Cropland Area Monitoring Program at the National Agricultural Statistics Service

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USDA NASS
Collapsed harvested area of major US crops for 2013
Cropland Data Layer 2012
Agriculture by crop type and location

A sample:
- Yellow: Corn
- Brown: Winter Wheat
- Blue: Rice
- Green: Soybeans
- Red: Cotton
- Pink: Alfalfa
|   | Crop       | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 |
| 1 | Corn       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2 | Cotton     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3 | Rice       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4 | Sorghum    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 5 | Soybeans   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6 | Sunflower  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 7 | Peanuts    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 8 | Tobacco    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 9 | Sweet Corn |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|10 | Pop. or Orn. Corn |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|11 | Mint       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|12 | Barley     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|13 | Durum Wheat |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|14 | Winter Wheat |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|15 | Other Small Grains |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|16 | Dbl. Crop WinWht/Soy |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|17 | Rye        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|18 | Oats       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|19 | Millet     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|20 | Speltz     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|21 | Canola     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|22 | Flaxseed   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|23 | Safflower  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|24 | Rape Seed  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|25 | Mustard    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|26 | Alfalfa    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|27 | Other Hay  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|28 | Camelina   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

**Crop Categories**

1. Corn
2. Cotton
3. Rice
4. Sorghum
5. Soybeans
6. Sunflower
7. Peanuts
8. Tobacco
9. Sweet Corn
10. Pop. or Orn. Corn
11. Mint
12. Barley
13. Durum Wheat
14. Winter Wheat
15. Other Small Grains
16. Dbl. Crop WinWht/Soy
17. Rye
18. Oats
19. Millet
20. Speltz
21. Canola
22. Flaxseed
23. Safflower
24. Rape Seed
25. Mustard
26. Alfalfa
27. Other Hay
28. Camelina
29. Corn - Non-Irrigated
30. Soybean - Non-Irrigated
31. WinWht - Non-Irrigated
32. Citrus
33. Other Tree Nuts
34. WinWht/Corn
35. Oats/Corn
36. Other Tree Fruits
37. Lettuce/Cantaloupe
38. Lettuce/Upland Cotton
2013 Cropland Data Layer Inputs

Satellite Imagery – Deimos-1 & UK2

Satellite Imagery – Landsat 8

Farm Service Agency: Common Land Unit

2006 USGS NLCD & Derivative products
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

CROP ACREAGE ESTIMATES

LINEAR REGRESSION

CLASSIFICATION

Major Land Cover Categories (by decreasing acreage)

Agriculture
- Pasture/Grass
- Corn
- Soybeans
- All Wheat
- Other Hay

Non-Agriculture
- Fallow Cropland
- Vegetables/Fruits/Nuts
- Other Small Grains
- Rice

Woodland
- Shrubland
- Urban/Developed
- Wetlands
- Water

Linear Regression

Reported = 2.34 + 0.029*Classified
r² = 0.948

Outliers
CDL Generalities

- Annual land cover classification targeted to identifying *circa* summer cultivated crops
- Encompasses all of conterminous USA (since 2008)
- 56m or 30m resolution
  - Depending on year; 30m since 2010
- Built with a supervised boosted classification tree methodology
  - Implemented with See 5.0
- Utilizes ground/training data from USDA Farm Service data
  - Ancillary data from National Land Cover Database
- Highly robust for dominant crop types
  - corn, soybeans, wheat, rice, cotton, etc.
- Used internally by NASS to estimate planted acreage amounts
CDL 2013

# of CDLs scheduled

Crops Estimated

- Corn
- Soybeans
- Peanuts
- Barley
- Sugar beets
- Dry beans
- Sunflower
- Rice
- Alalfa
- Canola
- Flaxseed
- Winter wheat
- Durum wheat
- Spring wheat
- Cotton
- Sugarcane
- Tobacco
- Sorghum
- Potatoes
**SECTION D - CROPS AND LAND USE ON TRACT**

How many acres are inside this blue tract boundary drawn on the photo (map)?

Now I would like to ask about each field inside this blue tract boundary and its use during 2000.

<table>
<thead>
<tr>
<th>FIELD NUMBER</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Total acres in field</td>
<td>828</td>
<td>828</td>
<td>828</td>
<td>828</td>
<td>828</td>
</tr>
<tr>
<td>2 Crop or land use [Specify]</td>
<td>787</td>
<td>787</td>
<td>787</td>
<td>787</td>
<td>787</td>
</tr>
<tr>
<td>3 Occupied forested or non-forested</td>
<td>433</td>
<td>433</td>
<td>433</td>
<td>433</td>
<td>433</td>
</tr>
<tr>
<td>4 Vacated, unoccupied dwellings, buildings and structures, roads, ditches, etc.</td>
<td>831</td>
<td>831</td>
<td>831</td>
<td>831</td>
<td>831</td>
</tr>
<tr>
<td>5 Woodland</td>
<td>831</td>
<td>831</td>
<td>831</td>
<td>831</td>
<td>831</td>
</tr>
<tr>
<td>6 Pasture</td>
<td>842</td>
<td>842</td>
<td>842</td>
<td>842</td>
<td>842</td>
</tr>
<tr>
<td>7 Cultivated Woodland [cultivated only for pasture]</td>
<td>856</td>
<td>856</td>
<td>856</td>
<td>856</td>
<td>856</td>
</tr>
<tr>
<td>8 Idle or abandoned</td>
<td>864</td>
<td>864</td>
<td>864</td>
<td>864</td>
<td>864</td>
</tr>
<tr>
<td>9 Soybeans</td>
<td>227</td>
<td>273</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Wheat</td>
<td>337</td>
<td>541</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**REGRESSION VARIABLES:**

<table>
<thead>
<tr>
<th>Dependent</th>
<th>Independent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enumerated JAS Segments</td>
<td>CDL Classified Acres</td>
</tr>
<tr>
<td>Soybeans</td>
<td>227</td>
</tr>
<tr>
<td>Wheat</td>
<td>337</td>
</tr>
<tr>
<td>273</td>
<td></td>
</tr>
<tr>
<td>541</td>
<td></td>
</tr>
</tbody>
</table>
Reported = 5.94 + 0.95*Classified 

$R^2 = 0.890$

Classified Acres

Reported Acres

Deleted

4

3

2

Outliers

State: WA10   AD: 00    Crop: Wht_Wintr_PL

Stratum: 11  Version: v1a
Reported = \(-0.79 + 1.01 \times \text{Classified}\)

\(r^2 = 0.957\)

Arkansas - October
Rice – Stratum 11

\begin{align*}
\text{R}^2 \\
\text{Aug} &- 0.948 \\
\text{Sep} &- 0.950 \\
\text{Oct} &- 0.957
\end{align*}
CropScape

- A web service based interactive map visualization, dissemination and querying system for U.S. cropland
  - No burden on users
    - No client software development & installation
    - No special software tools needed
    - Data mashable
    - Democratization of data
  - Open access, timely delivery, and geospatial navigation
- Collaboration with George Mason University/Center for Spatial Information Science and Systems (CSISS)

http://nassgeodata.gmu.edu/CropScape
The NASS 2012 Cultivated Layer created from 2008-2012 CDL data
Questions?

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