Early Season Remote Sensing Based Acreage Estimates

Rick Mueller
Pecora 17 Conference
11/19/2008
Cropland Data Layer (CDL)

• Annual ag-centric land use/land cover update
  – Statistically driven
  – Census by Satellite

• Major program crop focus
  – Updated multiple times throughout growing season

• Deliver in-season acreage estimates
  – Via continuously updated ground truth
  – Via continuously updated satellite imagery
CDL Program

• Inputs
  – Resourcesat-1 AWiFS imagery
  – Farm Service Agency – Common Land Unit
  – NASS June Ag Survey
  – Ancillary data
    • NLCD & derivative products
  – Commercial software suite

• Outputs
  – Acreage Estimates
  – Cropland Data Layer
CDL Program Priorities

Speculative Corn States
Speculative Soybean States
Speculative Wheat States
Speculative Cotton States

2008 CDL Coverage
CDL Production Schedule

- Crop Production Report
  - CDL all crops
- Crop Acreage Report
  - CDL winter wheat
- Small Grains Annual Summary
  - CDL small grains
- Historical:
  - Crop Production Annual Summary
  - CDL all crops/county estimates
## Current CDL Coverage

<table>
<thead>
<tr>
<th>Commodity</th>
<th>CDL States</th>
<th>US Total Acres (mill)</th>
<th>% US Total</th>
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<td>78,177</td>
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<td>Soybeans</td>
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<td>Cotton</td>
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## CDL States and Commodities

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<th>Corn</th>
<th>Soybeans</th>
<th>Winter Wheat</th>
<th>Cotton</th>
<th>Spring Wheat</th>
<th>Rice</th>
<th>Sorghum</th>
<th>Sugar-beets</th>
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<th>Dry Beans</th>
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CDL Program Estimation

- **State level/large domain**
  - Classification accuracy
  - Apply regression equations to population level classified pixel counts within area frame land use strata
  - Sum across strata

- **County level/small domain**
  - Battese-Fuller approach
    - Incorporate an additional term that accounts for cc
      - Pixel count ~ biased
        - Not subject to sampling error ~ census
        - Nonsampling error due to pixel misclassification

- **Provide timely, accurate, useful indications**
  - Measurable error
  - Unbiased/independent estimator
  - Update planted area
USDA Corrects October Crop Acreage Estimates

WASHINGTON, Oct 28, 2008 – The U.S. Department of Agriculture today adjusted its official October acreage and production estimates for six field crops. USDA revised the numbers after discovering discrepancies in a Farm Service Agency (FSA) database of producer-reported crop acreage used by the National Agricultural Statistics Service (NASS). NASS published the changes this morning in a corrected version of the Oct. 10 Crop Production. The World Agricultural Outlook Board also issued an abbreviated World Agricultural Supply and Demand Estimates (WASDE) report reflecting the acreage updates.

This morning’s crop report includes changes to acreage and production estimates for corn, soybeans, sorghum, canola, sunflowers and dry edible beans. The revisions will have no impact on crop support payments to farmers.

Overstated soybean acres by 1.1 million acres
Overstated corn acres by 800,000 acres
Overstated canola, sunflowers & dry edible beans
Understated sorghum acres by 200,000 acres

CDL Summary

- Statistically robust program method
- Annual ag-centric land use/land cover update
- Major program crop focus
- Derive in-season acreage estimates

- Available via Geospatial Data Gateway
  - Post official county estimates release
Thank you!