Midwest and Great Plains Climate-Drought Outlook
15 September 2016

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General Information

* Providing climate services to the Central Region
  * Collaboration Activity Between:
    * State Climatologists
    * NOAA – NCEI
    * USDA Climate Hubs
    * American Association of State Climatologists
    * Midwest and High Plains Regional Climate Centers
    * National Drought Mitigation Center/USDA

* Next Regular Climate/Drought Outlook Webinar
  * Oct. 20, 2016 (1 PM CDT) Laura Edwards Acting SC in SD

* Access to Future Climate Webinars and Information
  * http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars
  * http://mrcc.isws.illinois.edu/webinars.htm
  * http://www.hprcc.unl.edu/webinars.php
  * Open for questions at the end
Agenda

* Current Conditions

* Ag Review
  * Brad Rippey

* Outlooks
  * Non-La Niña
  * Fall - winter

OH Corn early August– Jim Noel NWS
Review/Current Conditions
August Temperature Recap

Warm across the east – moderate to cooler western region.

August Temperature Recap

Different when split out – much warmer minimums, lower maximums

August Precipitation Recap

Wet late season most of region – moderate to the west.

June – August temperature ranks
June - August Precipitation

Wet summer Corn Belt. Drier west. Mid-late season recovery after warm dry June

Average Dew Point Temperature Departures from Average
June–August 2016
Period: 1981–2010

Thanks to Deke Arndt and Chris Fenimore (NOAA-NCEI)
Average Dew Point Temperature Percentiles
June–August 2016

*Includes Ties
Data Source: Integrated Surface Daily (ISD)

Record Low*
Much Below Normal
Below Normal
Near Normal
Above Normal
Much Above Normal
Record High*
Soil Moisture

Wet – late season precip

Potential issues
• Crop drydown
• Field access
• Carry-over Sp ‘17

Soil Moisture Anomaly in millimeters

http://www.emc.ncep.noaa.gov/mmb/nldas/drought/
Wednesday, 14 September 2016

- Streamflows react to wetness
- Some increased potential for flooding in the fall due to flows
  - Upper Mississippi
  - Lower Missouri

Outlooks
Climate Outlooks

- Non-La Niña
- 7-day precipitation forecast
- 8-14 day outlook
- October
- 3 Months (October-December)
- Seasonal Drought Outlooks
- Winter – early look
Neutral conditions most likely outcome winter 2016-17.
7-day Quantitative Precipitation Forecast

http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml
Temperature and Precipitation

Temperature

Precipitation

http://www.cpc.ncep.noaa.gov/products/predictions/814day/index.php
October Temperature and Precipitation Probabilities

Temperature

http://www.cpc.ncep.noaa.gov/products/predictions/predictions/30day/
3 Month Temperature and Precipitation Probabilities
(October - December)

Temperature
Precipitation

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1
3 Month Temperature and Precipitation Probabilities (December - February)

Temperature

Precipitation

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1
Drought Outlook through 31 Dec.

U.S. Seasonal Drought Outlook valid for September 15 - December 31, 2016
Drought Tendency During the Valid Period

Author:
David Miskus
NOAA/NWS/NCEP/Climate Prediction Center

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).


http://go.usa.gov/3eZ73
Median Fall Freeze Date (32°F)

Fall Freeze
Median Date Of 28°F Freeze
Based on 1981-2010 Average
Summary - Conditions

- Warm summer – moreso from minimums
- Very wet across much of corn belt – late season recovery
- High dew points linked to this

- Generally good crop conditions – minor problems in areas
- Late season disease
- Crop development near to ahead of average
Summary - Outlooks

- La Niña – no advisory. Still some possible impact – included in outlooks
- Overall less confidence in outlooks
- Warm conditions more likely until winter – slight chance of cooler conditions further north then
- Some spotty wetness possible into winter
- Drought conditions will probably improve a little
- Limited concern of frost/freeze
Further Information - Partners

- Today’s and Past Recorded Presentations and:
  - http://mrcc.isws.illinois.edu/webinars.htm
  - http://www.hprcc.unl.edu
- NOAA’s National Climatic Data Center: www.ncdc.noaa.gov
- NOAA’s Climate Prediction Center: www.cpc.ncep.noaa.gov
- Climate Portal: www.climate.gov
- National Drought Mitigation Center: http://drought.unl.edu/
- State climatologists
  * http://www.stateclimate.org
- Regional climate centers
  * http://mrcc.isws.illinois.edu
  * http://www.hprcc.unl.edu
Questions:

* **Climate:**
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* **Weather:**
  * crhroc@noaa.gov
United States: Corn

- Major areas combined account for 75% of the total national production.
- Major and minor areas combined account for 99% of the total national production.
- Major and minor areas and state production percentages are derived from NASS survey data from 2010 to 2014.

Corn crop calendar for most of the United States

The crop calendar was developed using NASS crop progress data from 2010-2014. This calendar illustrates, on average, the dates when national progress advanced from 10 to 90 percent.
- It was a mostly good year for corn, especially in the upper Midwest.
- September 1 estimates, if realized, indicate record-high corn production in Illinois, Iowa, Kentucky, North Dakota, and Wisconsin.
- If September 1 estimates are realized, 2016 will feature the highest U.S. corn yield (174.4 bushels/acre) and production (15.1 billion bushels) on record.
- Drought affected 0 to 7% of the U.S. corn production area during the 2016 growing season.
- Currently, nearly three-fourths (74%) of the U.S. corn crop is rated good to excellent.
U.S. Corn Areas Experiencing Drought

Reflects September 6, 2016 U.S. Drought Monitor data

Approximately 3% of corn production is within an area experiencing drought.

Major and minor agricultural areas are derived from NASS county-level crop production data from 2006 to 2010. Additional information on these agricultural data can be found at: http://www.nass.usda.gov/

Mapped drought areas are derived from the U.S. Drought Monitor product and do not depict the intensity of drought in any particular location. More information on the Drought Monitor can be found at: http://droughtmonitor.unl.edu/

- Major agricultural areas combined account for 75% of the total national production.
- Major and minor agricultural areas combined account for 99% of the total national production.
Aside from 2014, corn rated good to excellent is the highest since 1994 (84% G/EX on September 11, 1994).
U.S. Corn Conditions
Percent Good to Excellent
September 11, 2016

Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

National Condition
Good to Excellent 74
Change from Last Year +6

TOP ## - Percent Good to Excellent
[BOTTOM ##] - Change from Last Year

USDA Agricultural Weather Assessments
World Agricultural Weather Outlook Board
September 1, 2016 Corn Yield
Bushels and Change From Previous Month

USDA-NASS
9-12-16
U.S. Corn Progress
Percent Mature
September 11, 2016

National Progress
Mature 33
Change from 5-year Average +1

TOP ## - Percent Mature
[BOTTOM ##] - Change from 5-year Average

Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

USDA Agricultural Weather Assessments
World Agricultural Outlook Board
U.S. Corn Progress
Percent Harvested
September 11, 2016

National Progress
Harvested 5
Change from 5-year Average -2

Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables.
United States: Soybeans

Yellow numbers indicate the percent each state contributed to the total national production. States not numbered contributed less than 1% to the national total.

- Major areas combined account for approximately 75% of the total national production.
- Major and minor areas combined account for approximately 99% of the total national production.
- Major and minor areas and state production percentages are derived from NASS county- and state-level production data from 2006-2010.

Soybean crop calendar for most of the United States

Crop calendar dates are based upon NASS crop progress data from 2006-2010. The field activities and crop development stages illustrated in the crop calendar represent the average time period when national progress advanced from 10 to 90 percent.

Note: The agricultural data used to create the map and crop calendar were obtained from the National Agricultural Statistics Service at http://www.nass.usda.gov.
- It was a mostly good year for soybeans, except in far eastern and western areas.
- September 1 estimates, if realized, indicate record-high soybean production in seven states (IL, IN, IA, KY, MO, NE, and WI) in the north-central U.S.
- If September 1 estimates are realized, 2016 will feature the highest U.S. soybean yield (50.6 bushels/acre) and production (4.20 billion bushels) on record.
- Drought affected 0 to 8% of the U.S. soybean production area during the 2016 growing season.
- Currently, 73% of the U.S. soybean crop is rated good to excellent – the highest amount at this time of year since 1994 (74%).
U.S. Soybean Areas Experiencing Drought

Reflects September 6, 2016
U.S. Drought Monitor data

Approximately 3% of soybean production is within an area experiencing drought.

Major and minor agricultural areas are derived from NASS county-level crop production data from 2006 to 2010. Additional information on these agricultural data can be found at: http://www.nass.usda.gov/

Mapped drought areas are derived from the U.S. Drought Monitor product and do not depict the intensity of drought in any particular location. More information on the Drought Monitor can be found at: http://droughtmonitor.unl.edu/

- Major agricultural areas combined account for 75% of the total national production.
- Major and minor agricultural areas combined account for 99% of the total national production.
United States Soybean Areas Located in Drought

Percent

Date

0 20 40 60 80 100


Moderate or more intense drought (D1+)
Severe or more intense drought (D2+)
Extreme or more intense drought (D3+)
Exceptional drought (D4)
U.S. Soybean Conditions
Percent Good to Excellent
September 11, 2016

National Condition
Good to Excellent 73
Change from Last Year +12

Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

TOP ## - Percent Good to Excellent
[BOTTOM ##] - Change from Last Year

USDA Agricultural Weather Assessments
World Agricultural Outlook Board
Soybean Production
United States

Billion Bushels

1996: 2.38
1998: 2.69
2000: 2.65
2002: 2.74
2004: 2.74
2006: 2.89
2008: 3.12
2010: 3.20
2012: 3.36
2014: 3.93
2016: 4.20
U.S. Soybeans Progress

Percent Dropping Leaves

September 11, 2016

Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

National Progress

Dropping Leaves 26
Change from 5-year Average +1

TOP ## - Percent Dropping Leaves
[BOTTOM ##] - Change from 5-year Average

USDA Agricultural Weather Assessments
World Agricultural Outlook Board
Other Current Agricultural Highlights

- The spring wheat harvest is wrapping up early.
- Hard Red Winter wheat planting is underway on the Plains.
- The sugarbeet harvest is underway. The production estimate is up more than 1% from last year.
- Sorghum production down 18% – all due to an 18% decrease in harvested acres.
- Fruits/vegetables mostly recovered from last year’s losses, which were mainly due to a harsh winter (2014-15) and/or spring (2015). For example, Michigan’s tart cherry production – accounting for nearly three-fourths of the U.S. total – was up 66% from 2015. Michigan’s sweet cherry production was up 32% from last year.
- Rangeland and pastures are mostly in great shape; Illinois led the U.S. with 82% rated good to excellent on September 11.
United States: Spring Wheat

- Major areas combined account for 75% of the total national production.
- Major and minor areas combined account for 99% of the total national production.
- Major and minor areas and state production percentages are derived from NASS survey data from 2010 to 2014.

XX = percent each state contributed, on average, to national production. States not numbered contributed < 1%.

The crop calendar was developed using NASS crop progress data from 2010-2014. This calendar illustrates, on average, the dates when national progress advanced from 10 to 90 percent.
U.S. Spring Wheat Progress

Percent Harvested
September 11, 2016

National Progress

Harvested 94
Change from 5-year Average +8

Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables.
United States: Winter Wheat

- Major areas combined account for 75% of the total national production.
- Major and minor areas combined account for 99% of the total national production.
- Major and minor areas and state production percentages are derived from NASS survey data from 2010 to 2014.

XX = percent each state contributed, on average, to national production. States not numbered contributed < 1%.

Winter wheat crop calendar for most of the United States

The crop calendar was developed using NASS crop progress data from 2010-2014. This calendar illustrates, on average, the dates when national progress advanced from 10 to 90 percent.
U.S. Winter Wheat Conditions
Percent Good to Excellent
July 3, 2016

National Condition
Good to Excellent 62
Change from Last Week 0

Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

Good to Excellent Condition
- Less than 10%
- 10% - 19%
- 20% - 29%
- 30% - 39%
- 40% - 49%
- 50% - 59%
- 60% - 69%
- 70% - 79%
- 80% - 89%
- 90% or More

TOP ## - Percent Good to Excellent
[BOTTOM ##] - Change from Last Week

USDA Agricultural Weather Assessments
World Agricultural Outlook Board
U.S. Winter Wheat Progress

Percent Planted
September 11, 2016

Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables.

National Progress

Planted: 6
Change from 5-year Average: -1

TOP ## - Percent Planted
[BOTTOM ##] - Change from 5-year Average
U.S. Winter Wheat Areas Experiencing Drought

Reflects September 6, 2016
U.S. Drought Monitor data

Approximately 10% of winter wheat production is within an area experiencing drought.

Major and minor agricultural areas are derived from NASS county-level crop production data from 2006 to 2010. Additional information on these agricultural data can be found at: http://www.nass.usda.gov/.

Mapped drought areas are derived from the U.S. Drought Monitor product and do not depict the intensity of drought in any particular location. More information on the Drought Monitor can be found at: http://droughtmonitor.unl.edu/.

- Major agricultural areas combined account for 75% of the total national production.
- Major and minor agricultural areas combined account for 99% of the total national production.
United States: Sugarbeets

- Major areas combined account for 75% of the total national production.
- Major and minor areas combined account for 99% of the total national production.
- Major and minor areas and state production percentages are derived from NASS survey data from 2010 to 2014.

Sugarbeet crop calendar for most of the United States

XX = percent each state contributed, on average, to national production. States not numbered contributed < 1%.

The crop calendar was developed using NASS crop progress data from 2010-2014. This calendar illustrates, on average, the dates when national progress advanced from 10 to 90 percent.
U.S. Sugarbeets Progress
Percent Harvested
September 11, 2016

Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

National Progress

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Harvested</td>
<td>8</td>
</tr>
<tr>
<td>Change from 5-year Average</td>
<td>+3</td>
</tr>
</tbody>
</table>

TOP ## - Percent Harvested
[BOTTOM ##] - Change from 5-year Average

USDA Agricultural Weather Assessments
World Agricultural Outlook Board
United States: Sorghum

- Major areas combined account for 75% of the total national production.
- Major and minor areas combined account for 99% of the total national production.
- Major and minor areas and state production percentages are derived from NASS survey data from 2010 to 2014.

XX = percent each state contributed, on average, to national production. States not numbered contributed < 1%.

Sorghum crop calendar for most of the United States

The crop calendar was developed using NASS crop progress data from 2010-2014. This calendar illustrates, on average, the dates when national progress advanced from 10 to 90 percent.
U.S. Sorghum Progress
Percent Mature
September 11, 2016

Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

National Progress

Mature 44
Change from 5-year Average +6

TOP ## - Percent Mature
[BOTTOM ##] - Change from 5-year Average

USDA Agricultural Weather Assessments
World Agricultural Outlook Board
U.S. Sorghum Progress
Percent Harvested
September 11, 2016

Data obtained from preliminary National Agricultural Statistics Service (NASS) weekly crop progress and condition tables

National Progress
Harvested 26
Change from 5-year Average -1

TOP # - Percent Harvested
[BOTTOM #] - Change from 5-year Average

USDA Agricultural Weather Assessments
World Agricultural Outlook Board
Tart Cherry Production Up 39 Percent

United States tart cherry production is forecast at 309 million pounds, up 39 percent from the 2015 production.

In Michigan, the largest producing State, growers were confident about the tart cherry crop with higher forecasted yields than last year. The crop was developing on schedule with good growth on trees reported throughout the State.

Utah growers reported a crop that will result in relatively good production. Favorable conditions contributed to good yields. In Wisconsin, the major tart cherry growing area of the State escaped a late frost and growers were looking forward to a good year.

In Washington, growers reported a record early harvest this year due to warm weather.

New York growers anticipate a less than average crop this year. Most growers reporting low production cited freeze and frost at bloom.

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<table>
<thead>
<tr>
<th>State</th>
<th>Total production</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>2014</td>
</tr>
<tr>
<td></td>
<td>(million pounds)</td>
</tr>
<tr>
<td>Michigan</td>
<td>203.0</td>
</tr>
<tr>
<td>New York</td>
<td>10.0</td>
</tr>
<tr>
<td>Oregon</td>
<td>2.4</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>0.9</td>
</tr>
<tr>
<td>Utah</td>
<td>51.0</td>
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<tr>
<td>Washington</td>
<td>24.3</td>
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<tr>
<td>Wisconsin</td>
<td>12.3</td>
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<tr>
<td>United States</td>
<td>303.9</td>
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</tbody>
</table>

(NA) Not available.

1 Estimates discontinued in 2016.
U.S. pasture conditions are the highest on record (1995 to date) for this time of year.

Based on NASS crop progress data.

Index Weighting: Excellent = 4; Good = 3; Fair = 2; Poor = 1; Very Poor = 0
Topsoil Moisture
Percent Surplus
Week Ending - September 11, 2016

Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports. These reports are available through http://www.nass.usda.gov/Publications/.
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Chicago Skyline from Mt. Tom, IN
June 29, 2016
(Brad Rippey photo)