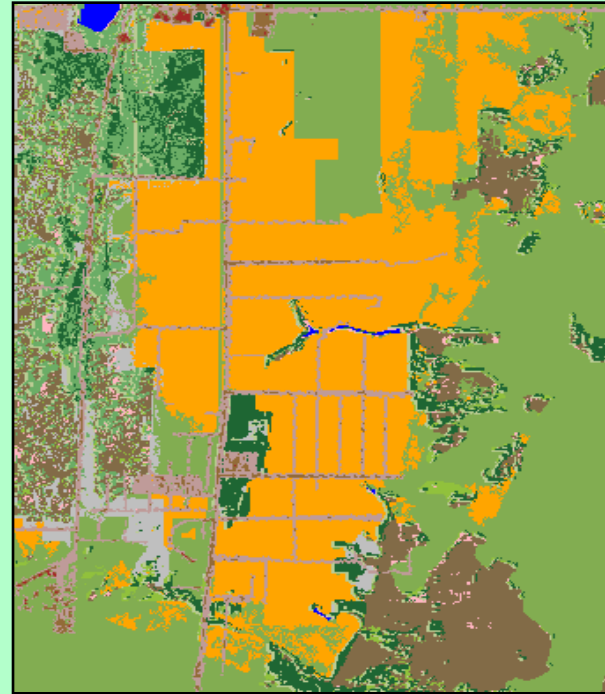
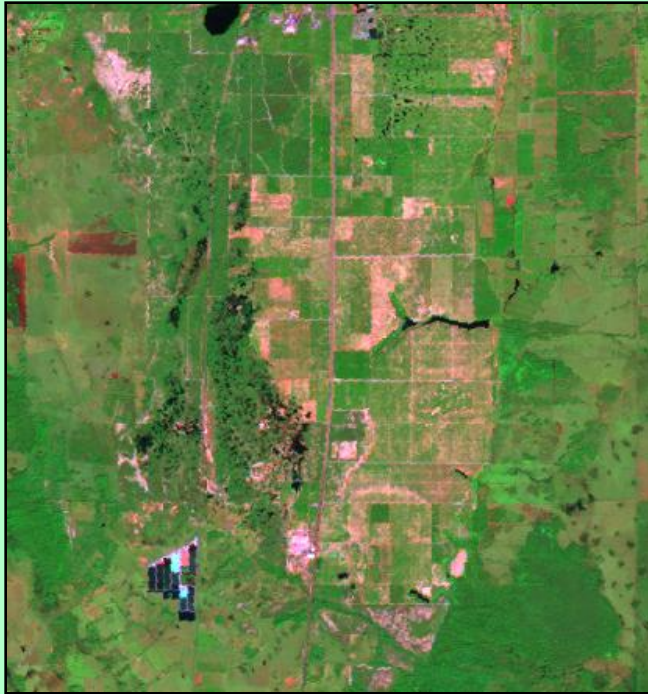
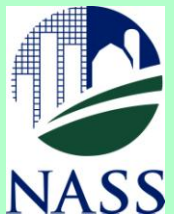


A Florida 2004 Cropland Data Layer: A See5 Implementation



Claire Boryan, Geographer

United States Department of Agriculture
National Agricultural Statistics Service
Research and Development Division



The National Agricultural Statistics Service

Provider of timely, accurate, and useful statistics
in service to U.S. agriculture

NASS - Data and Statistics - Microsoft Internet Explorer

Address: http://www.nass.usda.gov/Data_and_Statistics/index.asp

United States Department of Agriculture
National Agricultural Statistics Service

The 2002 Census of Agriculture is the most comprehensive source of statistics portraying our nation's agriculture

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Data and Statistics

Quick Stats (Agricultural Statistics Data Base)

NASS publishes U.S., state, and county level agricultural statistics for many commodities and data series. Quick Stats offers the ability to query by commodity, state(s) and year(s), providing the most up-to-date statistics including all revisions. The query dataset can be downloaded for easy use in your database or spreadsheet.

- Query our Quick Stats Data Base

Additional Crops County Resources

Maps of crops county estimates for acreage and yield are available from NASS as both CSV data files and maps.

County data from Quick Stats data is also available in pre-extracted data sets by year and by crop.

Census of Agriculture

To query Census of Agriculture data, choose from the Census years below. To view the Census publications, click here:

- Data Queries for 2002, select below:

Select a Census Query

- Data Queries for 1997, 1992, 1987

Interactive Data

NASS provides a variety of tools for interacting with our Census datasets.

Interactive Statistical Maps Interactive Census Maps for 2002 Census Highlights

Table Lens Table Lens Application for 1997 Census Data

Last modified: 12/30/05

NASS Home | USDA.gov | FEDSTATS | Economics Statistics System (ESS) | Site Map
FOIA | Accessibility Statement | Privacy Policy | Non-Discrimination Statement | Information Quality | FirstGov | White House

2001 Wildlife Damage Survey

7.7 Percent of Crop Value Lost to Deer and Geese

Maryland farmers lost \$17.2 million of corn, soybeans and wheat to deer or geese during 2001, translating to Maryland farmers losing 7.7 percent of the crop value to deer and geese. Soybeans account for the greatest economic loss, totaling \$9.1 million, 11 percent. Corn losses were \$6.6 million, 5.8 percent and wheat \$1.5 million, 5.6 percent. Deer damage resulted in losses of \$13.6 million, 6.1 percent, while losses were \$3.6 million, 1.6 percent.

Production losses totaled 4.0 million bushels. Corn losses were 3.2 million bushels, soybean losses 2.2 million bushels and wheat accounted for 0.6 million bushels. Production losses to deer were 4.7 million bushels and geese 1.3 million bushels.

In terms of yield, losses to deer were most severe in Central and Western Maryland, while geese damage was greater on the Eastern Shore. Corn yield losses of 0.6 bushels per acre and 7.4 bushels per acre were reported in Central and Western Maryland, respectively. The Lower Eastern Shore reported the highest soybean loss of 6.1 bushels per acre.

Sixty-two percent of farms reported deer or geese damage to one or more crops. Damage was reported on 27 percent of farms raising corn, 58 percent of farms growing soybeans and 27 percent of farms with wheat.

Maryland 2001 Crop Loss from Deer

Region	Crop	Acre Harvested	Average Yield (bushels)	Production Loss (bu)	Economic Loss (\$)
Region 1	Corn				

WISCONSIN AGRICULTURAL STATISTICS SERVICE
P.O. Box 8034 Madison, WI 53708-8034

In cooperation with WI Department of Agriculture, Trade and Consumer Protection

2002 Dairy Producer Opinion Survey

November 2002

Wisconsin Milk Production To Recover

Milk production is expected to increase in Wisconsin during the next five years according to a survey conducted by the Wisconsin Agricultural Statistics Service. This statewide survey of producers asked for their plans with the assumption that milk prices for the next five years will be at the same level as the past five years. The survey was conducted during May and June 2002.

Based on the survey, 60 percent of producers expect to keep the same herd size, 20 percent plan to increase herd size, and 20 percent intend to discontinue milking by 2007. Actual results will depend on future milk prices, input prices, financing availability, crop yields, and other factors.

The number of herds projected for 2007 shows that the diversity of small to large herds will continue. The most prevalent herd size will remain at 50 to 99 cows.

United States | All data items are from Chapter 2 - Table 1, Area Summary Highlights, 2002
Selected crops harvested - Land in orchards (acres)

State: **United States - County Level** Data Item: **Selected crops harvested - Land in orchards (acres)**

Data

United States Total: 5,330,439
State:
State Total:
County:
County Total:

Download data as CSV | XML | PDF

Legend

Scale: **National**

Zero or Data Withheld	<= 20,000
	20,001 to 40,000
	40,001 to 60,000
	60,001 to 80,000
	80,001 to 100,000
	100,001 >=

Color: **Green**

Comparisons: **6**

(Change the data range based on National or State level)

Source: USDA-NASS 2002 Census of Agriculture © USDA-NASS 2005-2006

Navigation: Mouse-over a specific state/county to view the state/county level data. Right-click to zoom (option-click for MAC users). Hold the Alt Key and click-drag to pan. For additional assistance with this application, [click here to view the support page.](#)

Wisconsin Dairy Herds by Herd Size

Milk cow herd size	May 2002 herds	May 2007 herds (projected) †	Change 2007/2002
1 - 29	2,800	1,440	-45
30 - 49	4,700	3,440	-27
50 - 99	7,400	5,600	-24
100 - 199	1,900	2,080	+9
200 - 499	700	900	+29
500+	200	440	+120
Total	17,500	15,900	-20

†The May 2007 projection is based on farmers' opinions in May-June 2002, with the assumption that milk prices for the next five years will be at the same level as the past five years.

Plans for May 2007 1/2 rd Size

Keep or feed size	Increase herd size	Discontinue milking
47	17	36
71	9	20
85	19	18
83	37	10
33	59	8
22	78	0
60	29	20

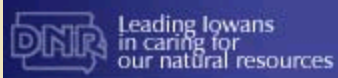
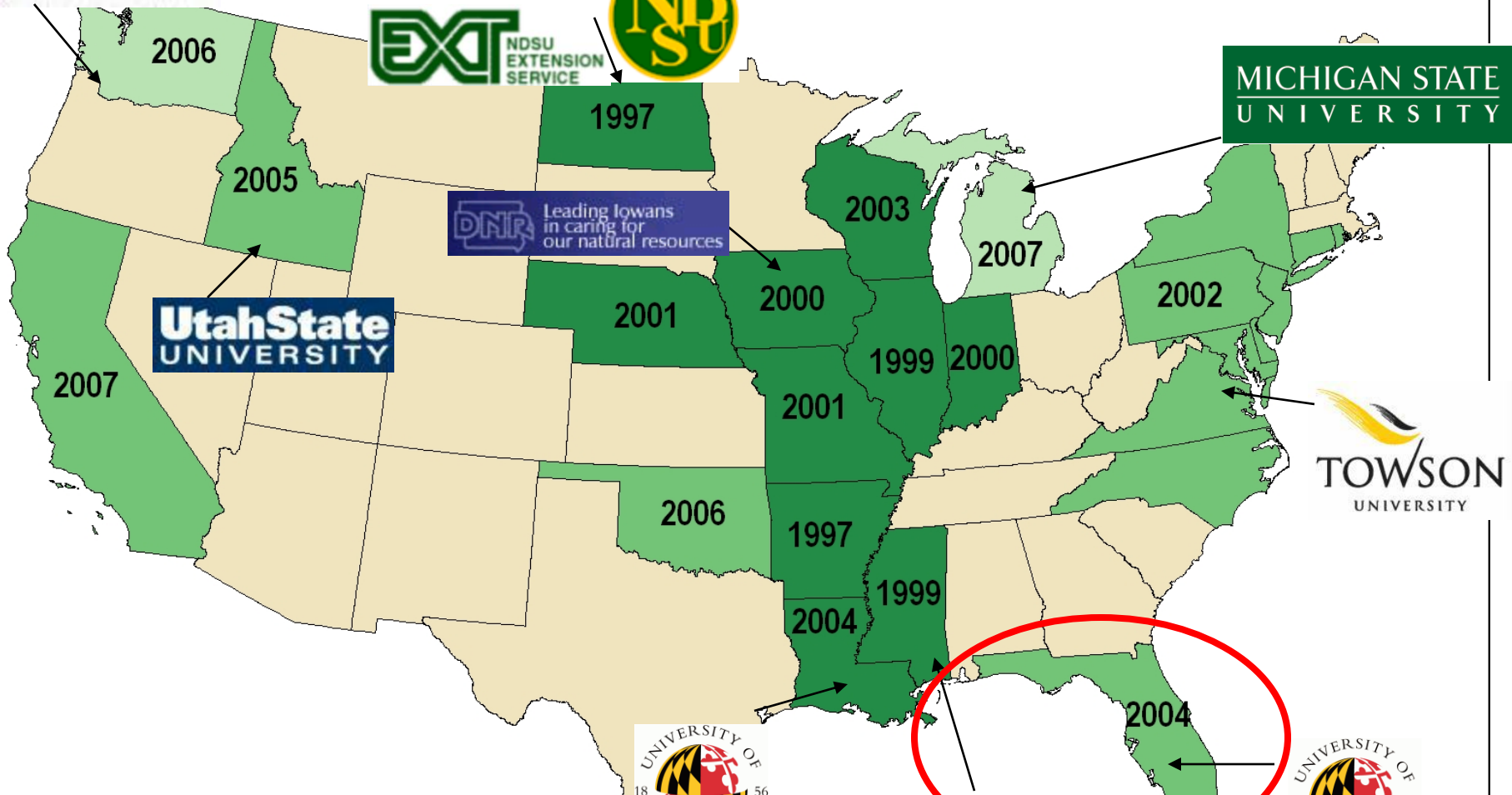
Percent of Herds by Size Group 2007 Projection

Herd Size Groups

- 1-29
- 30-49
- 50-99
- 100-199
- 200-499
- 500+

"The Fact Finders of Agriculture."

Program Cooperators



- Annual CDL Production
- One Time CDL Production
- Potential CDL Production



Project Players

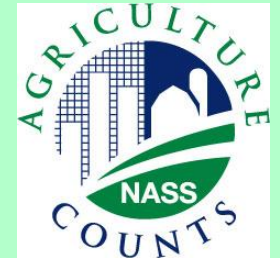
- **USDA/NASS Research Division**



- SARS (Spatial Analysis Research Section)

- Remote sensing analysts
- Software developers

- **USDA/Foreign Agricultural Service**



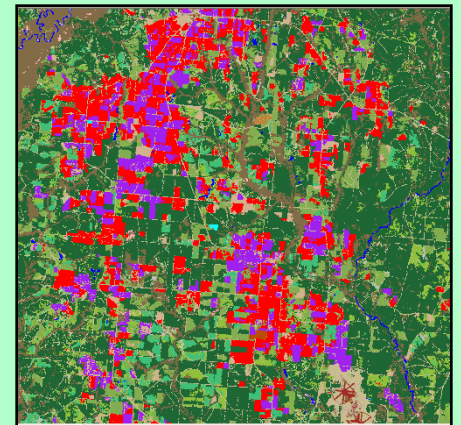
- Landsat TM/ETM+ imagery source



Florida Cropland Data Layer Benefits

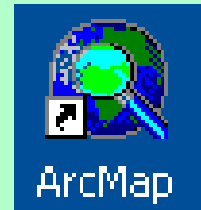
- Ortho-rectified image product
- Commercial image formats
- Detailed breakdown of cropland area via large training sample
- Distribute to public via the NRCS Data Gateway

<http://datagateway.nrcs.usda.gov/>



Program Resources

- Ground Truth Preparation
 - ESRI ArcGIS 9.1
- Imagery Preparation
 - Leica Geosystems ERDAS
Imagine 9.0
- Image processing
 - Decision tree software
 - See5.0
 - www.rulequest.com

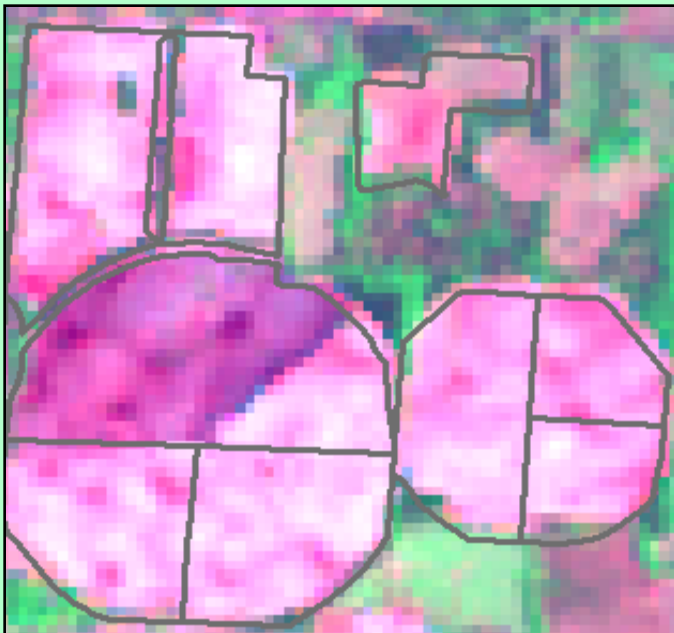


Cropland Data Layer Inputs

Satellite Images

CLU Polygons/ FSA 578 Data / Citrus GIS

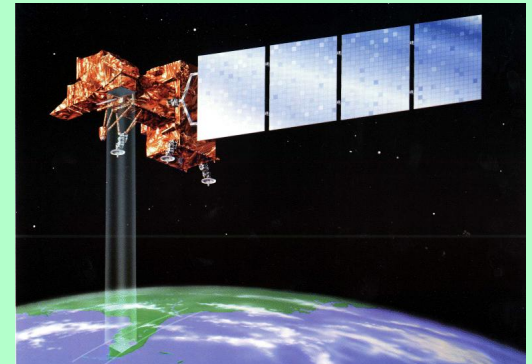
Ancillary Data



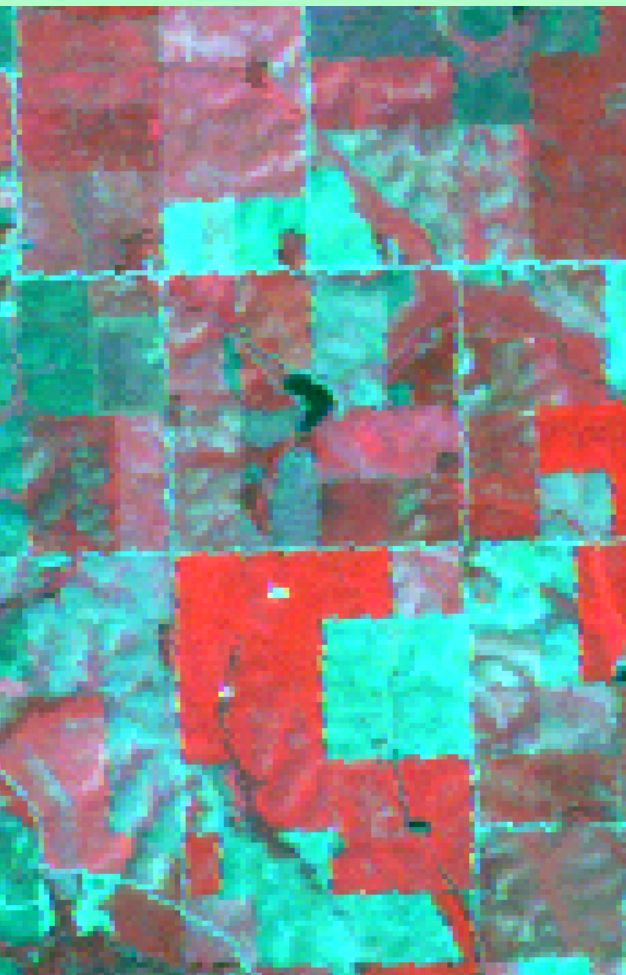
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0	12	1	2	865 2		PNUTS	RUNNER PEANUTS	20.9	20.9	RUN	75
1	12	1	2	865 3		FALLOW	NIA	9.5	9.5	NIA	101
2	12	1	2	865 4		GRASS	BAHIA GRASS	16	16	BHI	102
3	12	1	2	865 5		GRASS	BAHIA GRASS	22.9	22.9	BHI	102
4	12	1	2	865 6		GRASS	BAHIA GRASS	14.8	14.8	BHI	102
5	12	1	2	865 1A		CORN	YELLOW	7	7	YEL	41
6	12	1	2	865 1B		BEANS	VELVET BEANS	7	7	VEL	47
7	12	1	2	865 1C		PNUTS	RUNNER PEANUTS	14.1	14.1	RUN	75
8	12	1	2	865 1X		TRNAR	NIA	0.4	0.4	NIA	105
9	12	1	2	865 2X		TRNAR	NIA	0.7	0.7	NIA	105
10	12	1	13	2125 1		GRASS	BAHIA GRASS	13.1	13.1	BHI	102
11	12	1	17	627 2		PNUTS	RUNNER PEANUTS	22	22	RUN	75
12	12	1	17	627 1A		PNUTS	RUNNER PEANUTS	54.9	54.9	RUN	75
13	12	1	17	627 1B		FALLOW	NIA	4.2	4.2	NIA	101
14	12	1	17	627 1X		TRNAR	NIA	1.7	1.7	NIA	105
15	12	1	17	627 2X		TRNAR	NIA	0.7	0.7	NIA	105
16	12	1	23	2224 1		OKRA	NIA	2.1	2.1	NIA	286
17	12	1	23	2224 2		GREEN	COLLARDS	0.9	0.9	COL	4000
18	12	1	23	2224 4		CORN	YELLOW	4.4	4.4	YEL	41
19	12	1	23	2224 5		CORN	YELLOW	8.3	8.3	YEL	41
20	12	1	23	2224 1X		TRNAR	NIA	0.1	0.1	NIA	105
21	12	1	23	2224 2X		TRNAR	NIA	0.1	0.1	NIA	105
22	12	1	23	2224 3A		WATRM	COMMON	0.2	0.2	COM	757
23	12	1	23	2224 3B		PEAS	SOUTHERN ACRE	0.5	0.5	SOA	67
24	12	1	23	2224 3C		CORN	YELLOW	2	2	YEL	41
25	12	1	23	2224 3X		FALLOW	NIA	1.8	1.8	NIA	101
26	12	1	23	2224 4X		TRNAR	NIA	0.1	0.1	NIA	105
27	12	1	23	2224 5X		TRNAR	NIA	0.1	0.1	NIA	105
28	12	1	34	22116 1		GRASS	BAHIA GRASS	6.6	6.6	BHI	102
29	12	1	34	22117 1		GRASS	BAHIA GRASS	8.3	8.3	BHI	102
30	12	1	34	22117 2		WATRM	COMMON	5.5	0	COM	757
31	12	1	34	22117 3		GRASS	BAHIA GRASS	8.2	8.2	BHI	102
32	12	1	34	22117 2X		TRNAR	NIA	0.2	0.2	NIA	105
33	12	1	34	22118 1		WATRM	COMMON	1	1	COM	757
34	12	1	34	22509 1		WATRM	COMMON	1	1	COM	757
35	12	1	40	22469 1		FALLOW	NIA	7	7	NIA	101
36	12	1	40	22469 2A		PEAS	SOUTHERN ACRE	0.5	0.5	SOA	67

Landsat Platform

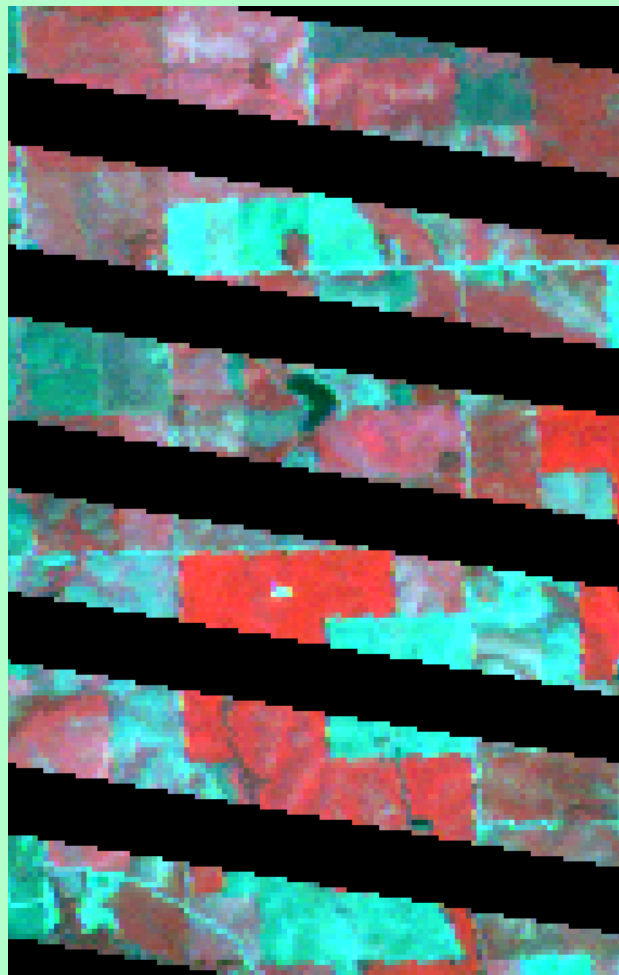
- Landsat 5 launched 1984 (3 yr design life!)
 - Thematic Mapper (TM) Sensor
- Landsat 7 launched 1999 Thematic Mapper (ETM+) Sensor



Landsat 7 Gap- Filled Images



Original



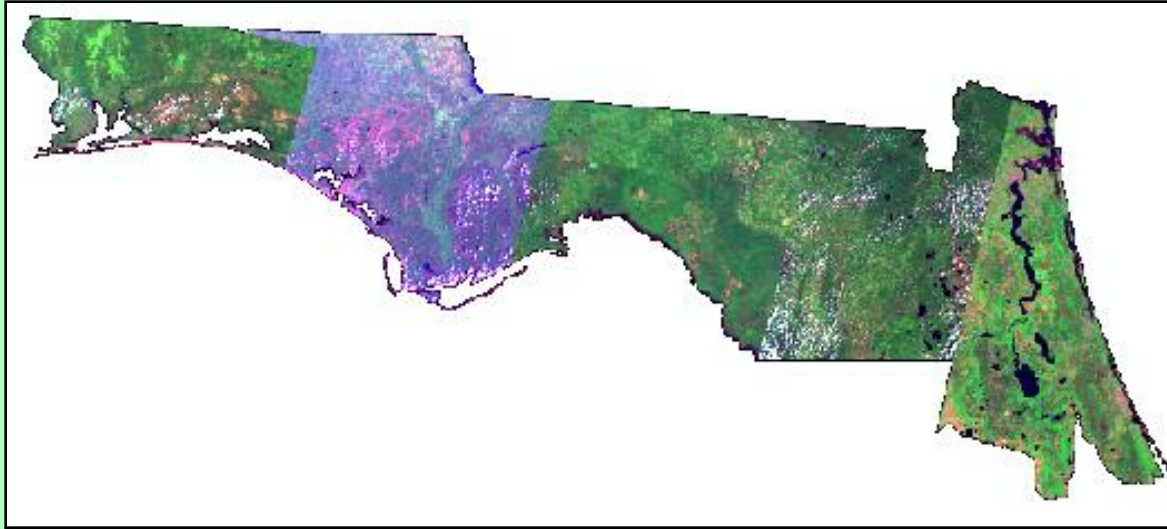
SLC_off



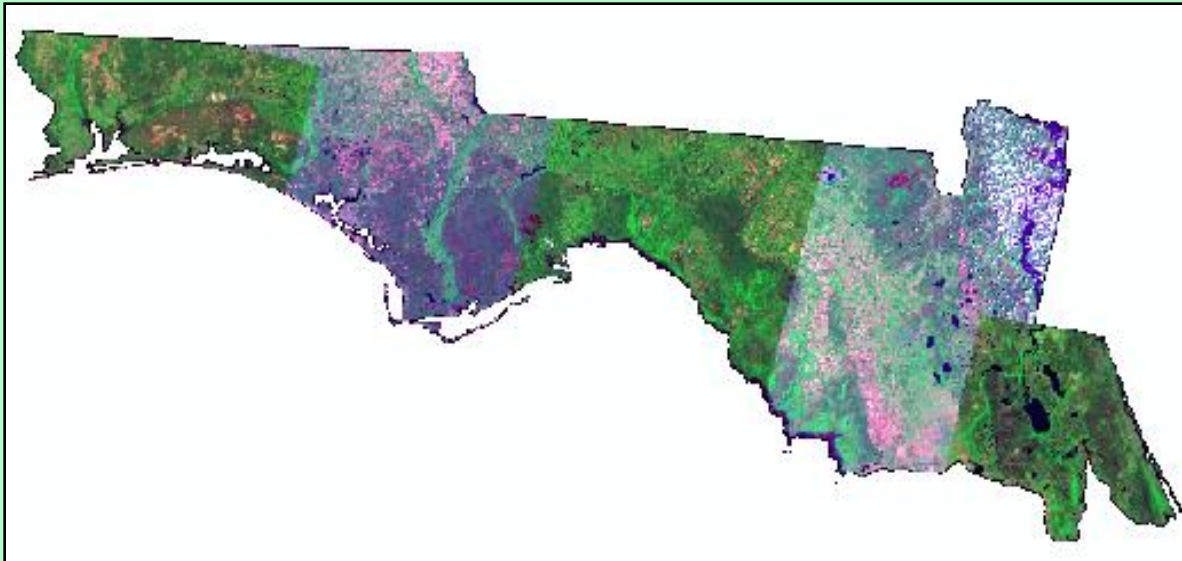
SLC_off Filled

Florida Panhandle

Imagery Mosaics created from Landsat TM and
Gap Filled Landsat ETM+ scenes



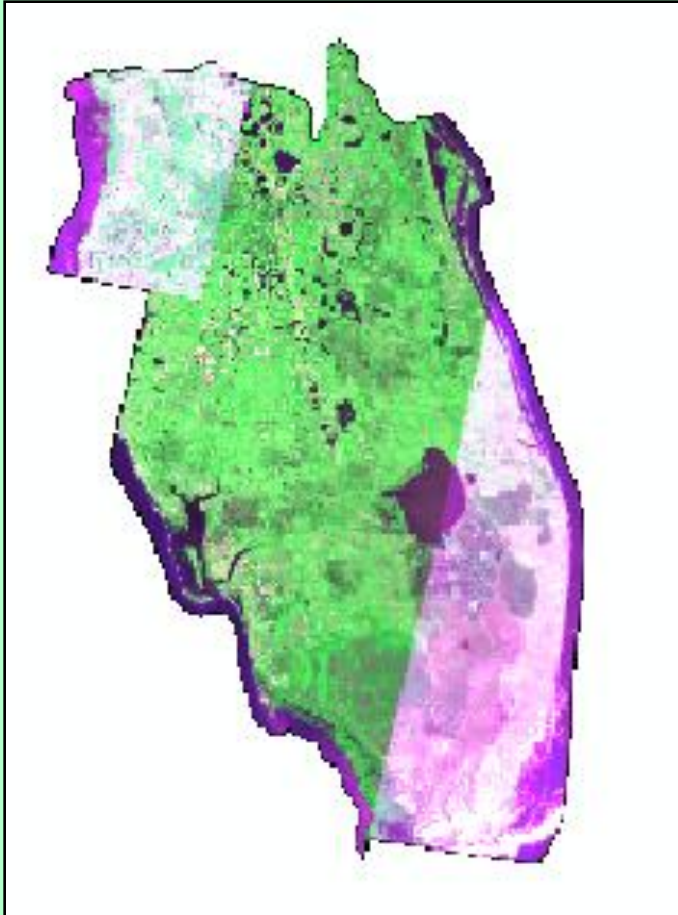
Spring Mosaic



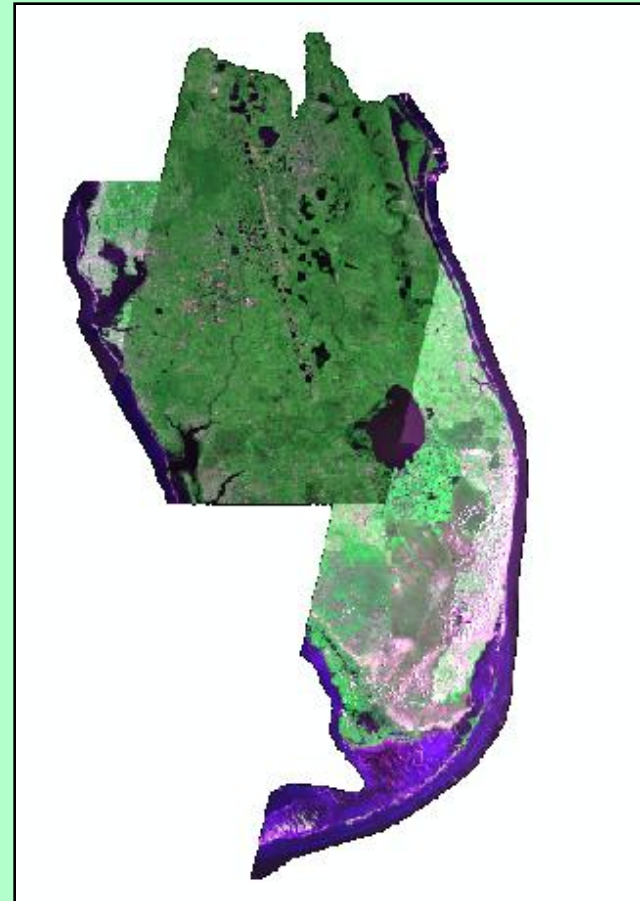
Fall Mosaic

Florida Peninsula

Imagery Mosaics created from Landsat TM and Gap Filled ETM+ scenes

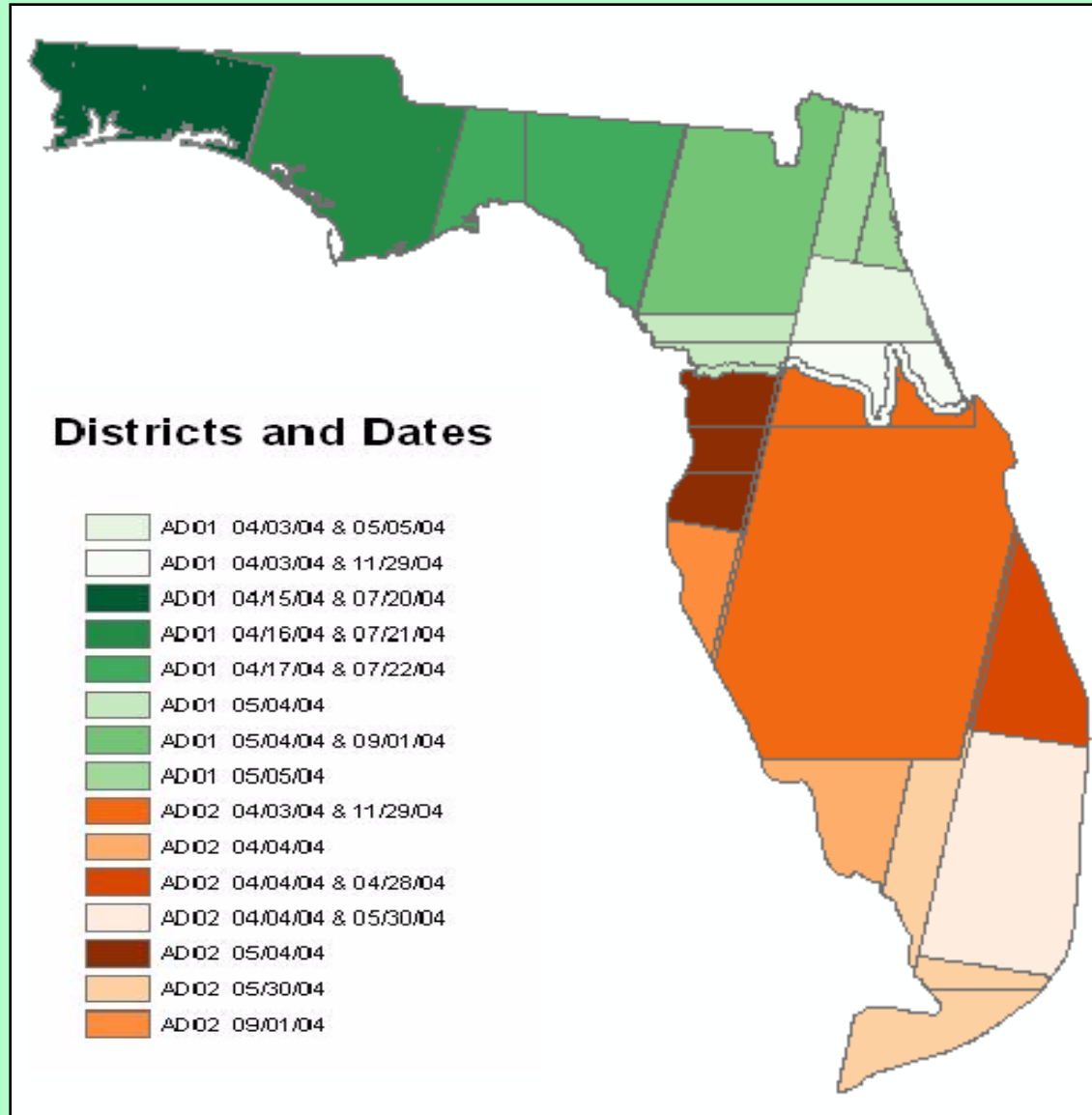


Spring Mosaic



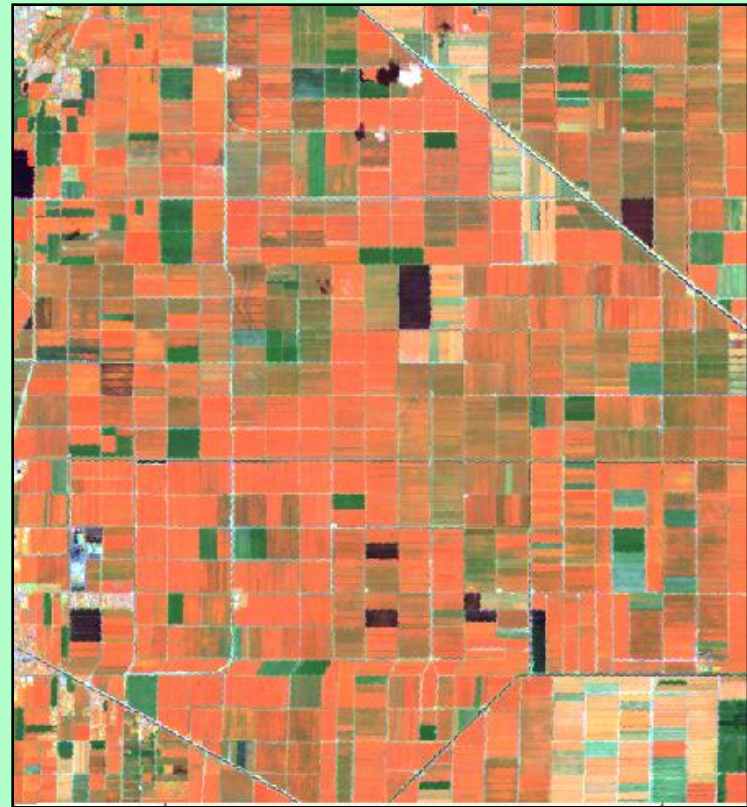
Fall Mosaic

Analysis Districts and Scene Dates



Zoom of Raw Scenes

Landsat 5 – 05/30/04



Landsat 5 – 11/29/04



GIS– Ground truth

Farm Service Agency (FSA) Common Land Unit (CLU) data

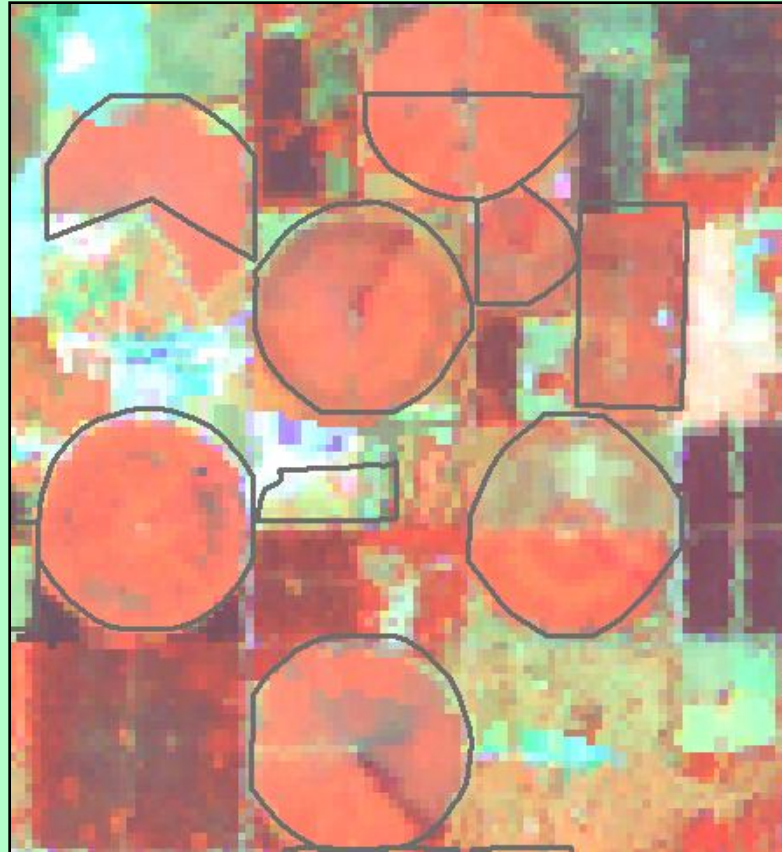


FSA CLU

OID	STATE	COUNTY_COD	FARM_NUMBE	TRACT_NUMB	FIELD_NUMB	CROP_ABBR	CROP_NAME	ACRES	PLANTED	CROP1	CROP_CD
0	12	1	2	865 2		PNUTS	RUNNER PEANUTS	20.9	20.9	RUN	75
1	12	1	2	865 3		FALLOW	N/A	9.5	9.5	N/A	101
2	12	1	2	865 4		GRASS	BAHIA GRASS	16	16	BHI	102
3	12	1	2	865 5		GRASS	BAHIA GRASS	22.9	22.9	BHI	102
4	12	1	2	865 6		GRASS	BAHIA GRASS	14.8	14.8	BHI	102
5	12	1	2	865 1A		CORN	YELLOW	7	7	YEL	41
6	12	1	2	865 1B		BEANS	VELVET BEANS	7	7	VEL	47
7	12	1	2	865 1C		PNUTS	RUNNER PEANUTS	14.1	14.1	RUN	75
8	12	1	2	865 1X		TRNAR	N/A	0.4	0.4	N/A	105
9	12	1	2	865 2X		TRNAR	N/A	0.7	0.7	N/A	105
10	12	1	13	2125 1		GRASS	BAHIA GRASS	13.1	13.1	BHI	102
11	12	1	17	627 2		PNUTS	RUNNER PEANUTS	22	22	RUN	75
12	12	1	17	627 1A		PNUTS	RUNNER PEANUTS	54.9	54.9	RUN	75
13	12	1	17	627 1B		FALLOW	N/A	4.2	4.2	N/A	101
14	12	1	17	627 1X		TRNAR	N/A	1.7	1.7	N/A	105
15	12	1	17	627 2X		TRNAR	N/A	0.7	0.7	N/A	105
16	12	1	23	2224 1		OKRA	N/A	2.1	2.1	N/A	286
17	12	1	23	2224 2		GREEN	COLLARDS	0.9	0.9	COL	4000
18	12	1	23	2224 4		CORN	YELLOW	4.4	4.4	YEL	41
19	12	1	23	2224 5		CORN	YELLOW	8.3	8.3	YEL	41
20	12	1	23	2224 1X		TRNAR	N/A	0.1	0.1	N/A	105
21	12	1	23	2224 2X		TRNAR	N/A	0.1	0.1	N/A	105
22	12	1	23	2224 3A		WATRM	COMMON	0.2	0.2	COM	757
23	12	1	23	2224 3B		PEAS	SOUTHERN ACRE	0.5	0.5	SOA	67
24	12	1	23	2224 3C		CORN	YELLOW	2	2	YEL	41
25	12	1	23	2224 3X		FALLOW	N/A	1.8	1.8	N/A	101
26	12	1	23	2224 4X		TRNAR	N/A	0.1	0.1	N/A	105
27	12	1	23	2224 5X		TRNAR	N/A	0.1	0.1	N/A	105
28	12	1	34	22116 1		GRASS	BAHIA GRASS	6.6	6.6	BHI	102
29	12	1	34	22117 1		GRASS	BAHIA GRASS	8.3	8.3	BHI	102
30	12	1	34	22117 2		WATRM	COMMON	5.5	0	COM	757
31	12	1	34	22117 3		GRASS	BAHIA GRASS	8.2	8.2	BHI	102
32	12	1	34	22117 2X		TRNAR	N/A	0.2	0.2	N/A	105
33	12	1	34	22118 1		WATRM	COMMON	1	1	COM	757
34	12	1	34	22509 1		WATRM	COMMON	1	1	COM	757
35	12	1	40	22469 1		FALLOW	N/A	7	7	N/A	101
36	12	1	40	22469 2A		PEAS	SOUTHERN ACRE	0.5	0.5	SOA	67

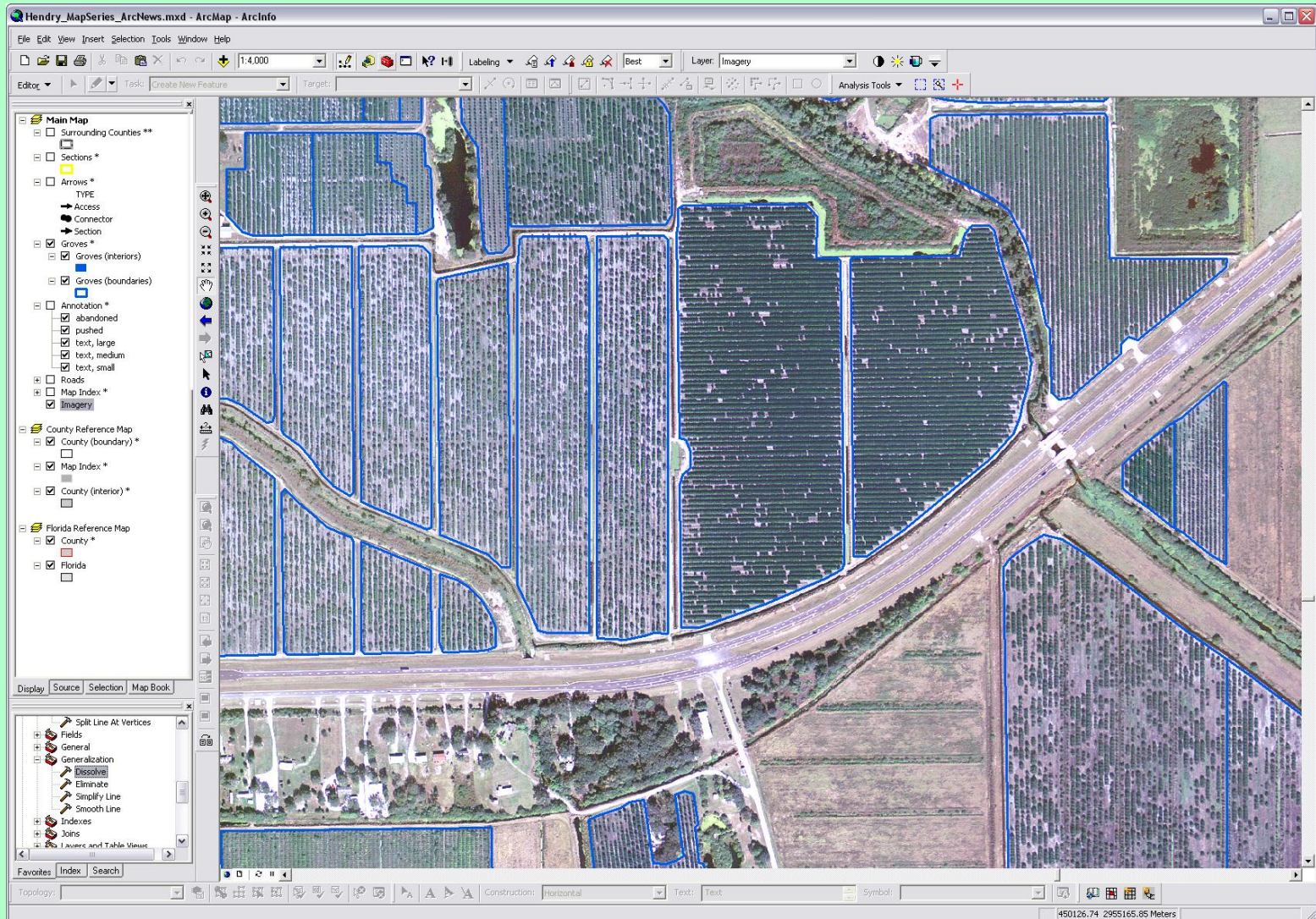
578 Admin Data

Farm Service Agency (FSA) Data



FSA (CLU) Data Used for Ground Truth Information

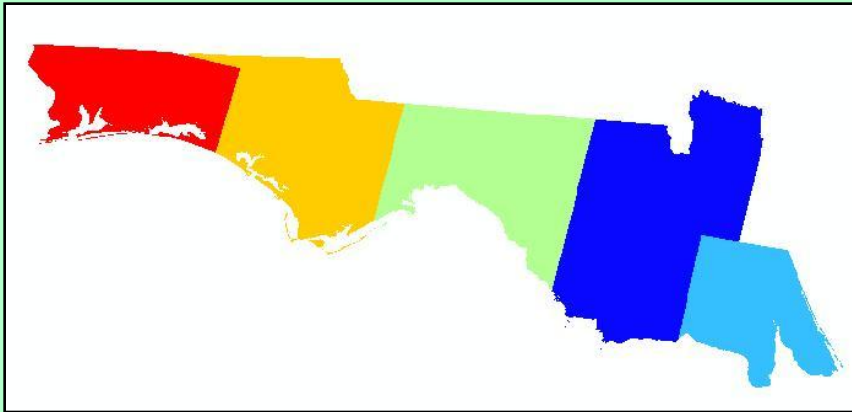
Florida Commercial Citrus Inventory GIS Groundtruth for Citrus Crop



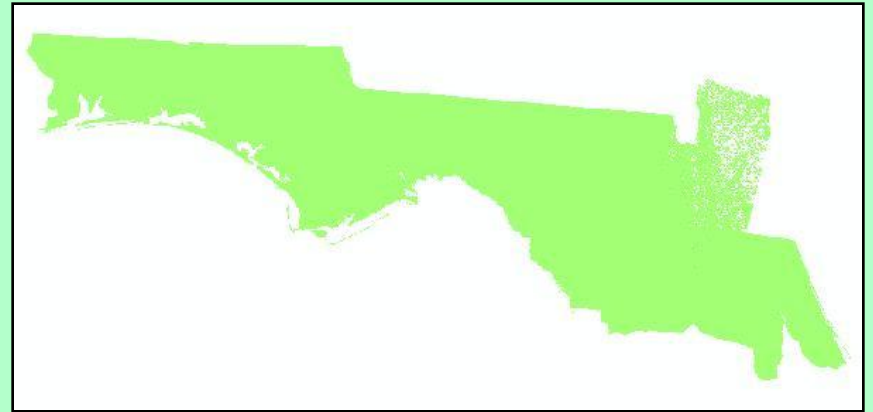
Screen capture of ArcMap in action

Ancillary Data Sets

- Cloud Masks
- Date Masks



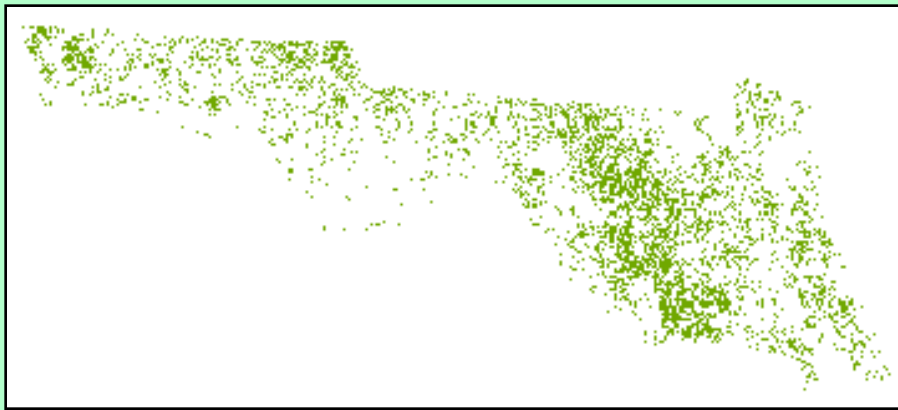
- Date Mask



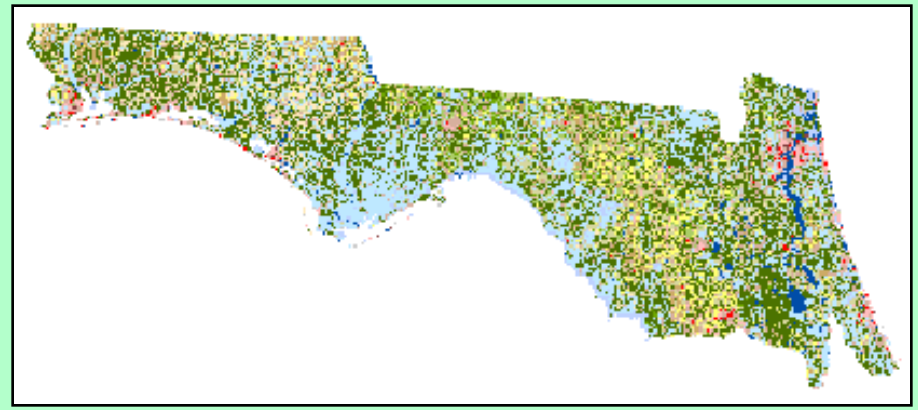
- Cloud Mask

More Ancillary Data sets

- Agricultural Masks
- National Land Cover Data Set (NLCD) 2001



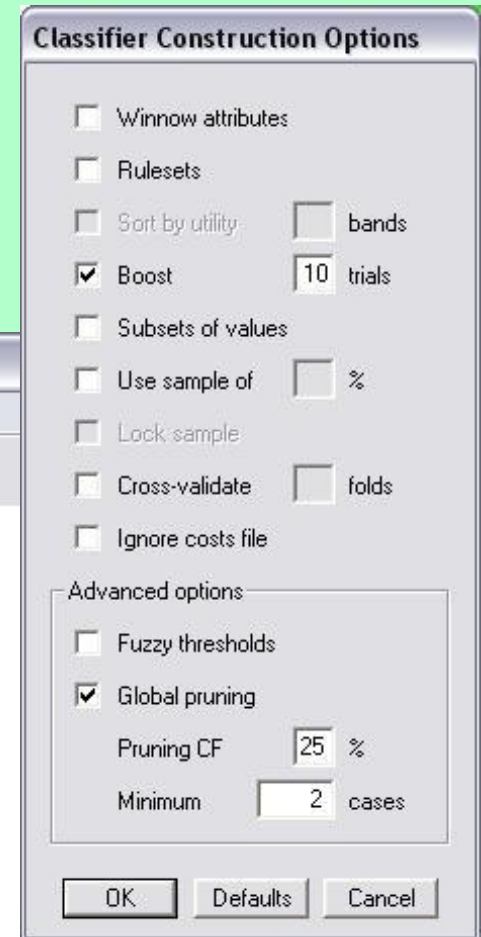
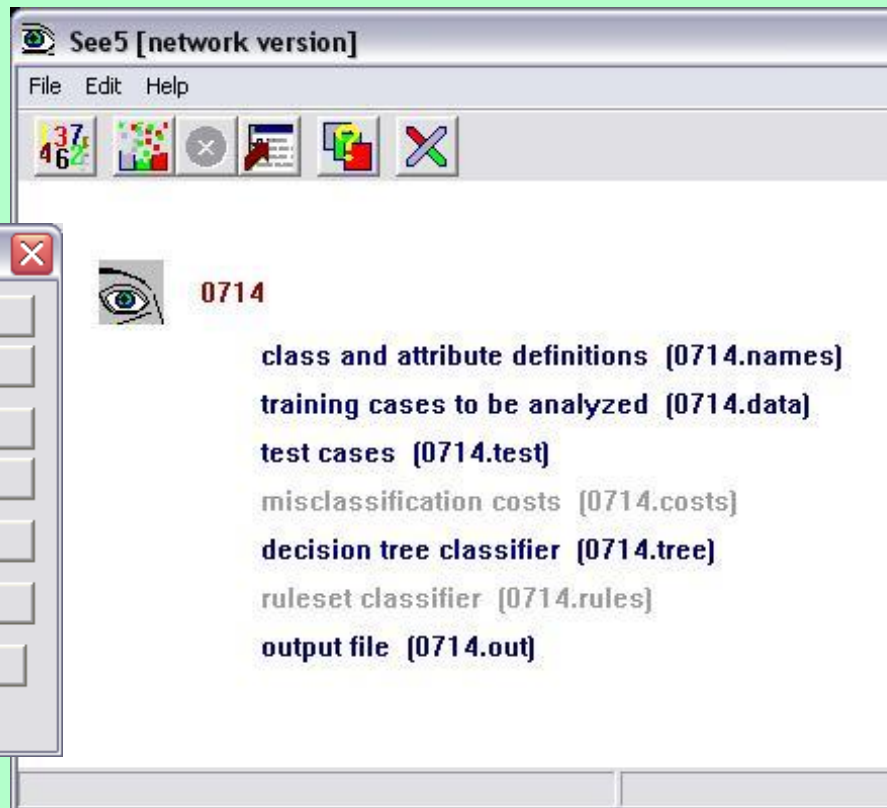
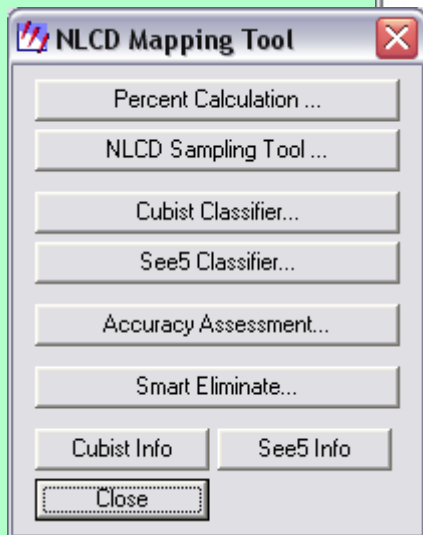
• Agricultural Mask



• (NLCD) 2001

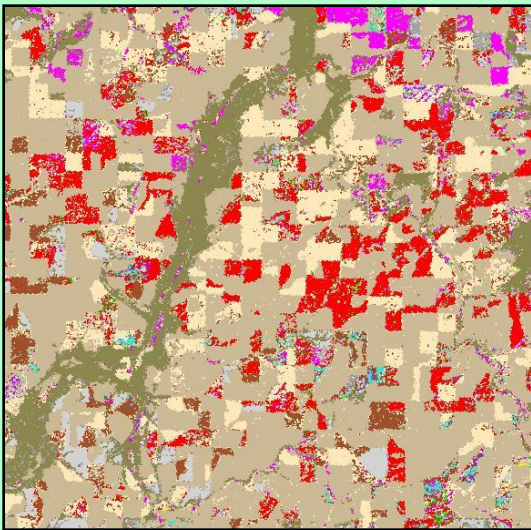
Classification Overview (See5)

- Derive classification within each analysis district
- Combine analysis districts classification to create a single statewide product

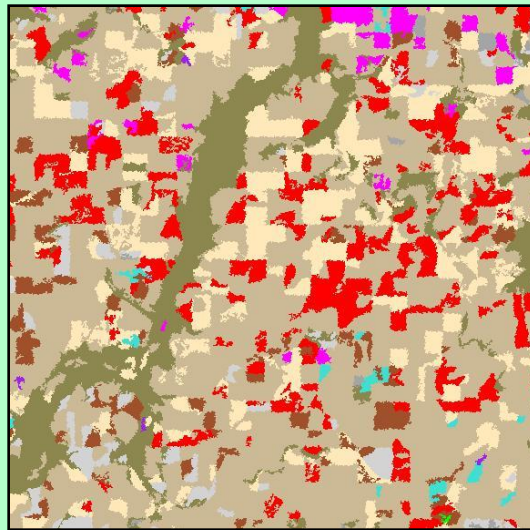


Post Classification Enhancements

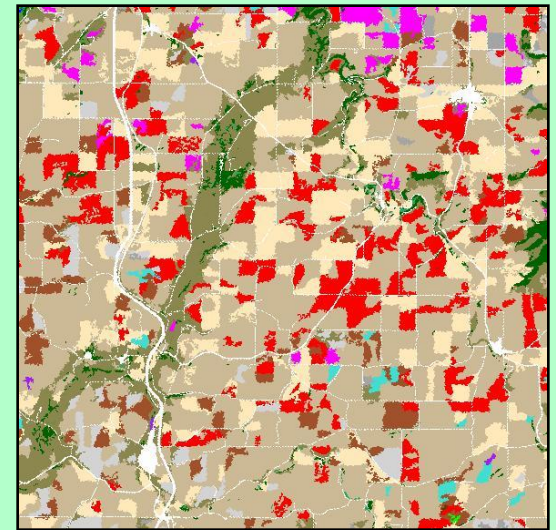
- Polish
 - 20 acre minimum mapping unit works best
- Overlay non agricultural classes with those from ancillary data
 - For example: National Land Cover Dataset



Original



Polished



Ancillary added

Florida Cropland Data Layer Error Matrix

B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	Reference													
	Corn	Cotton	Sorghum	Soybeans	Peanuts	WW/Rye/	Other Cr	Sugarcane	Waterm	Grass/Pa	Citrus	Totals	User Accuracies	
Corn	41386	21	0	1	14	71	6	0	98	7727	275	49599	83.441	
Cotton(Upla	73	96224	0	97	453	598	47	0	13	4733	0	102238	94.118	
Sorghum	12	0	2592	0	0	0	0	0	0	21	0	2625	98.743	
Soybeans	33	35	0	17624	39	50	6	0	0	155	0	17942	98.228	
Peanuts	155	966	1	27	148665	201	135	0	357	3541	123	154171	96.429	
WW/Rye/Oa	69	150	9	9	135	69652	3277	0	0	1052	0	74342	93.691	
Other Crop_	1473	0	2618	0	0	0	4313	1	0	1306	26575	36286	11.886	
Sugarcane	134	0	0	0	0	0	1474	56013	0	0	4108	61729	90.74	
Watermelon	0	3	0	0	46	50	382	0	6812	43	0	7336	92.857	
Grass/Pastu	696	810	116	296	2356	5528	9713	428	1771	729996	454562	1E+06	60.517	
Citrus	0	0	0	0	0	0	12	0	3	525	2055068	2E+06	99.974	
Sum Classif	44031	98209	5336	18054	151708	76150	19365	56442	9054	749099	2540711	4E+06		
Accuracies	93.993	97.979	48.5757	97.618256	97.9942	91.46684	22.2721	99.23993	0.75237	97.4499	80.8855		0.8567	
	Producer Accuracies											Agriculture Accuracy (NLCD) not included		

User's Accuracies

Table 1: User's Accuracies

Corn	83.42%
Cotton (Upland)	94.12%
Sorghum	98.74%
Soybeans	98.29%
Peanuts:	96.43%
Winter Wheat/Rye/Oats/Millet	93.69%
Other Crop	11.89%
Watermelon/Other Fruit	92.86%
Grass/Pasture	60.50%
Sugarcane:	90.74%
Citrus	99.97%

User Accuracies indicate the probability that a pixel from the CDL classification actually matches the ground truth data and measures errors of commission.

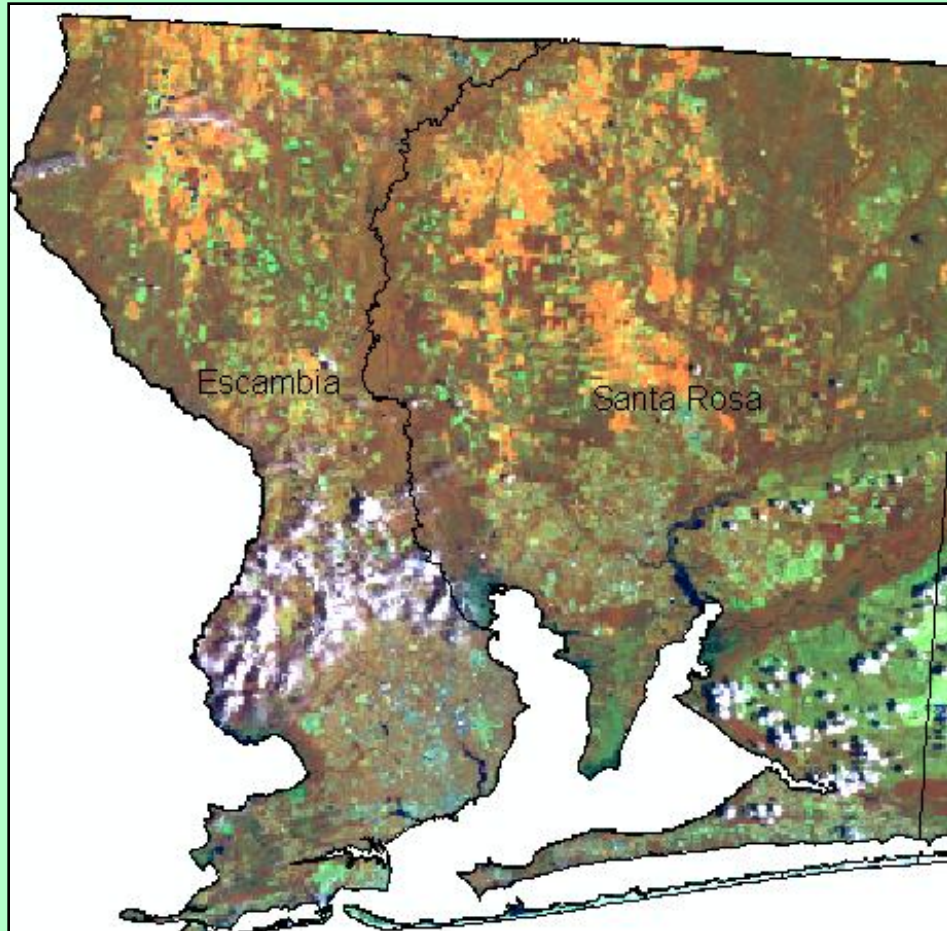
Producer's Accuracies

Table 2: Producer's Accuracies

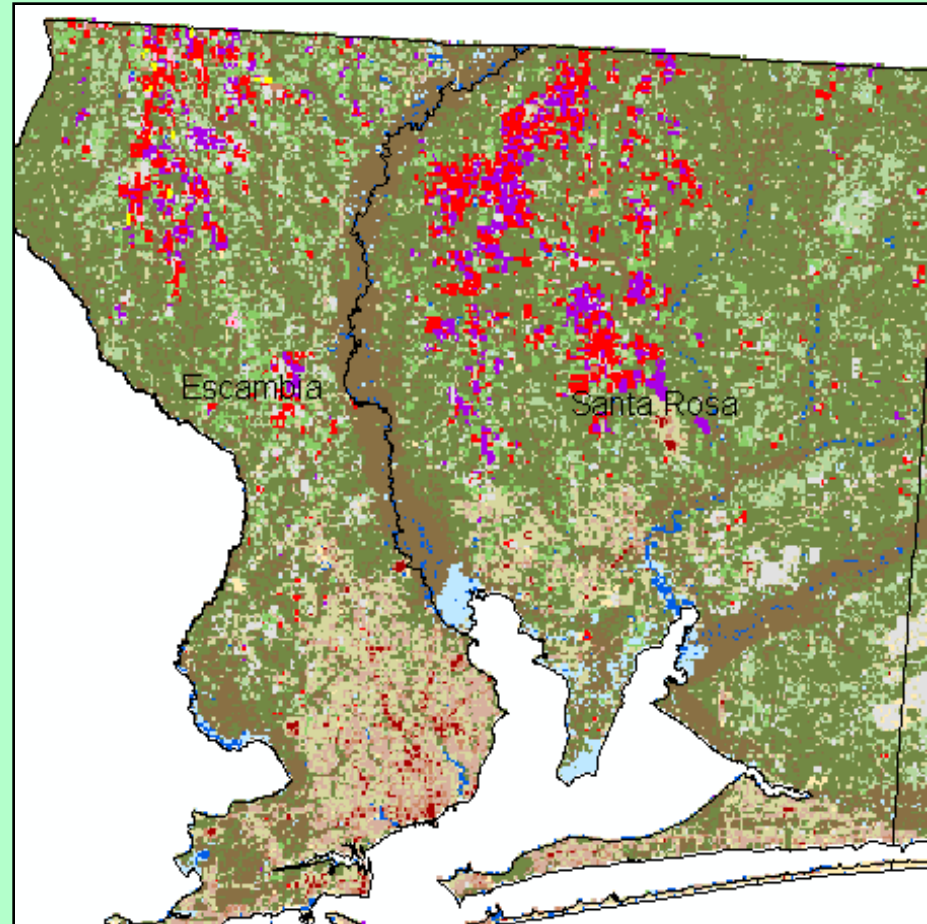
Corn	93.99%
Cotton (Upland)	97.98%
Sorghum	45.58%
Soybeans	97.62%
Peanuts:	97.99%
Winter Wheat/Rye/Oats/Millet	91.47%
Other Crop	22.27%
Watermelon/Other Fruit	75.24%
Grass/Pasture	97.45%
Sugarcane:	99.24%
Citrus	80.89%

Producer's accuracies relate to the probability that a ground truth pixel will be correctly mapped and measures errors of omission.

Santa Rosa and Escambia Counties

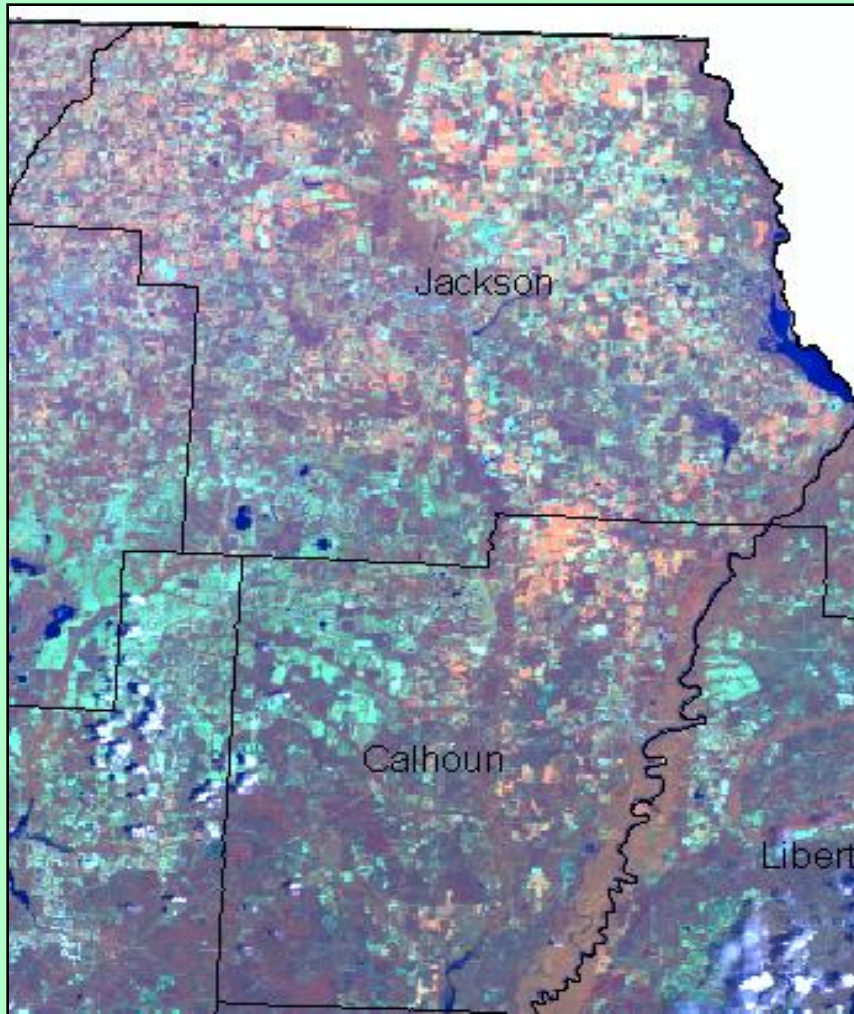


Raw Landsat TM Imagery Bands 4,5,3

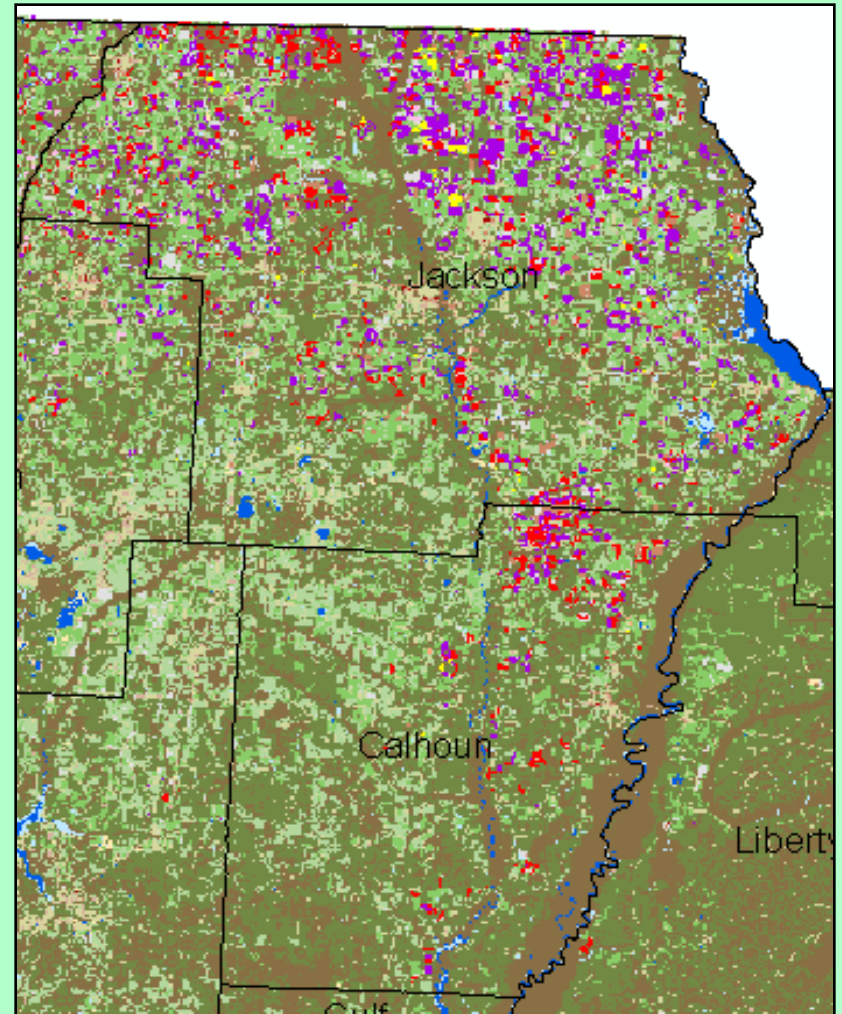


**Florida CDL Zoom
of Santa Rosa and Escambia Counties**

Jackson and Calhoun Counties

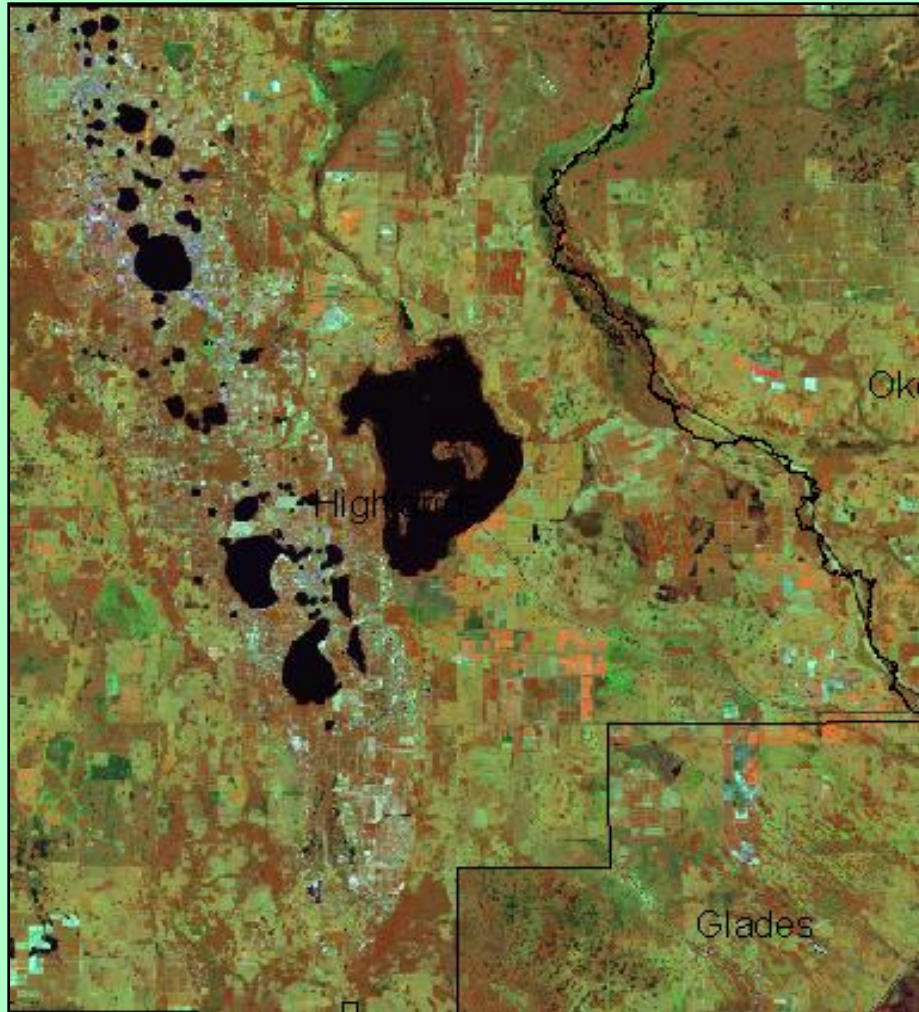


Raw Landsat TM Imagery Bands 4,5,3

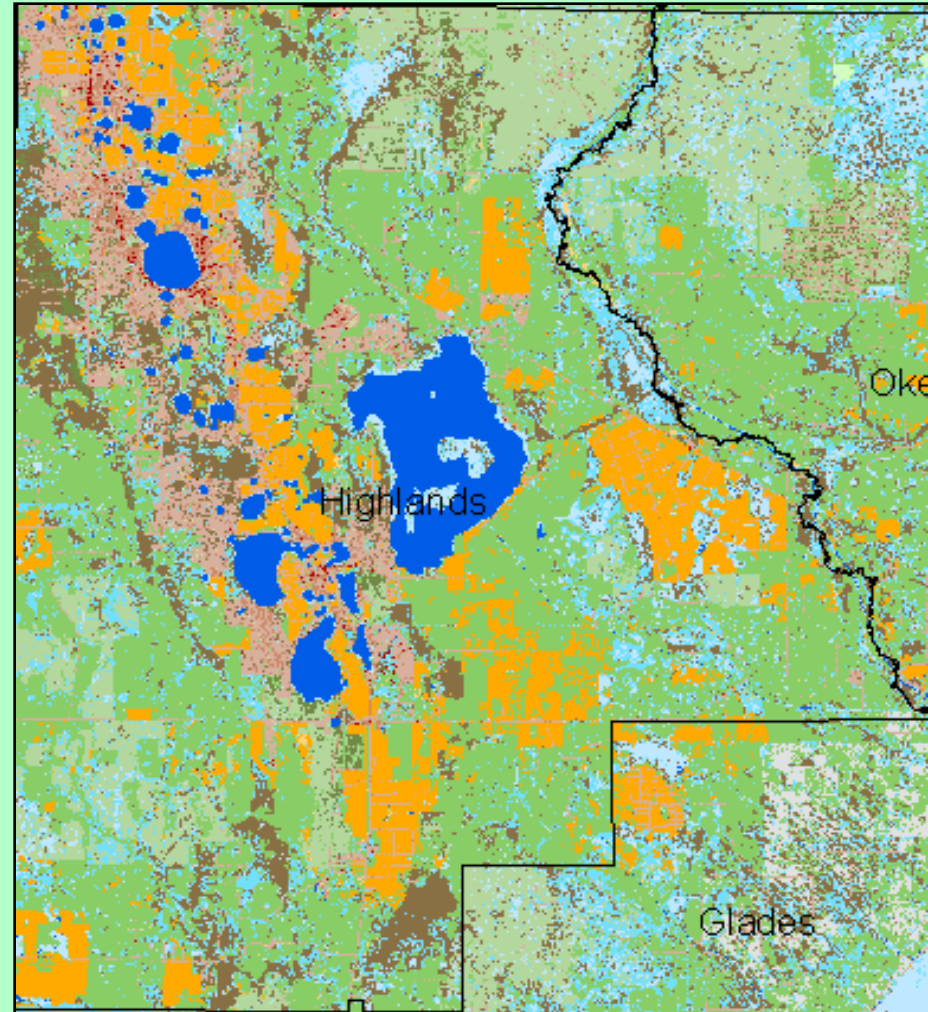


Florida CDL Zoom
of Jackson and Calhoun Counties

Highlands County































Raw Landsat TM Imagery Bands 4,5,3

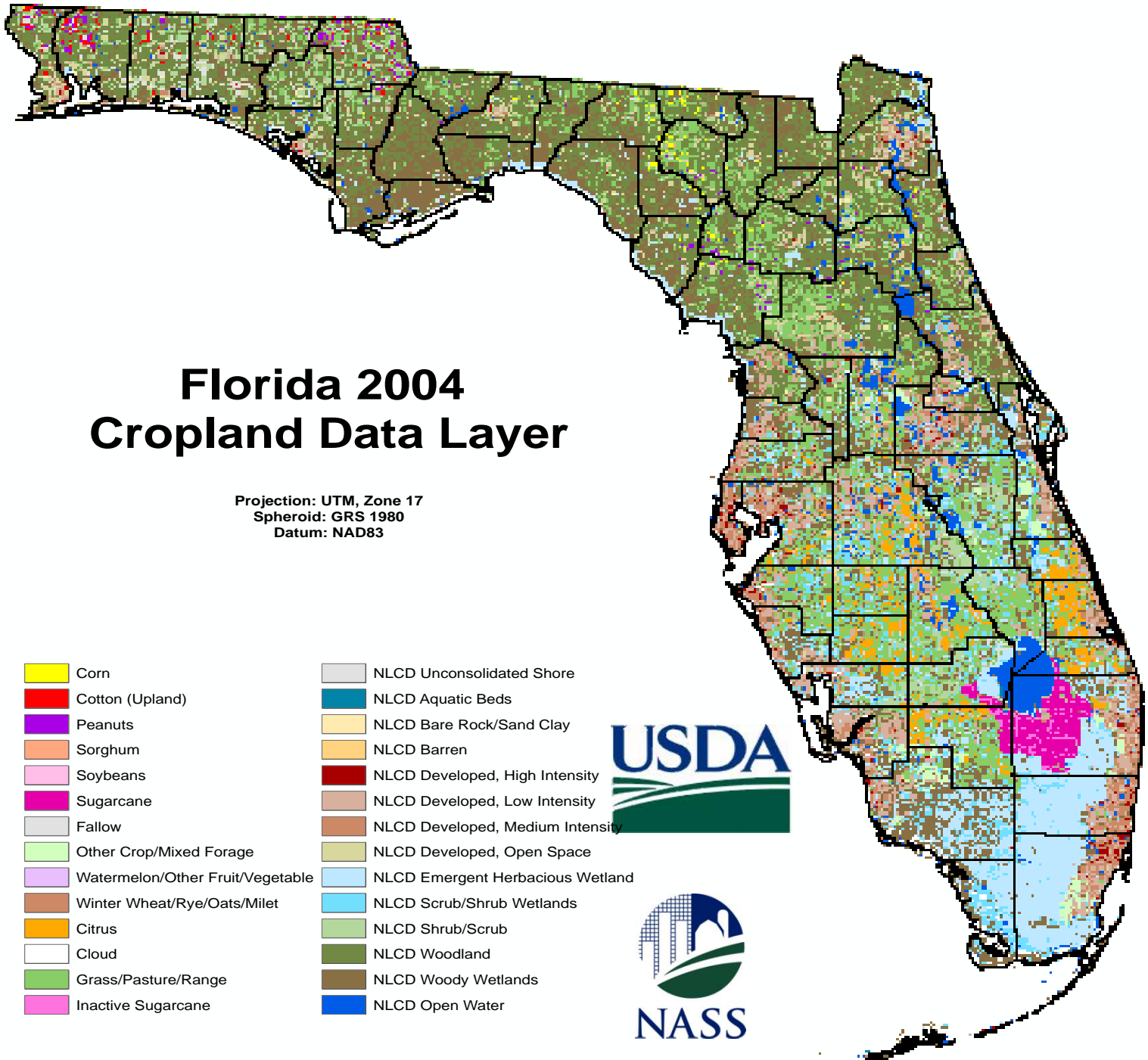


Florida CDL Zoom of Highlands County

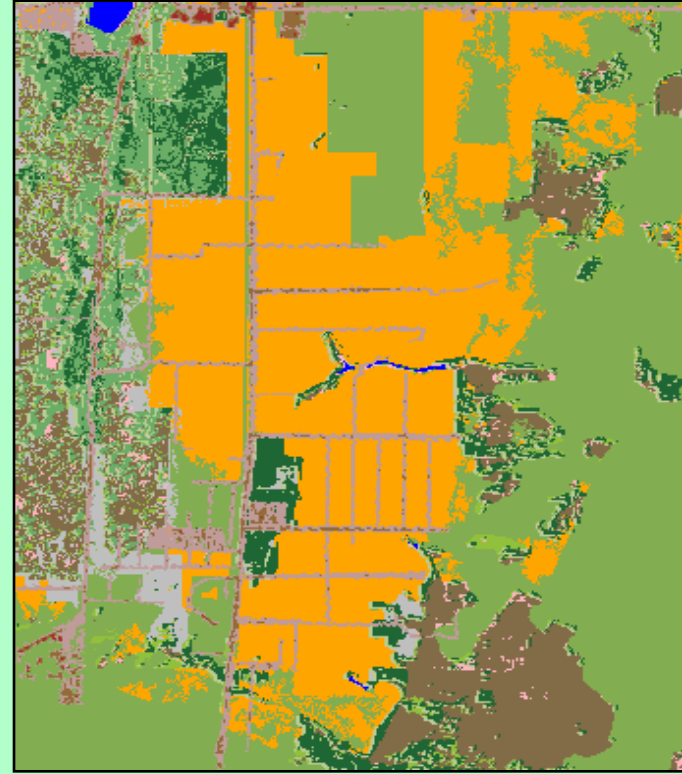
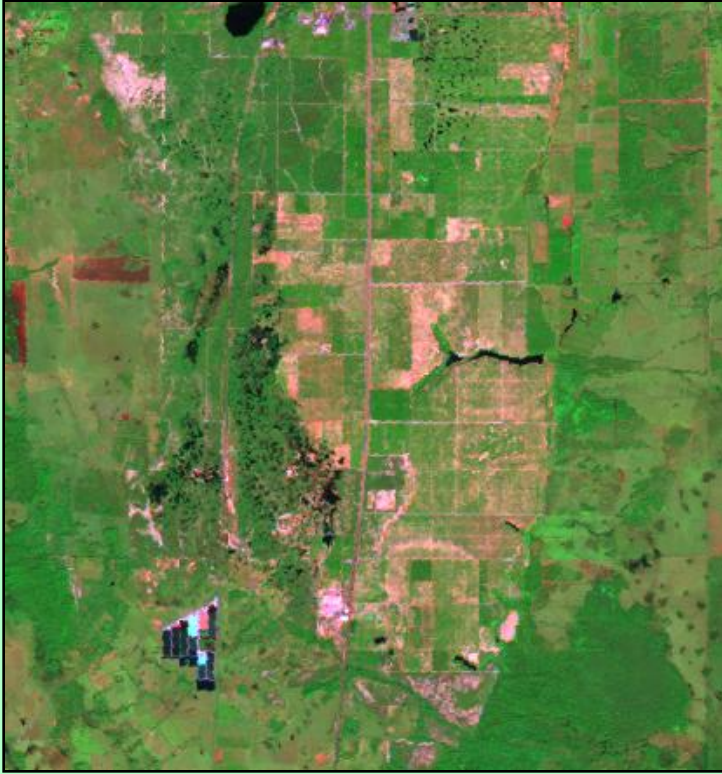
Florida 2004 Cropland Data Layer

Projection: UTM, Zone 17
Spheroid: GRS 1980
Datum: NAD83

- | | |
|--|--|
|  Corn |  NLCD Unconsolidated Shore |
|  Cotton (Upland) |  NLCD Aquatic Beds |
|  Peanuts |  NLCD Bare Rock/Sand Clay |
|  Sorghum |  NLCD Barren |
|  Soybeans |  NLCD Developed, High Intensity |
|  Sugarcane |  NLCD Developed, Low Intensity |
|  Fallow |  NLCD Developed, Medium Intensity |
|  Other Crop/Mixed Forage |  NLCD Developed, Open Space |
|  Watermelon/Other Fruit/Vegetable |  NLCD Emergent Herbacious Wetland |
|  Winter Wheat/Rye/Oats/Millet |  NLCD Scrub/Shrub Wetlands |
|  Citrus |  NLCD Shrub/Scrub |
|  Cloud |  NLCD Woodland |
|  Grass/Pasture/Range |  NLCD Woody Wetlands |
|  Inactive Sugarcane |  NLCD Open Water |



Thank You



Claire Boryan, Geographer
USDA/NASS/RDD/SARS

www.datagateway.nrcs.usda.gov

