

# *Selection of Multi-Temporal Scenes for the Mississippi Cropland Data Layer, 2004*

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# The Cropland Data Layer in Mississippi

- **Based on USDA/NASS programs started in the 1970s and the LARSYS software from Purdue University.**
- **Mississippi project started in 1999 using the Peditor and RSP software programs of NASS**
- **A cooperative project of NASS, Mississippi State University, and the Mississippi Department of Agriculture and Commerce**

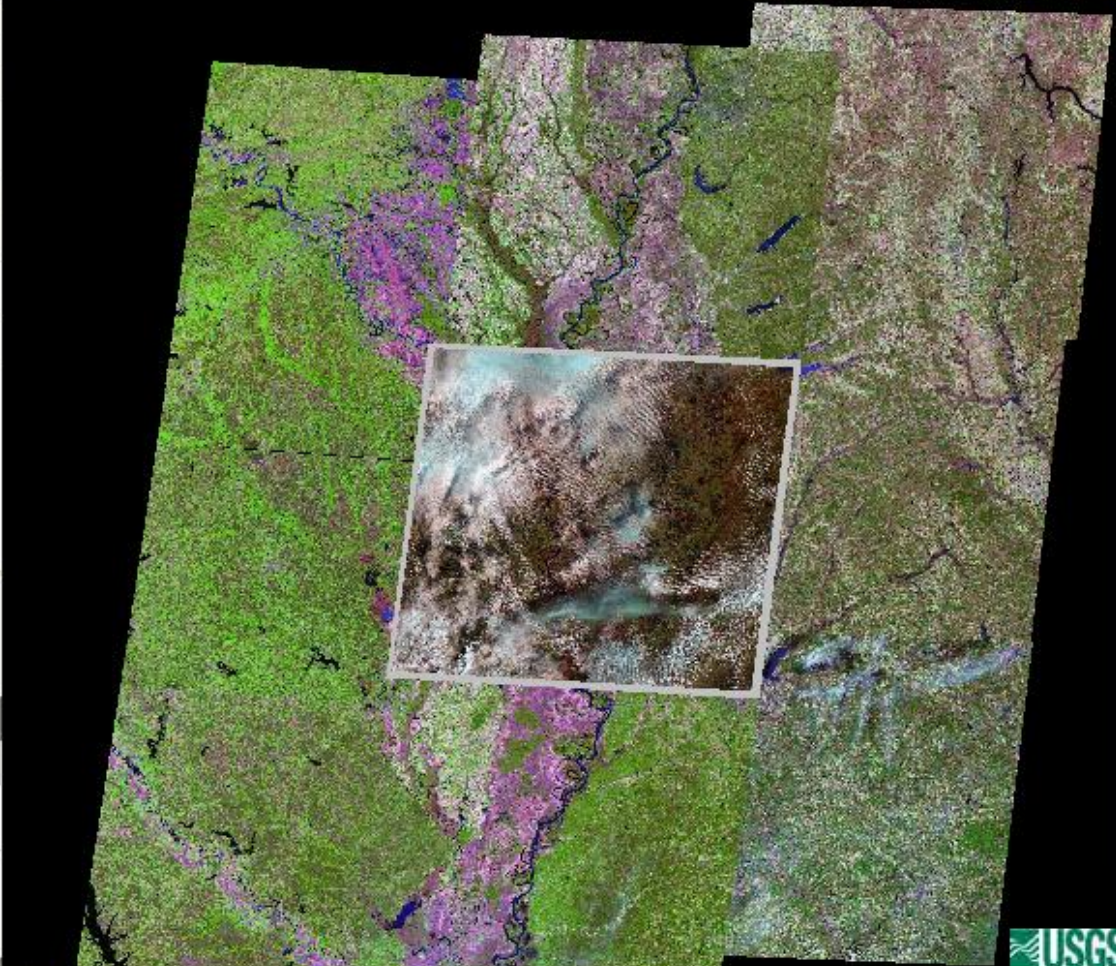
# Data Collection for the MS 2004 Cropland Data Layer

- **June Agricultural Survey Area Frame sample selection of 356 segments by strata, generally 1 square mile per segment.**
- **June Agricultural Survey field observations.**
- **Landsat 5 satellite imagery scenes with little or no clouds.**

# Clouds, March 3, 2004

USGS Global Visualization Viewer

Sensor Resolution Map Layers Tools Help



WRS-2 Path/Row: 23 37 Go  
Lat/Long: 33.2 -90.9 Go

Max Cloud: 100% [Left Arrow] [Up Arrow] [Down Arrow] [Right Arrow]

Scene Information:  
ID: 5023037000406310  
Cloud Cover: 60%  
Date: 2004/3/3

Mar 2004 Go  
Prev Scene Next Scene

Landsat 4-5 TM Scene List

Add Delete Order

USGS

start USGS Global Visualiza... USGS Global Visualiza... M:\HySnapDX 3:47 PM



# The MS Delta, April 4, 2004

**USGS Global Visualization Viewer**

Sensor Resolution Map Layers Tools Help

WRS-2 Path/Row: 23 37 Go  
Lat/Long: 33.2 -90.9 Go

Max Cloud: 100% [Left Arrow] [Up Arrow] [Down Arrow] [Right Arrow]

**Scene Information:**  
ID: 5023037000409510  
Cloud Cover: 0%  
Date: 2004/4/4

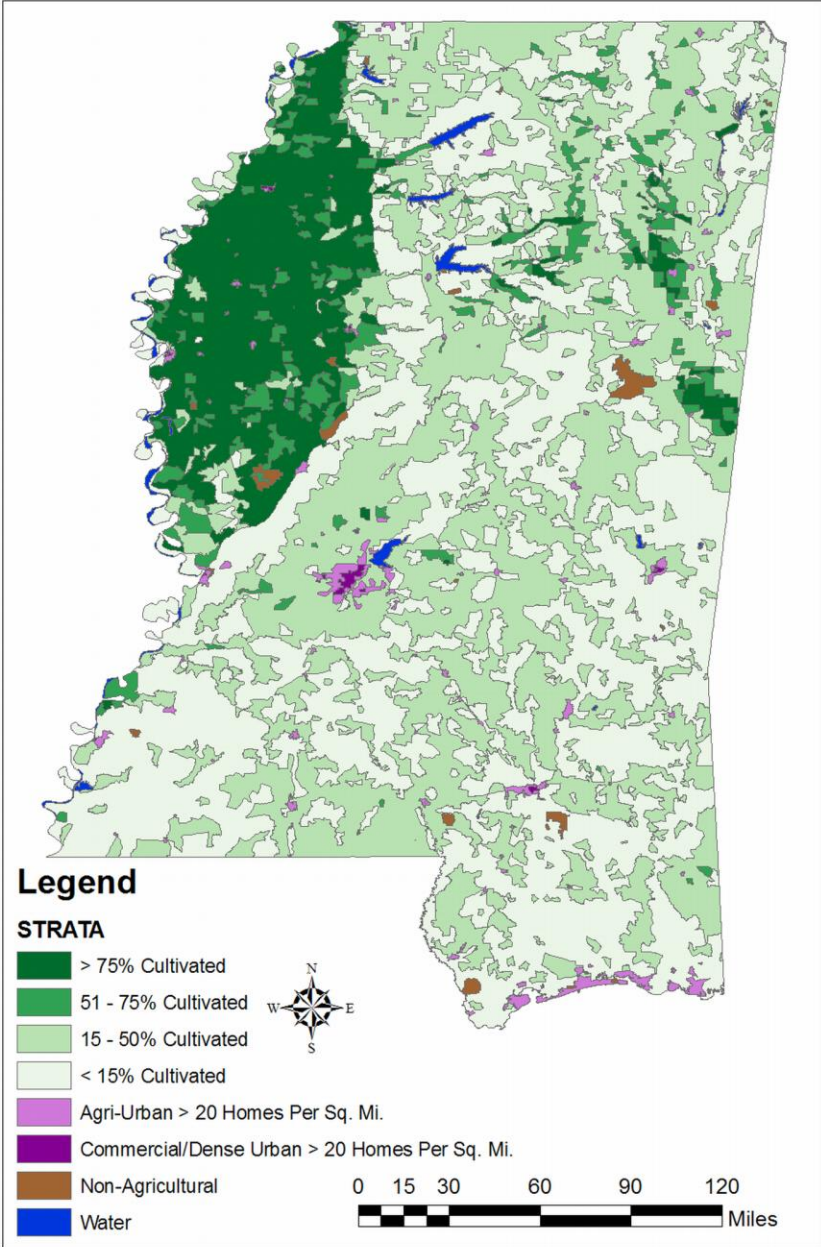
Apr 2004 Go  
Prev Scene Next Scene

**Landsat 4-5 TM Scene List**

Add Delete Order

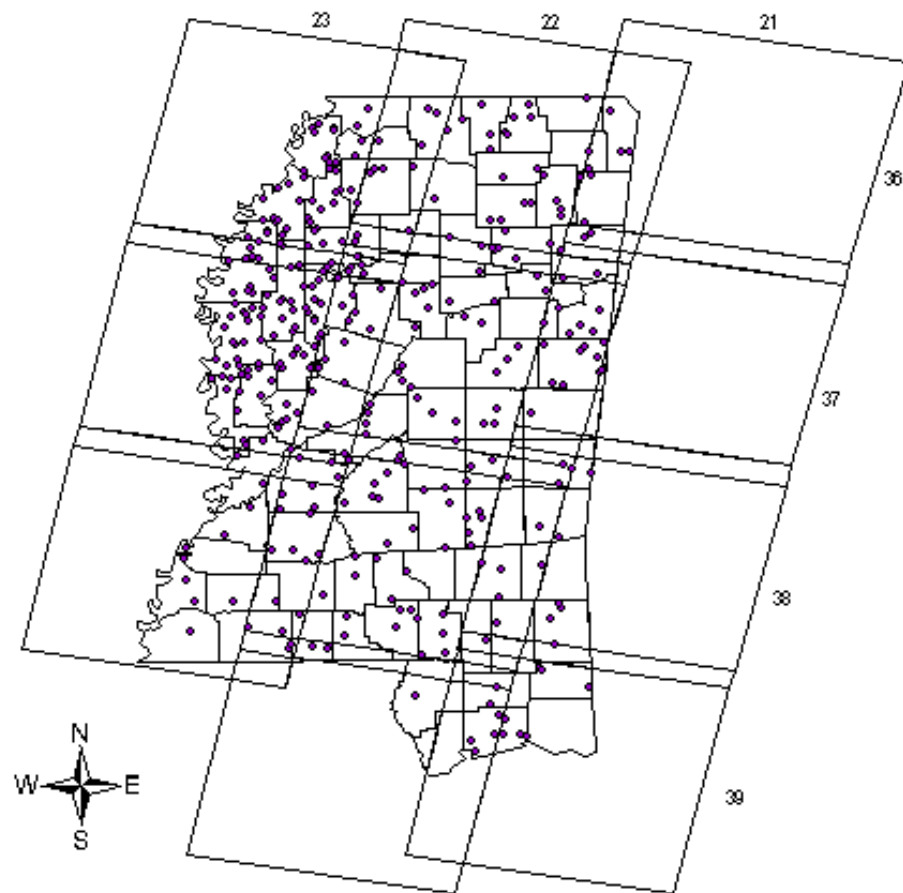
start | USGS Global Visualiza... | USGS Global Visualiza... | M:\HySnapDX | 3:44 PM

# June Agricultural Survey Segment Selection



# Mississippi Data Collection

## Landsat Path/Row Scenes and 2004 Segments



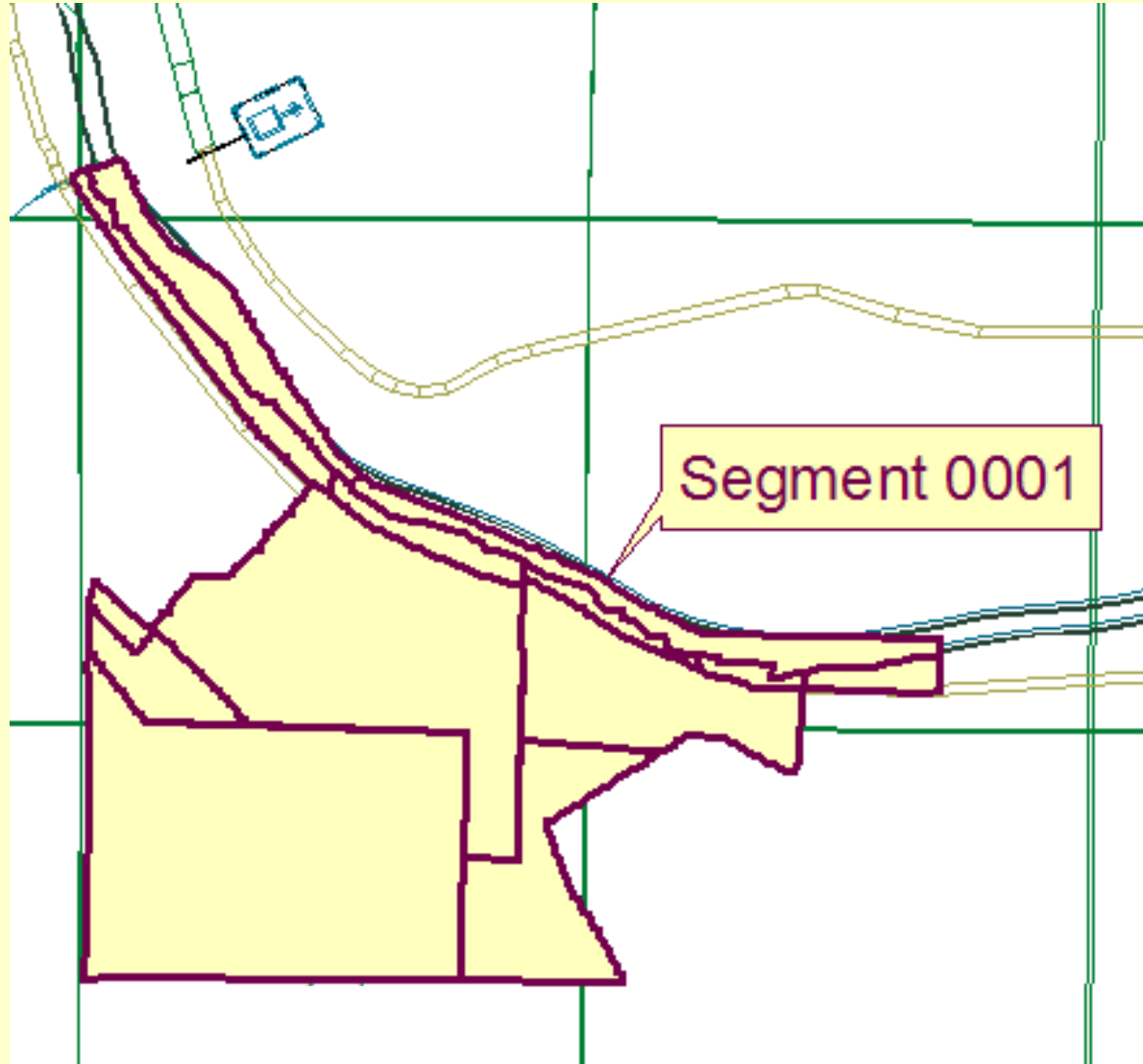
### Legend

- Scenes
- MS 2004 segs

Map by Dr. Fred Shore, 4/29/04



# Segment Locator Map and Field Locations





# Scene Selection for MS 2004

(Possible Delta ADs Shown in Red)

Analysis District    Primary Scene    Secondary Scene

AD01		
	23360-40404	23360-40506
	23370-40404	23370-40506
	23380-40404	23380-40506
AD02		
	21360-40406	21360-40508
	21370-40406	21370-40508
	21380-40406	21380-40508
	21390-40406	21390-40508
AD06		
	23360-40927	23360-40404
	23370-40927	23370-40404
	23380-40927	23380-40404
AD07		
	22360-40920	
	22370-40920	
	22380-40920	
	22390-40920	
AD08		
	23360-40506	23360-40927
	23370-40506	23370-40927
	23380-40506	23380-40927

# Multi-Temporal Crop Signatures

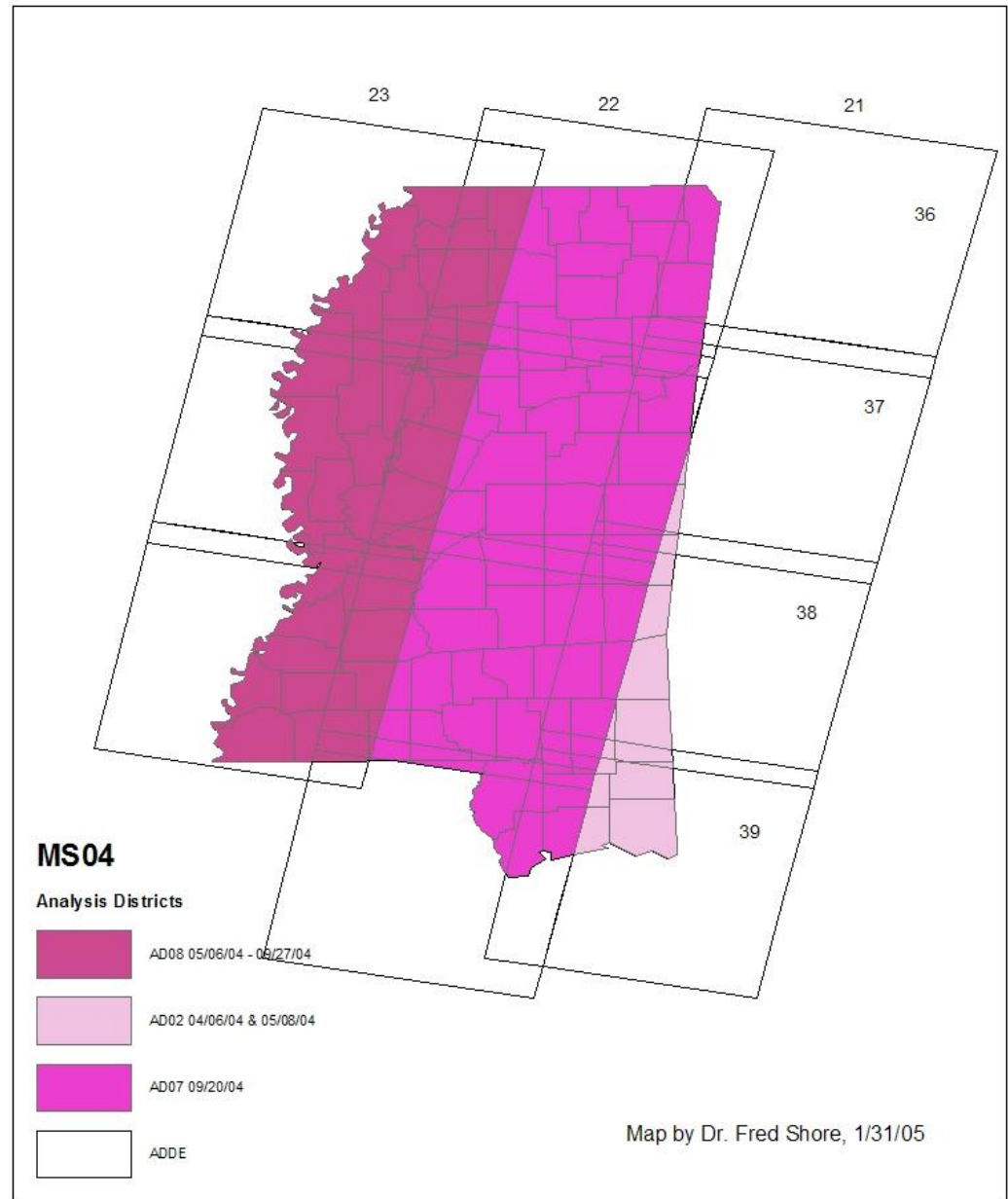
- **Computer processing using Peditor and RSP.**
- **Use of two Landsat 5 scenes of different dates with 7 bands each.**
- **Use of the ground truth data.**
- **Clustering the crop signatures and training the classifier.**
- **Comparison of statistics of 3 possible analysis districts to select the best classification for the MS Delta.**

# Multi-Temporal Classification Statistics to Select the Analysis District for the MS Delta, 2004

Analysis District	Dates	Percent Correct (%)				Commission Error (%)		
		<i>Overall</i>	<i>Cotton</i>	<i>Soybeans</i>	<i>Rice</i>	<i>Cotton</i>	<i>Soybeans</i>	<i>Rice</i>
AD01	4/4/2004 and 5/6/2004	81.87	85.78	89.96	94.13	5.08	6.50	27.97
AD06	9/27/2004 and 4/4/2004	80.92	94.61	81.19	96.68	5.79	3.30	22.53
AD08	5/6/2004 and 9/27/2004	85.99	97.19	95.61	90.16	3.23	3.24	13.21

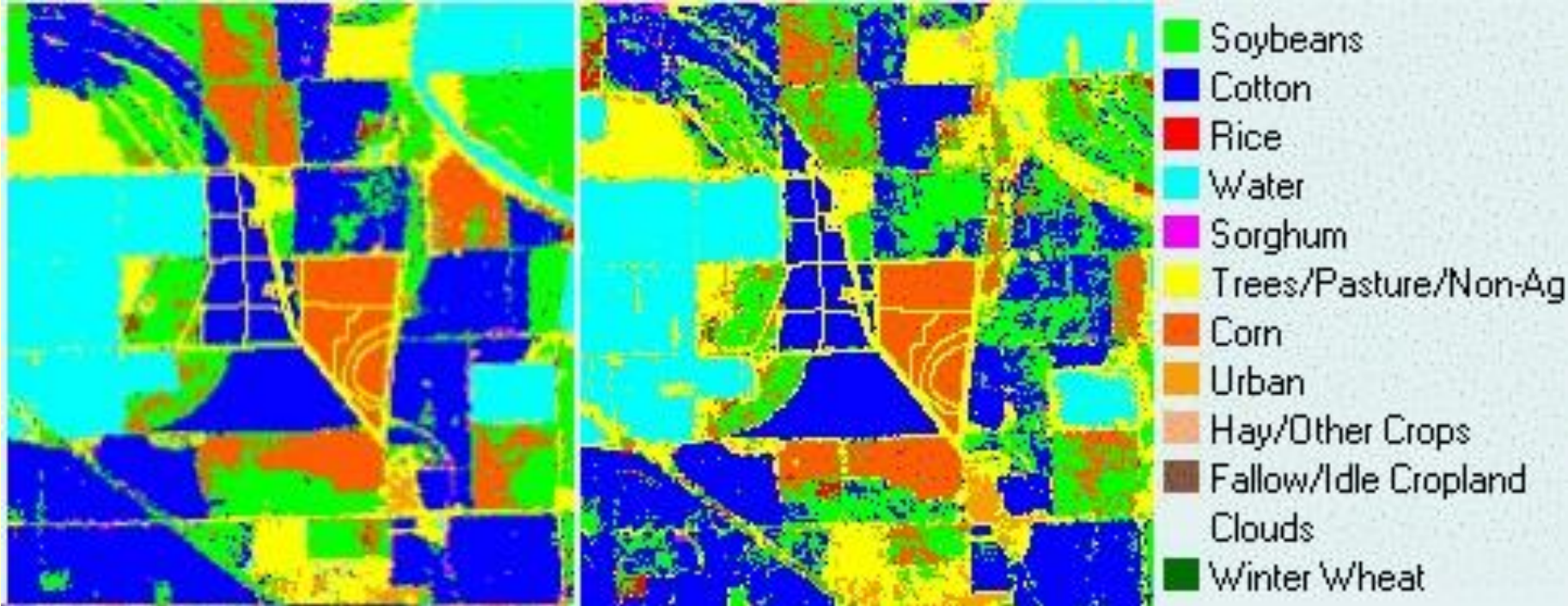
# Image Processing for MS CDL, 2004

## MS04 Analysis Districts, 2004





# Multi-Temporal Field Classification Comparison



AD08

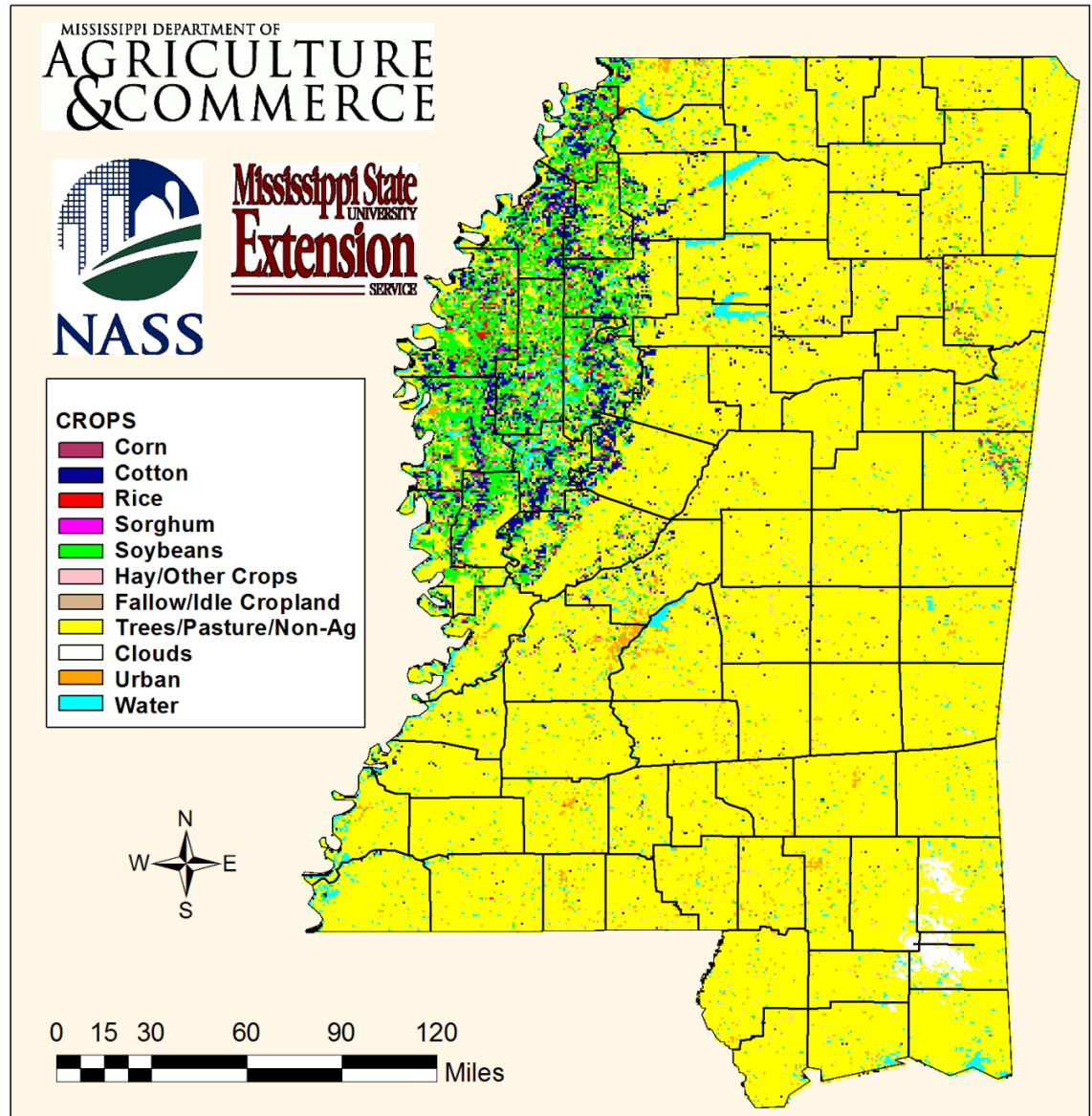
AD06

Legend

## Mississippi Cropland Data Layer, 2004

# The Mississippi Cropland Data Layer, 2004

Release Date, July 2005



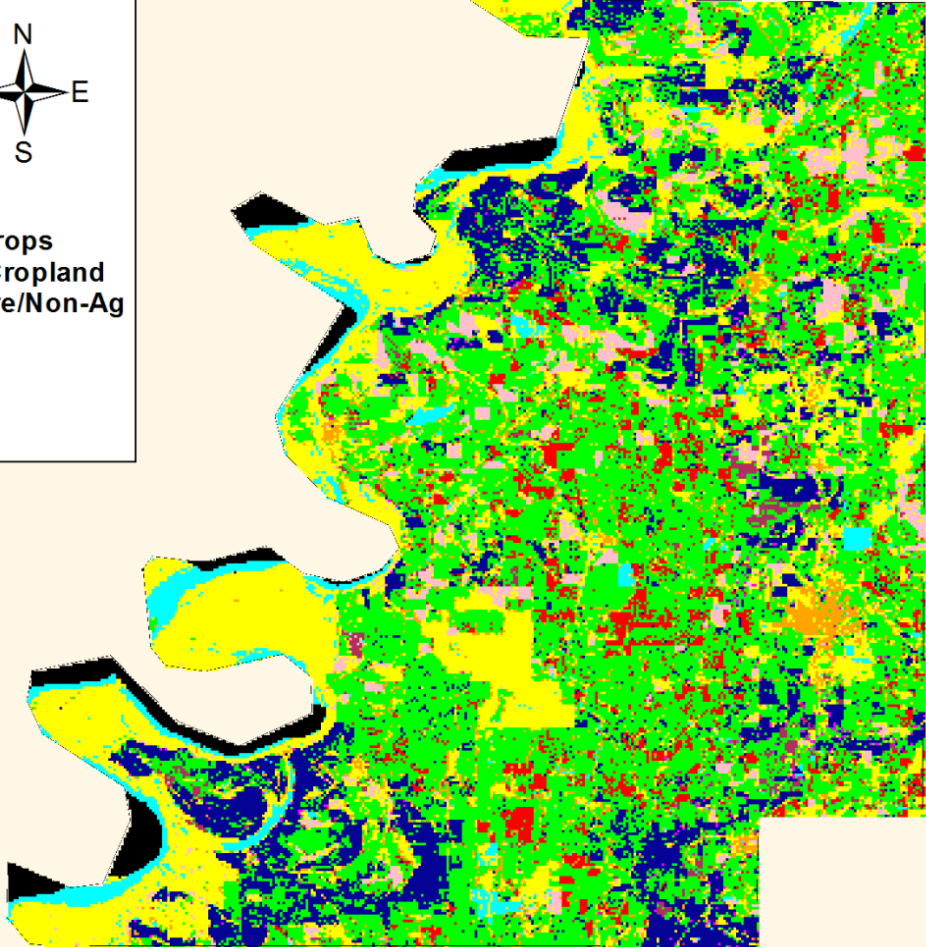

# Bolivar County, Mississippi Cropland Data Layer, 2004

# Bolivar County Cropland Data Layer, 2004

Release Date, July  
2005

**CROPS**

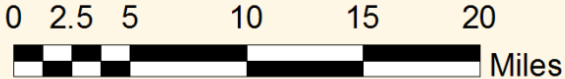
- Corn
- Cotton
- Rice
- Sorghum
- Soybeans
- Hay/Other Crops
- Fallow/Idle Cropland
- Trees/Pasture/Non-Ag
- Clouds
- Urban
- Water



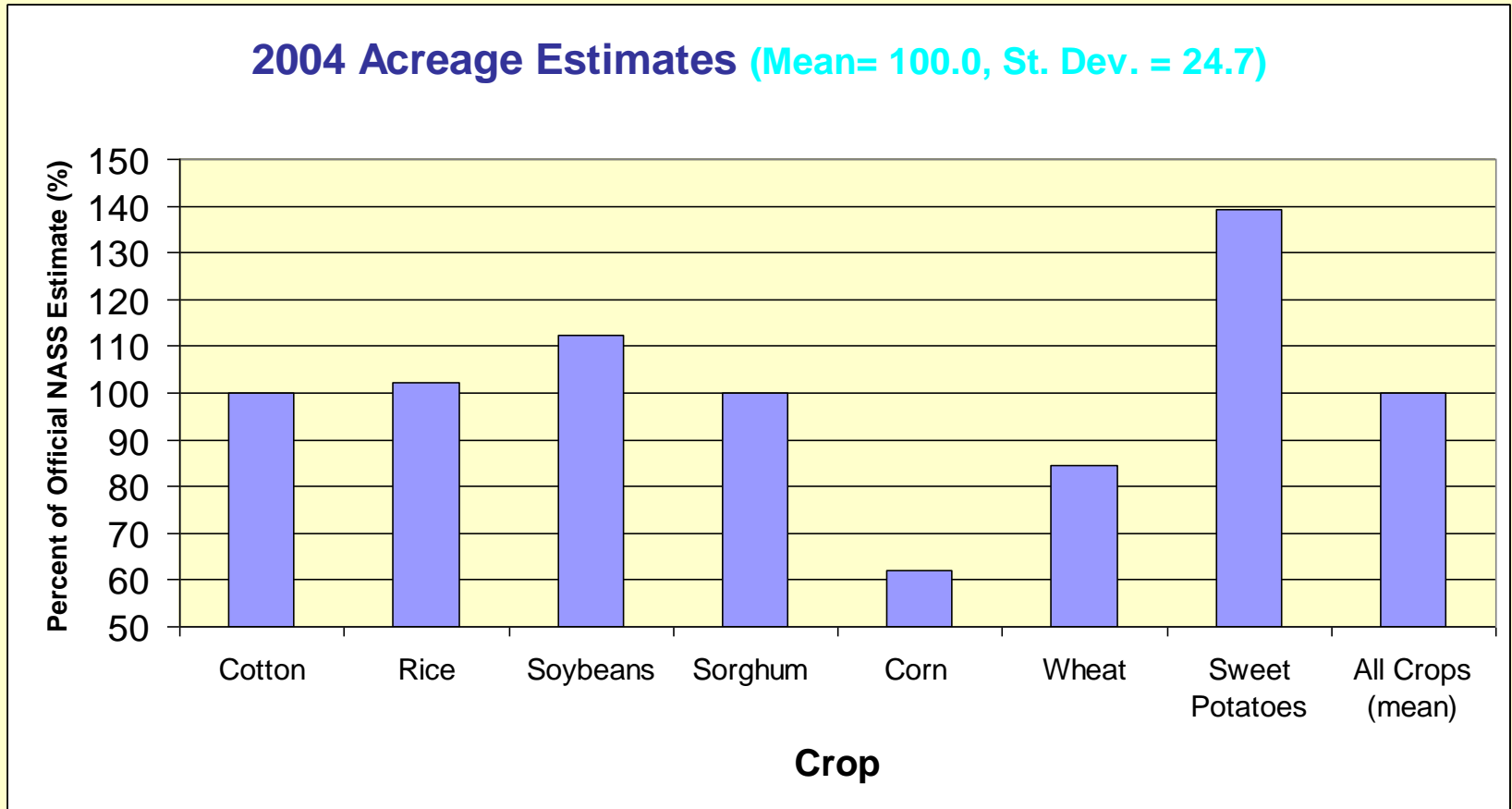
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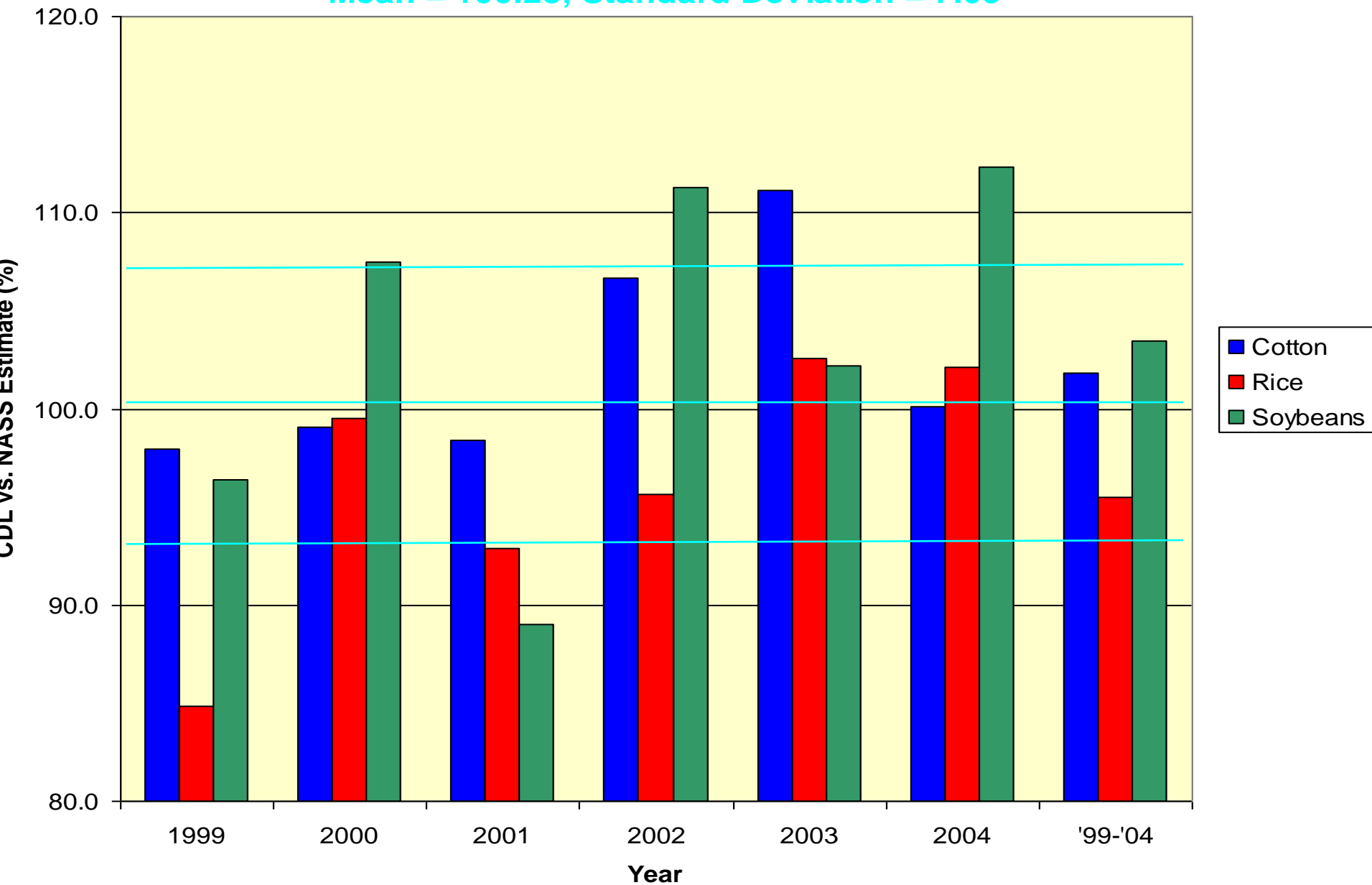


# Mississippi State-Wide Cropland Data Layer Acreage Estimation Results, 2004





Mississippi Major Crop Estimates, 1999-2004  
Cropland Data Layer Value as Percent of the Official Estimate  
Mean = 100.28, Standard Deviation = 7.09



# Multi-Temporal Classification Results

## Mississippi Cropland Data Layer 2004

### Multi-Temporal Strategies

- Three multi-temporal strategies were tested for the MS Delta region.
- The date combination selected for the multi-temporal administrative district gave superior definition for the classified map and better classification statistics overall.

# Multi-Temporal Classification Results

## Mississippi Cropland Data Layer 2004

### Acreage Estimates

- The 2004 CDL acreage estimates for the major crops were consistent with previous years with 2 crops essentially in agreement with the NASS Official Estimates.
- Very early (wheat and corn) and late (sweet potatoes) crops showed less agreement, indicating the importance of the satellite scene dates.