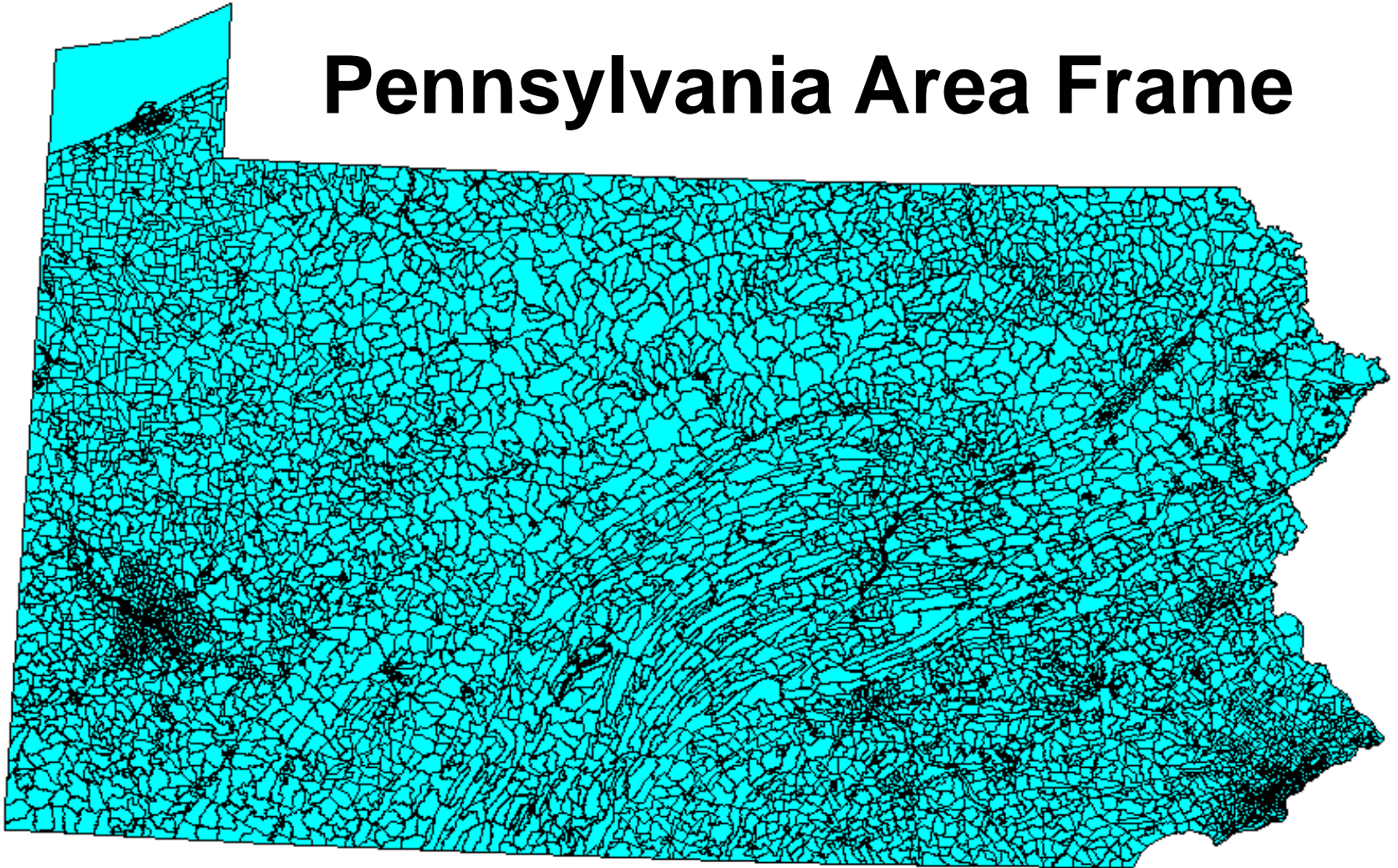- Robust for crop acreage
- Better performance

Con:

- Expensive

USDA National Agricultural Statistics Service
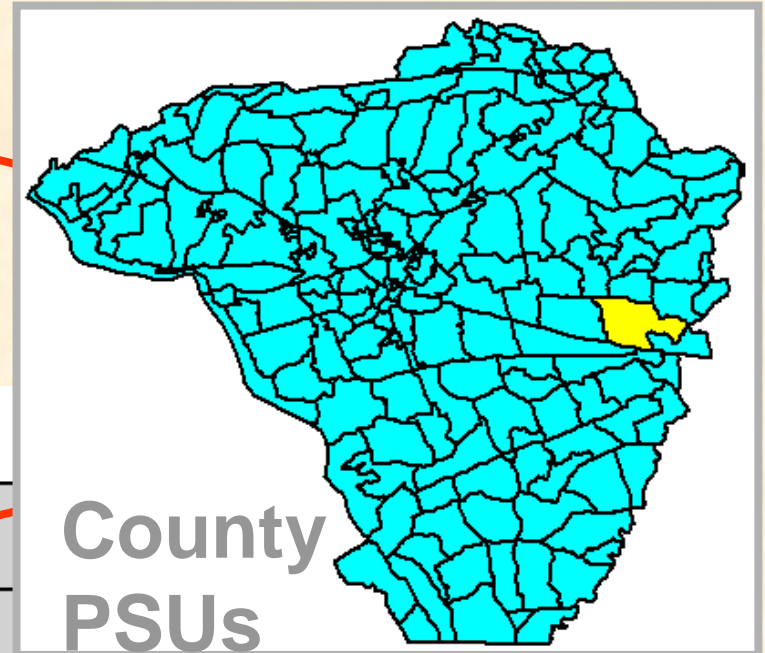Land Use Area Frame

Strata: Land Use
- 50% > cultivation
- 50% to 15% cultivation
- 15% < cultivation
- Low density urban
- High density urban
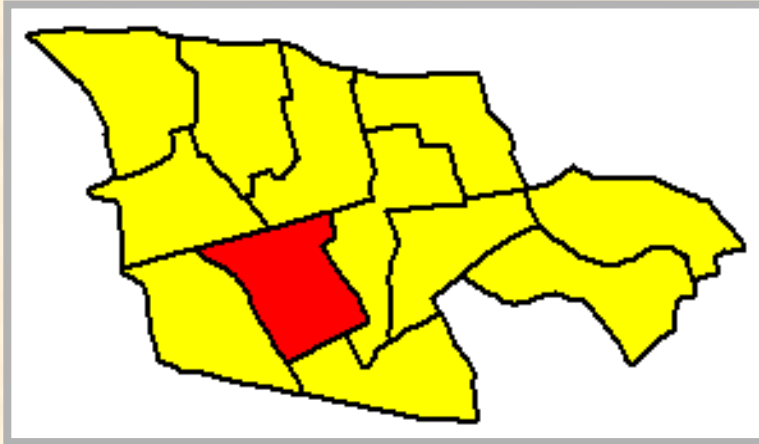- Non-agriculture
- Water

What is an Area Frame?

Pennsylvania Area Frame

What is an Area Frame?

PSU Segments

County PSUs
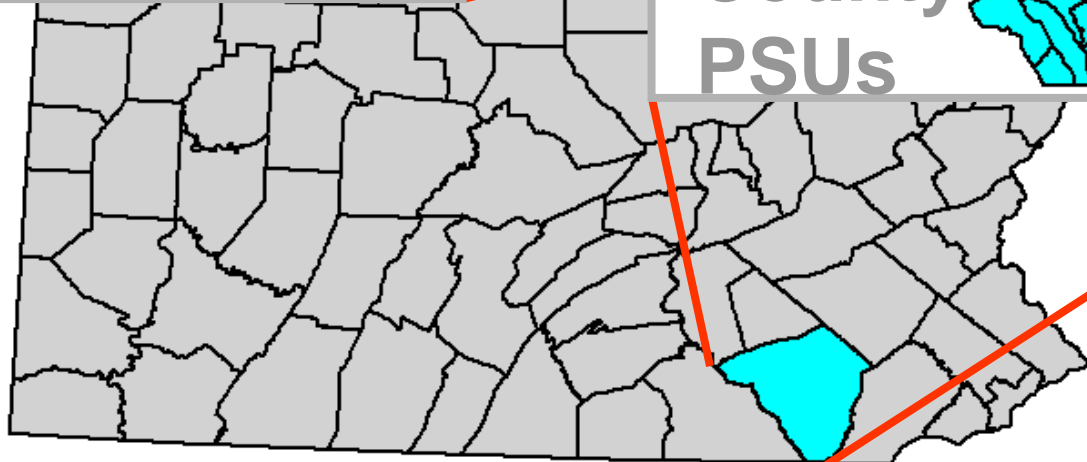
Counties

Area Frame Construction Steps

Land Use Stratification

↓

Sample Allocation

↓

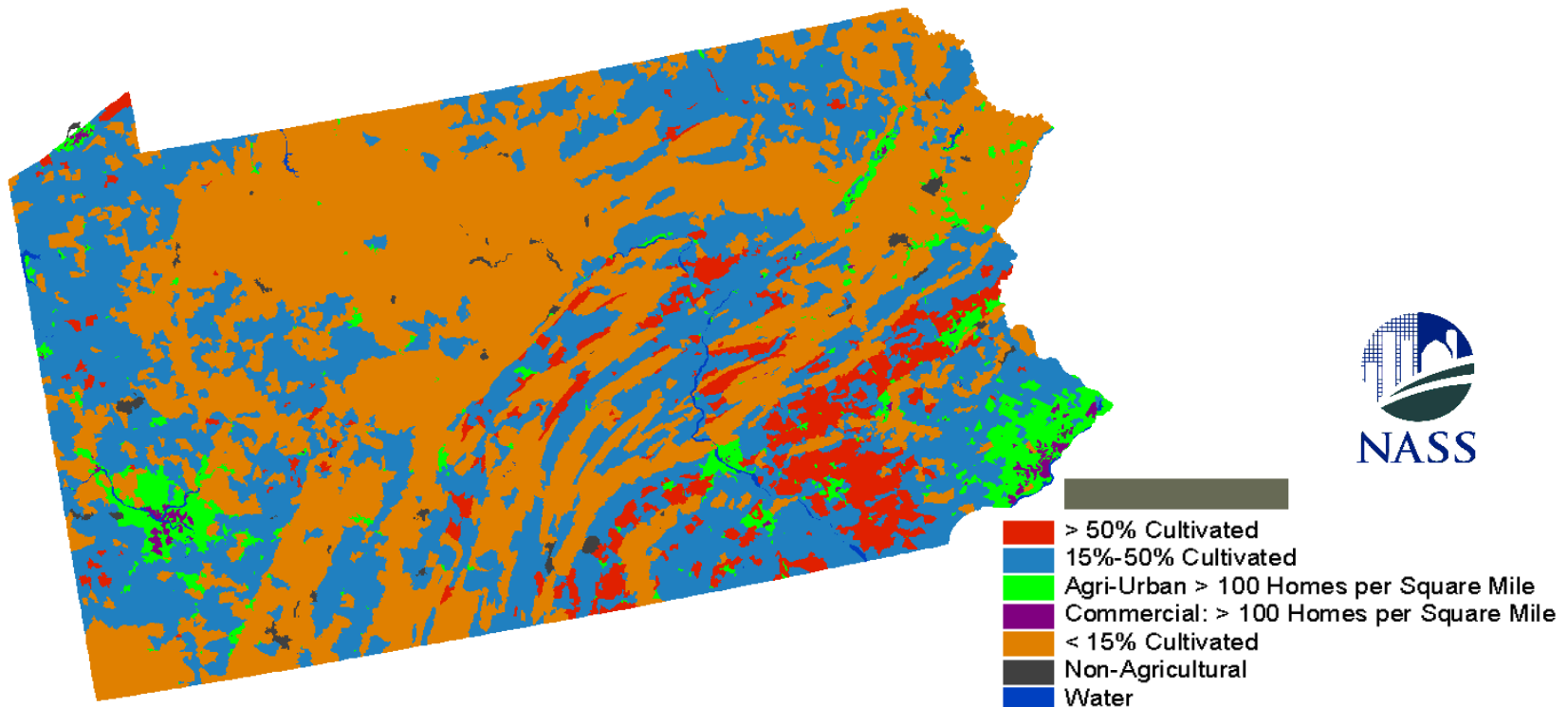**Sample Selection**

↓

Sample Preparation

Stratification is the division of a land area into broad land use categories:

- **Cultivation**
- **Agri-urban**
- **Intensive Urban**
- **Non-Agricultural**
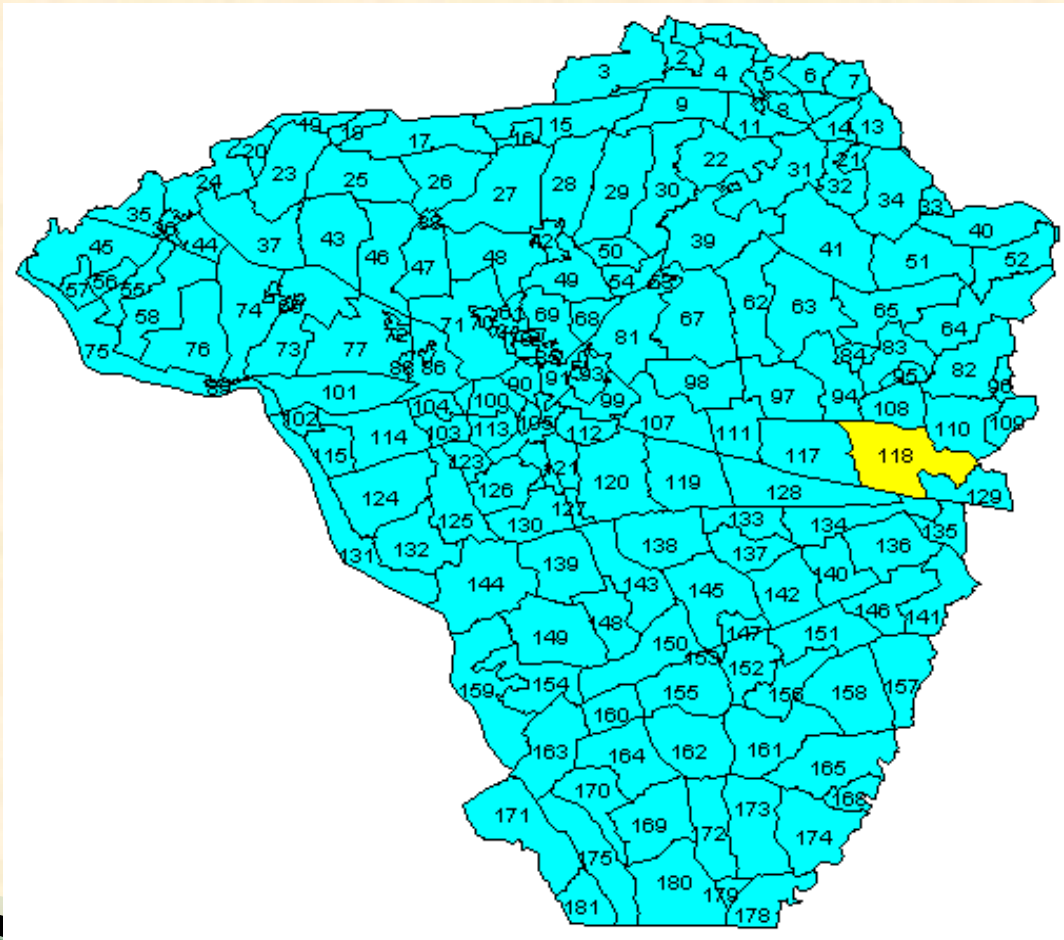- **Large water bodies**

PA Stratum	Stratum Definition
13	> 50% Cultivated
20	15% – 50% Cultivated
31	Agri–Urban
32	Intensive Urban
40	< 15% Cultivated
50	Non–Agricultural

Product: Land Use Stratification Map of Statewide Merged Strata Values
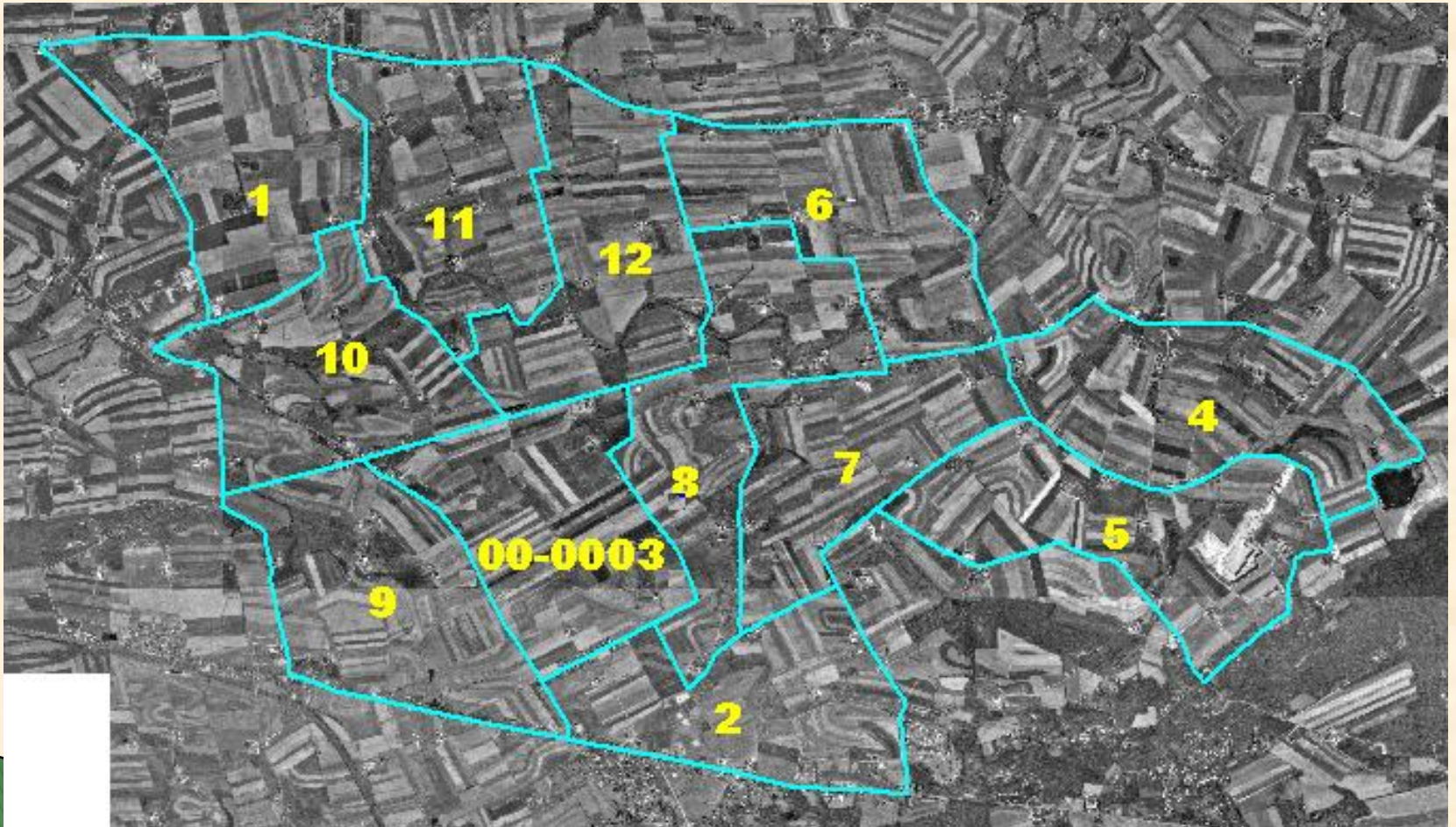

Stratification of Pennsylvania 1999

NASS

- > 50% Cultivated
- 15%-50% Cultivated
- Agri-Urban > 100 Homes per Square Mile
- Commercial: > 100 Homes per Square Mile
- < 15% Cultivated
- Non-Agricultural
- Water

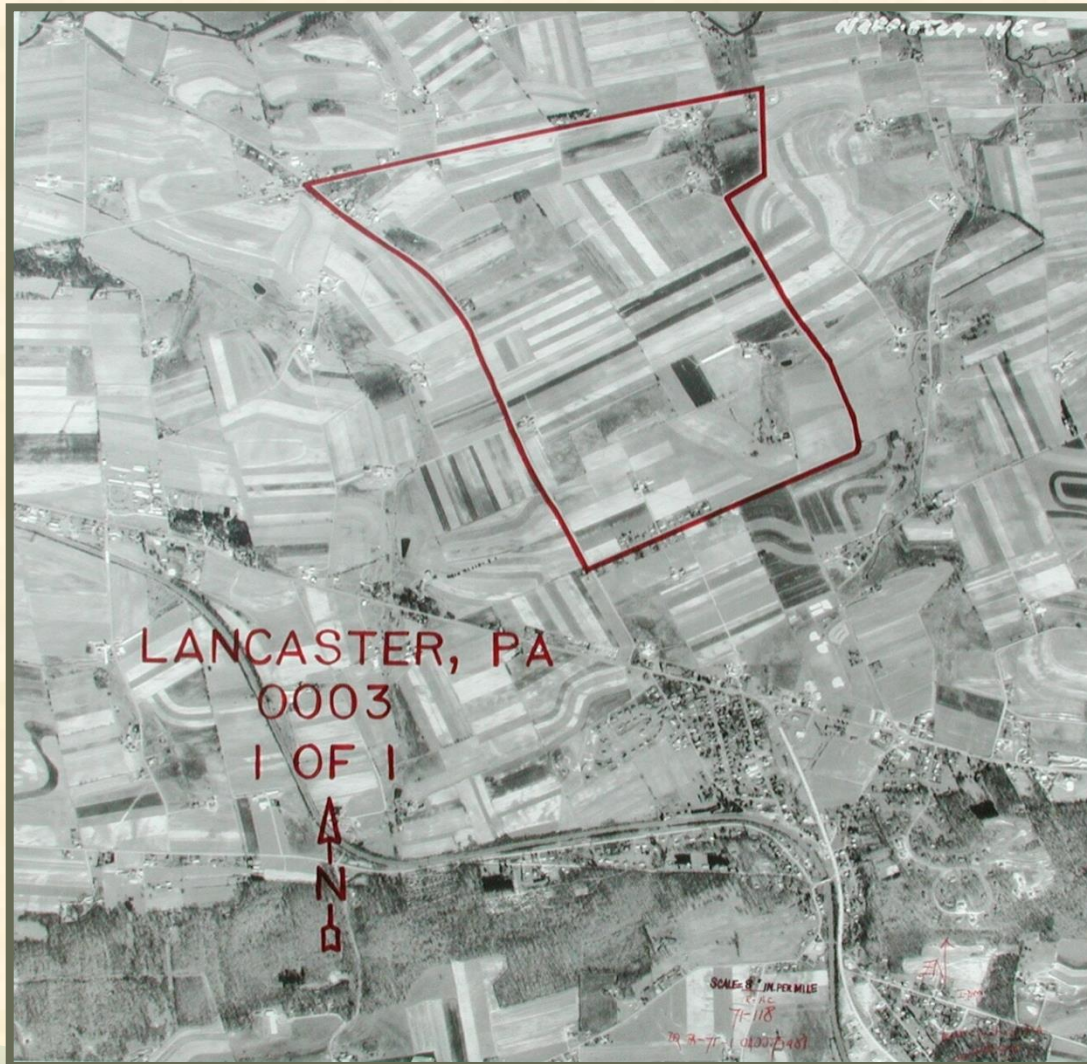# Area Frame File of Lancaster County PSUs

Workfile of PSU 118 and Segments

Prepared Photo Enlargement

- Survey based State/County Estimates
  - Accessing NASS County maps and County data
- Census of Agriculture
  - Accessing AgAtlas maps and Census data
- Vegetation Condition
  - Accessing vegetation condition maps
- Cropland Data Layer
  - Accessing the CDL from CropScape
- Area Sampling Frame

Thank You

- For further questions or comments:
- Contact: zhengwei_yang@nass.usda.gov