Crop Specific Mapping Techniques with Landsat and AWiFS

Global Agricultural Monitoring: Domestic and International

Rick Mueller
USDA/National Agricultural Statistics Service
Corn: The inflation crop

The U.S. is set to report a jump in acreage planted as farmers feed the ethanol machine. One byproduct: rising food prices.

By Jeff Cox, CNNMoney.com contributing writer
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NEW YORK (CNNMoney.com) -- It's no secret that the rush to ethanol and other alternative fuels has made corn the rock star of the Farm Belt.

That newfound prominence has big implications for the nation's economy, experts say. Soaring corn prices are pushing up the tab for everything from candy to corn flakes, moribund land values have jumped in many Midwestern farming communities and the crop has become the linchpin for the budding $40 billion ethanol industry.
NASS’ Satellite Acreage Program

• Produce remote sensing based indications
  – State level in October
  – End of year for county estimates

• Unbiased statistical estimator
  – Quality a must!

• Cropland Data Layer (CDL)
  – Public domain

“Census by Satellite”
Cropland Data Layer Components

• AWiFS sensor
• Common Land Unit/578 Admin Data
  – USDA/Farm Service Agency
• ERDAS Imagine/See5
  • Image Processing/Classification
Resourcesat-1 AWiFS sensor

- 370 km swath per quad
- 740 km combined
- 56 m resolution at nadir
- 70 m resolution at scene edges
- Launched 2003
- 5 day repeat cycle
Common Land Unit/578 Admin Data
ERDAS Imagine & See5

- Derivation of decision tree classification rules
  - Boosting & Smart Eliminate
- Sampling NLCD in non-ag areas
- Ancillary datasets
  - DEM & prior CDL
- Phenological profiles with AWiFS
IA 2006 State Level Estimates +/- 2% CVs (Coefficient of Variation)

Source of Estimate
- June Ag JAS
- % Over/Under ASB Final
- IA 2006 State Level Estimates +/- 2% CVs (Coefficient of Variation)
- JAS-Peditor FSA
- FSA-See5

% Over/Under ASB Final

- Corn
- Soybeans

Source of Estimate
- June Ag
- JAS-See5
- FSA-See5-se20
Cropland Data Layer Uses

Study of climate effects on vegetation

Global irrigated area mapping

Environmental landscape analysis

Epidemiological research

Demographic research

GIS reference layer

Crop rotation analysis

Carbon cycle research

Environmental landscape analysis

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Aid in emergency operations, planning and recovery efforts for Mississippi

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Precision farming, land classification

Habitat project planning

Ecosystem Modeling

Analysis of deer habitatographic research

Soil erosion prediction

Market data analysis for land sales and appraisals

overlay with health statistics to estimate pesticide exposures

Water use estimates

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