Preparation of the USDA World Ag Supply & Demand Estimates (WASDE) Report

United States Department of Agriculture (USDA)  
Sarah Hoffman, USDA-NASS
Agenda

- History – Why does the US track Global Production?
- Overview of USDA’s Commodity Information System
- Balance sheet approach
- Detailed look at how USDA-FAS monitors and generates production estimates
Why does USDA track Global Production?

- The Soviet Grain Deals of the early 1970’s
  - USDA failed to predict an increase in import demand for U.S. grain due to crop failures in the Soviet Union (1972)
  - International merchants quietly bought up U.S. grain supplies before the prices reflected the shortage – (Asymmetrical information)
  - Embargos on U.S. exports were imposed to stabilize prices, which ran counter to farmers’ interest
  - U.S. Food inflation increase – serious social issue for the U.S.

- This led to major changes within U.S. agriculture
Changes to USDA in 1970’s

• U.S. Exports were registered for major commodities
  • “What could not be disputed was the fact that the U.S. government still lacked a clear idea of what went on in its own grain markets. That August [1973] Congress amended the Agricultural Act to establish a mandatory reporting system in the USDA” from Merchants of Grain by Dan Morgan

• One USDA number was needed
  • The agencies currently involved were doing similar work back in the 1970’s but that information was NOT coordinated sufficiently and it need to be strengthened.
  • Created the World Agricultural Outlook Board

• We will watch
  • No information on foreign agriculture will be taken Carte Blanche (we will monitor and review)

• The need for quality market information has only become greater.
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USDA’s Commodity Information System

National Agricultural Statistics Service
Joint Agricultural Weather Facility
Foreign Agricultural Service
Economic Research Service
Farm Service Agency

Weekly Weather and Crop Bulletin
Domestic Production and Stocks Estimates
FAS Commodity Circulars
World Agricultural Supply and Demand Estimates
ERS Situation and Outlook Reports

World Agricultural Outlook Board
(Office of the Chief Economist)

Long-term Baseline Projections
Agenda

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Foreign Country Commodity Balance Sheets

SUPPLY = DEMAND

Beginning Stocks + Production + Imports = Exports + Domestic Use + Ending Stocks

Private
(On-farm
(Pipeline)

Government

Area Yield

Commercial
Concessional

Feed
Residual

Food, Seed, Industrial

WAOB Chaired Meetings:
Cotton, Oilseeds, Rice, Wheat, Coarse Grains
Participating USDA Agencies: WAOB, ERS, JAWF, FAS

WASDE Report
**Foreign Country Commodity Balance Sheets**

**SUPPLY = DEMAND**

- **Beginning Stocks**
  - Private (On-farm)
  - Pipeline
  - Government

- **Production**
  - Area Yield

- **Imports**
  - Commercial
  - Concessional

- **Exports**
  - Feed
  - Residual
  - Food, Seed, Industrial

- **Domestic Use**

- **Ending Stocks**

**WAOB Chaired Meetings:**
- Cotton, Oilseeds, Rice, Wheat, Coarse Grains

**Participating USDA Agencies:** WAOB, ERS, JAWF, FAS

**WASDE Report**

**Commodity Prices**
Agenda

- History – Why does the US track Global Production?
- Overview of USDA’s Commodity Information System
- Balance sheet approach
- Detailed look at how USDA-FAS monitors and generates production estimates
USDA-FAS Provides:
Crop Condition Assessment, Monitoring and Crop Estimates

- Monthly
- 17 Global Commodities
- 159 Countries
- 1020 Country-Crop Pairs (e.g. Australia-Wheat)
- 3 attributes: Area, Yield and Production
USDA-FAS Operational Approach to Global Crop Assessment and Monitoring

Resources → Analysis → Results

- Satellite Imagery
- Global Weather
- Crop & Soil Models
- Attaché Reports/GAIN
- Crop Travel/Ground Truth
- Official Data/Government
- News Reports/Private

Regional and Commodity Analysis

- Official U.S. government Crop Production Estimate
- Monthly Foreign Crop Condition
- Provide early warning of crop disasters
- Monitor food-insecure nations
USDA-FAS uses data from 8 out of 18 of NASA’s Earth Observing fleet. FAS uses additional satellites from ESA, ISRO and private orgs.
### USDA-FAS: Satellites used for Production Estimates

<table>
<thead>
<tr>
<th>Satellite Type</th>
<th>What it measures?</th>
<th>Example</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Low resolution Imager</td>
<td>vegetation vigor</td>
<td>(a) MODIS-Terra &amp; Aqua</td>
<td>Workhorse for FAS 250 to 1000 meters; transition to VIIRS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suomi-NPP (VIIRS)</td>
<td></td>
</tr>
<tr>
<td><strong>B</strong> LEO Precipitation</td>
<td>precipitation</td>
<td>(a) TRMM</td>
<td>GPM is replacing TRMM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) GPM</td>
<td></td>
</tr>
<tr>
<td><strong>C</strong> Mid-resolution Imager</td>
<td>vegetation vigor, crop type</td>
<td>(a) Landsat-8</td>
<td>10 to 60 meters; MuSLI project</td>
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<tr>
<td></td>
<td></td>
<td>(b) Sentinel-2</td>
<td></td>
</tr>
<tr>
<td><strong>D</strong> Microwave Imagers</td>
<td>surface soil moisture</td>
<td>(a) SSM/I</td>
<td>Surface wetness data used in soil moisture model</td>
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<tr>
<td></td>
<td></td>
<td>(b) SMOS</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(c) SMAP</td>
<td></td>
</tr>
<tr>
<td><strong>E</strong> GPS</td>
<td>location</td>
<td>(a) USA-201 (IIR-19)</td>
<td>Field work; geotagging</td>
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<tr>
<td><strong>F</strong> High resolution Imager</td>
<td>field scale</td>
<td>(a) WorldView-1</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(b) WorldView-2</td>
<td>0.5 to 3 meters</td>
</tr>
<tr>
<td><strong>G</strong> Synthetic Aperture Radar</td>
<td>flooding</td>
<td>(a) Sentinel-1</td>
<td>all-weather</td>
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<tr>
<td></td>
<td></td>
<td>(b) RadarSat-2</td>
<td></td>
</tr>
<tr>
<td><strong>H</strong> LEO Altimetry</td>
<td>heights of water bodies</td>
<td>(a) OSTM/Jason-2</td>
<td>Heights measured in centimeters</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) Jason-3</td>
<td></td>
</tr>
</tbody>
</table>
Precipitation

- World Meteorological Organization (WMO) — station data
- Satellite-Derived Sources
  - USAF: 557th USAF Weather Wing-Air Force Weather Agency (AFWA)
  - NOAA: CMORPH
  - NASA: Multi precipitation analysis (MPA with TRMM)
    - NASA: Global Precipitation Mission (GPM-IMERG)
    - UCSB: Climate Hazard Infra Red Precipitation-Stations (CHIRPS)

Each precip. source has some challenges:
- **WMO** — need more stations and in better locations.
- **Satellite** — improve accuracy
World Meteorological Organization (WMO)

Daily Data Loaded Next Day:
• 24-hour Precipitation
• Max Temp
• Min Temp
• Snow Coverage

USDA-FAS Updates Assessment Database:
• Average Daily Temperature
• Cumulative precipitation
• Potential ET
• Soil Moisture
• Surface soil moisture
• Subsurface soil moisture

Daily weather data provided by approximately 7000 WMO ground stations
Daily AFWA Data Loaded Next Day:
- 24-hour precipitation
- Max Temp
- Min Temp
- Snow Coverage
- Actual and Potential ET
- Solar and IR Radiation

FAS Updates Assessment Database:
- Average Daily Temperature
- Cumulative precipitation
- Potential ET
- Soil Moisture
- Surface Soil Moisture
- Subsurface Soil Moisture
Crop Assessment Data Retrieval & Evaluation (CADRE) database system

• Daily weather data stored in CADRE
• Uses various models to quantify the effect weather has on crops
• Provides objective information in assessing:
  • Crop condition
  • Yield prospects
  • Stress factors
  • Production potential
• High quality weather data is critical

• Visit [www.pecad.fas.usda.gov/cropexplorer](http://www.pecad.fas.usda.gov/cropexplorer) to see aggregated output from CADRE.

“Crop Explorer” products are displayed on the Internet every 10-days and for summer/winter growing seasons
USDA/FAS: Crop Explorer Web Portal

(displays numerous weather and vegetation condition data sets over major crop regions every 10-days)

Maps and time-series charts for:

- **Weather Data (AWFA, WMO, CMORPH, MPA)**
  Dekadal (10-day) precipitation & temperatures compared to climate normals

- **Soil Moisture & Crop Models**
  Modified Palmer two-layer soil moisture
  Behind firewall: Crop calendars for wheat, corn, & sorghum and corn hazard/alarm model.

- **Vegetation Indices (polar-orbiting satellites)**
  GAC (8-km) (behind firewall)
  SPOT-VEG (1-km)
  MODIS (250-m)

- **Daily MODIS**
  Aqua and Terra (250-m)

- **Lake/Reservoir Heights**
  TOPOX/Poseidon, Jason-1, Jason-2
  ERS, ENVISAT
10 day Crop Explorer System Updates Immediately

Latest observation data integrated into new maps and charts on the: 1st, 11th, 21st of each month

Vegetation Change

Soil Moisture

NDVI

Precipitation

Cumulative Precipitation

Vegetation Health

Latest observation data integrated into new maps and charts on the: 1st, 11th, 21st of each month
USDA-FAS has 96 foreign offices covering 167 countries.

FAS Overseas staff, collect data, statistics, crop progress, and agricultural market information.
FAS: Global Agricultural Information Network (GAIN)

http://gain.fas.usda.gov/Pages/Default.aspx

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<td>Ukrainian Agrarians are in Favor of Production of GE Crops_Kiev_Ukraine_11-6-2013</td>
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What about analysis?

• Screen information – Reliability of source
  • Is the source providing consistent data with good supporting information?
  • Does the source have a political or market agenda?
  • What is the source’s track record?
  • How many different sources confirm the same information?

• Balance Sheet relationships
  • Does supply=demand?
  • Imports=exports?
  • Yield consistent with history? With weather?
  • Stocks:Use ratio reasonable?
More on Analysis

• Economic analysis
  • Economic analysis is essential for assembling and verifying estimates.
  • Analyze data relations to see if they are consistent with economic principles, models, and past behavior.
  • Does ‘the story’ make sense, both for the individual estimates and in the aggregate?

• There is a large suite of tools used for analysis, but not every tool is used in every analysis situation.

• Information must be gathered, screened, and assembled into a cohesive whole.

• Putting together the WASDE is like putting together a complex puzzle.
Outputs: Reports

- Principal Federal Economic Indicators: WASDE, FAS & NASS

World Agricultural Supply and Demand Estimates

United States Department of Agriculture

WASDE - 484  Approved by the World Agricultural Outlook Board  July 9, 2010

NOTE: This report adopts U.S. area, yield, and production forecasts for winter wheat, durum, other spring wheat, barley, and oats released today by the National Agricultural Statistics Service (NASS). For rice, corn, soybeans, cotton, and vegetables, area estimates reflect the June 30 NASS Acreage report, and methods used to project yield are noted on each table. The first crop-based 2010 production forecasts for those crops will be reported by NASS on August 12 and will be included in that day’s issue of this report.

WHEAT: U.S. wheat supplies for 2010/11 are raised this month on higher area, yields, and carryin. Beginning stocks are raised 43 million bushels based on the June 1 stocks estimate. Total wheat production is forecast 140 million bushels higher with higher forecast area and a forecast record yield of 46.9 bushels per acre. Winter wheat production is up 23 million bushels as higher Hard Red Winter wheat yields more than offset lower yields for Soft Red Winter wheat. Durum and other spring wheat production are forecast higher as abundant moisture and lack of heat stress in the Northern Plains support above trend yields. Feed and residual use is projected 20 million bushels lower as higher prices limit the competitiveness of wheat in livestock and poultry rations. Exports are projected 100 million bushels higher with lower expected production in several major exporting countries and strong early season export sales. Despite increased foreign demand for U.S. wheat, ending stocks for 2010/11 are projected 102 million bushels higher and remain at an expected 23-year high. The season-average farm price for all wheat is projected at $4.20 to $6.00 per bushel, up 20 cents on each end of the range as tighter world supplies and higher corn prices support wheat values.
You are here: FAS Home / Market and Trade Data / PSD Online Home

Production, Supply and Distribution Online

Welcome to the Foreign Agricultural Service’s Production, Supply and Distribution (PSD) online database. This database contains current and historical official USDA data on production, supply and distribution of agricultural commodities for the United States and key producing and consuming countries.

Release Schedule
Get the complete PSD data release schedule for the current calendar year. PSD data will next be released on: Thursday, May 19, 2016

Perform a Custom Query
View PSD Official Statistics on screen or create downloadable files for your spreadsheet or database program.

Downloadable Data Sets
Downloadable files containing Official Statistics are generated when each commodity’s data is released. These data files include all attributes, countries and years pertaining to a particular commodity.

Reports (listed by Category)
Click on a Category to expand the list and reveal available Reports. Click on the desired Report in the list to view it.

- Coffee
- Cotton
- Dairy
- Field Crops - Production

- Table 01 World Crop Production Summary
- Table 02 Wheat Area, Yield, and Production
- Table 03 Total Coarse Grain Area, Yield, and Production
- Table 04 Corn Area, Yield, and Production
- Table 05 Barley Area, Yield, and Production
- Table 06 Oats Area, Yield, and Production
- Table 07 Rye Area, Yield, and Production
- Table 08 Sorghum Area, Yield, and Production
- Table 09 Rice Area, Yield, and Production
- Table 10 Total Animal Production
# Production Supply and Distribution Database

## Table 09 Rice Area, Yield, and Production

### World and Selected Countries and Regions

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Area (Million hectares)</th>
<th>Yield (Metric tons per hectare)</th>
<th>Production (Million metric tons)</th>
<th>Change in Production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014/15</td>
<td>Prel. 2015/16</td>
<td>nr</td>
<td>May</td>
</tr>
<tr>
<td>World</td>
<td>160.66</td>
<td>157.77</td>
<td>160.62</td>
<td>4.44</td>
</tr>
<tr>
<td>United States</td>
<td>1.19</td>
<td>1.04</td>
<td>1.23</td>
<td>8.49</td>
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<tr>
<td>Total Foreign</td>
<td>159.47</td>
<td>156.72</td>
<td>159.40</td>
<td>4.41</td>
</tr>
</tbody>
</table>

### East Asia

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Area (Million hectares)</th>
<th>Yield (Metric tons per hectare)</th>
<th>Production (Million metric tons)</th>
<th>Change in Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>30.31</td>
<td>30.21</td>
<td>30.32</td>
<td>6.81</td>
</tr>
<tr>
<td>Japan</td>
<td>1.61</td>
<td>1.59</td>
<td>1.58</td>
<td>6.71</td>
</tr>
<tr>
<td>Korea, South</td>
<td>0.82</td>
<td>0.80</td>
<td>0.78</td>
<td>6.91</td>
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<tr>
<td>Korea, North</td>
<td>0.53</td>
<td>0.48</td>
<td>0.50</td>
<td>4.98</td>
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</tbody>
</table>

### South Asia

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Area (Million hectares)</th>
<th>Yield (Metric tons per hectare)</th>
<th>Production (Million metric tons)</th>
<th>Change in Production</th>
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<tbody>
<tr>
<td>India</td>
<td>43.74</td>
<td>42.75</td>
<td>43.50</td>
<td>3.62</td>
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<tr>
<td>Bangladesh</td>
<td>11.79</td>
<td>11.77</td>
<td>11.80</td>
<td>4.39</td>
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<tr>
<td>Pakistan</td>
<td>2.85</td>
<td>2.74</td>
<td>2.80</td>
<td>3.63</td>
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<td>1.50</td>
<td>1.50</td>
<td>2.98</td>
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<tr>
<td>Sri Lanka</td>
<td>1.15</td>
<td>1.23</td>
<td>1.30</td>
<td>3.64</td>
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Thank you

Sarah Hoffman
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Sarah.Hoffman@nass.usda.gov