Managing Through the Drought
Educational Goals for Today’s Session

- Update on current situation and outlook
- How to assess drought-damaged crops
- Management considerations for various situations
- Integrating insurance and other risk management decisions with agronomic issues
- Tackle your specific questions
If You Are Having Audio Trouble

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Webinar ID: 899-025-114

For best visual and sound quality, turn off other computer applications
Today’s Panel Members

Shawn Conley
Soybean and Wheat Extension Specialist
University of Wisconsin-Madison

Chad Lee
Grain Crops Extension Agronomist
University of Kentucky

Emerson Nafziger
Professor of Crop Sciences and Extension Agronomist, University of Illinois
Brian Fuchs
Climatologist, National Drought Mitigation Center, University of Nebraska

Tim Hoffmann
Director of Product Administration and Standards, USDA Risk Management Agency

Bruce Erickson
Agronomic Education Manager
American Society of Agronomy
Adjunct Asst. Professor, Purdue University
We welcome your questions and comments:

- Type in the question queue
- Please be as brief as possible
- Indicate which panel member to ask if you have a preference
- Indicate your location, if relevant to question
Managing Through the Drought: Current Conditions and How We Got There

Brian Fuchs, Climatologist

National Drought Mitigation Center
School of Natural Resources
University of Nebraska-Lincoln

American Society of Agronomy Webinar July 11, 2012
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu/

Released Thursday, July 5, 2012
Author: Rich Tinker, NOAA/NWS/NCEP/CPC
### Drought Condition (Percent Area): United States

Conditions for the U.S., including Alaska, Hawaii and Puerto Rico

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>None</th>
<th>D0-D4</th>
<th>D1-D4</th>
<th>D2-D4</th>
<th>D3-D4</th>
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</tr>
</thead>
<tbody>
<tr>
<td>One Year Ago</td>
<td>06/28/12</td>
<td>65.21</td>
<td>34.79</td>
<td>23.49</td>
<td>19.45</td>
<td>15.35</td>
<td>9.97</td>
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<tr>
<td>Start of Water Year</td>
<td>09/27/11</td>
<td>63.45</td>
<td>36.55</td>
<td>24.42</td>
<td>19.61</td>
<td>14.87</td>
<td>9.50</td>
</tr>
<tr>
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<td>12/27/11</td>
<td>58.88</td>
<td>41.12</td>
<td>23.89</td>
<td>15.88</td>
<td>8.37</td>
<td>2.76</td>
</tr>
<tr>
<td>3 Months Ago</td>
<td>04/03/12</td>
<td>49.67</td>
<td>50.33</td>
<td>30.79</td>
<td>16.47</td>
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<td>1.61</td>
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<td>06/26/12</td>
<td>32.90</td>
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<td>42.80</td>
<td>25.72</td>
<td>7.15</td>
<td>0.34</td>
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<td><strong>07/03/12</strong></td>
<td><strong>29.30</strong></td>
<td><strong>70.70</strong></td>
<td><strong>46.84</strong></td>
<td><strong>28.65</strong></td>
<td><strong>8.64</strong></td>
<td><strong>0.50</strong></td>
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### Conditions for the Contiguous U.S.

<table>
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<th>Date</th>
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<th>D2-D4</th>
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</thead>
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<tr>
<td>One Year Ago</td>
<td>06/28/11</td>
<td>63.03</td>
<td>36.97</td>
<td>28.08</td>
<td>23.28</td>
<td>18.38</td>
<td>11.94</td>
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<tr>
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<td>09/27/11</td>
<td>56.45</td>
<td>43.55</td>
<td>29.13</td>
<td>23.44</td>
<td>17.80</td>
<td>11.37</td>
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<tr>
<td>Start of Calendar Year</td>
<td>12/27/11</td>
<td>50.89</td>
<td>49.11</td>
<td>28.49</td>
<td>18.95</td>
<td>10.01</td>
<td>3.31</td>
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<tr>
<td>3 Months Ago</td>
<td>04/03/12</td>
<td>39.87</td>
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<td>36.77</td>
<td>19.64</td>
<td>6.65</td>
<td>1.92</td>
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<tr>
<td>Last Week</td>
<td>06/26/12</td>
<td>27.99</td>
<td>72.01</td>
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<td>30.73</td>
<td>8.54</td>
<td>0.41</td>
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<tr>
<td><strong>Current</strong></td>
<td><strong>07/03/12</strong></td>
<td><strong>23.67</strong></td>
<td><strong>76.33</strong></td>
<td><strong>55.96</strong></td>
<td><strong>34.24</strong></td>
<td><strong>10.32</strong></td>
<td><strong>0.60</strong></td>
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</tbody>
</table>

National Drought Mitigation Center
Percent Area of the United States in Moderate to Extreme Drought

January 1895–May 2012

Based on data from the National Climatic Data Center/NOAA

44.4% as of May
## U.S. Drought Monitor
### Midwest

#### Drought Conditions (Percent Area)

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>D0-D4</th>
<th>D1-D4</th>
<th>D2-D4</th>
<th>D3-D4</th>
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</thead>
<tbody>
<tr>
<td>Current</td>
<td>25.55</td>
<td>74.45</td>
<td>52.56</td>
<td>24.76</td>
<td>5.60</td>
<td>0.00</td>
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<tr>
<td>Last Week (06/26/2012 map)</td>
<td>28.87</td>
<td>71.13</td>
<td>45.76</td>
<td>15.27</td>
<td>5.28</td>
<td>0.00</td>
</tr>
<tr>
<td>3 Months Ago (04/03/2012 map)</td>
<td>64.51</td>
<td>35.49</td>
<td>19.68</td>
<td>6.32</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Start of Calendar Year (12/27/2011 map)</td>
<td>71.84</td>
<td>28.16</td>
<td>13.42</td>
<td>6.80</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Start of Water Year (09/27/2011 map)</td>
<td>58.85</td>
<td>41.15</td>
<td>14.01</td>
<td>5.03</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>One Year Ago (06/28/2011 map)</td>
<td>97.20</td>
<td>2.80</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

#### Intensity:
- Yellow: D0 Abnormally Dry
- Light Orange: D1 Drought - Moderate
- Orange: D2 Drought - Severe
- Dark Orange: D3 Drought - Extreme
- Red: D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu

Released Thursday, July 5, 2012

Rich Tinker, Climate Prediction Center/NOAA
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu
Water Year SPI
10/1/2011 - 7/9/2012

Generated 7/10/2012 at HPRCC using provisional data.
Regional Climate Centers
Departure from Normal Precipitation (in)
10/1/2011 - 7/9/2012

Generated 7/10/2012 at HPRCC using provisional data.
Regional Climate Centers
30 Day SPI
6/10/2012 - 7/9/2012

[Map of the United States showing drought conditions from June 10, 2012 to July 9, 2012]
90 Day SPI

4/11/2012 - 7/9/2012

[Map of the United States showing precipitation patterns]
Departure from Normal Temperature (F)
6/10/2012 - 7/9/2012

Generated 7/10/2012 at HPRCC using provisional data.
U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period
Valid for Jul 5 - September 30, 2012
Released Jul 5, 2012

No Drought Posted/Predicted
Persistence

Key:
- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events such as individual storms cannot be accurately forecast more than a few days in advance. Use caution for applications such as crops that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.
Contact Information:

Brian Fuchs  
bfuchs2@unl.edu  
402-472-6775

National Drought Mitigation Center  
School of Natural Resources  
University of Nebraska-Lincoln
Corn and the 2012 Drought

Emerson Nafziger
ednaf@illinois.edu
Crop Sciences
University of Illinois
The Corn Story 2012

• Planted early into generally good soil conditions
• Good stands, little disease, good leaf color
• Good roots, except where planted into dry soil in no-till and “high-crown” problem in some areas
• Rainfall since May 1 ranging from 4 to 8 inches below normal
• Temperatures above average in May and July: GDD from 100 to 200 above average since May 1
  – Unusual run of temps >100 F in July
• Early planting + GDD → early pollination: 50% by July 8 (77% in IL) – 5-year US average is 19% by July 8
• Pollination under stress: does the crop have a chance?
CropSense™ Field Monitor provided by John Deere

Continuous corn, planted April 24, Urbana, Illinois

Total water use June 8 to July 8: 7.6”
- From rainfall: 1.0”
- From soil: 6.6”
Watching the Corn Crop Under Stress

• Where the crop has pollinated OK, can count kernels set, but continued drought stress will reduce kernel numbers through abortion
  – Kernel number won’t be final until stage R3 or early R4, 3-4 weeks after pollination

• Daily sugar production through photosynthesis (Ps) is the key to establishing yield potential and yield:
  – The way to monitor Ps is to see how much light is intercepted (on a daily basis) by green, exposed leaves
  – There is a high correlation between water use and Ps
  – As soon as leaves start to roll or wilt, water use slows to a halt, and so does Ps
  – When water loss stops, leaf temperatures rise
  – High leaf temperatures and sunlight without enough water for Ps will eventually degrade leaf area
  – Once leaf canopy color lightens or bleaches, Ps capacity will be irreversibly lost
Corn Crop Prospects 2012

- Positives: Good canopy color, little or no disease, and an outstanding root system in areas where there has been some rain, and where soils hold a lot of water

- Negatives: Soil water supplies cannot last many more days or weeks without any rain (daily use rates \(\sim 1/4^{th}\) inch)
  - By stage R2 the crop still needs 9 to 10 inches of water to complete grainfilling; the percentage of this the crop has access to (from soil and rain) while it still has green leaf area is likely to be close to the percentage of yield potential realized
  - In worst-hit areas, no kernels and no green leaf area means no grain crop this year
Managing Through the Drought Webinar

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  – Indicate your location, if relevant to question
Soybean Response to Drought

Shawn P. Conley
State Soybean and Small Grain Specialist
University of Wisconsin, Madison
Soybean Plant Response to Drought

- Tremendous plasticity
  - Wide recovery window
  - Root growth rate (0.9 to 1.2 cm day\(^{-1}\))
- Shortened internodes
- Stomatal closure
- Leaf abscission
- Reduced N-fixation
- Hastened growth stages
- Abortion of
  - Flowers
  - Seeds
  - Pods
- Plant death

Purcell and Specht, 2004; Specht, 2012
<table>
<thead>
<tr>
<th>Originator/Brand</th>
<th>Maturity Group</th>
<th>Yield</th>
<th>Lodging</th>
<th>Maturity</th>
<th>Protein</th>
<th>Oil plus</th>
<th>Chp</th>
<th>Mar</th>
<th>Sey</th>
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<tr>
<td><strong>LSD (0.10)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>43</strong></td>
<td>1.0</td>
<td>23-Sep</td>
<td>33.5</td>
<td>19.4</td>
<td>1355</td>
<td>39</td>
<td>37</td>
<td>52</td>
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<tr>
<td><strong>4</strong></td>
<td>3</td>
<td>0.6</td>
<td>0.3</td>
<td>124</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Soybean Growth and Development Relation to Drought

• R1: Vertical root growth rates ↑ rapidly

• R2: 25% of total dry weight and 50% of total node number
  • Rapid dry weight and nutrient and N-fixation rate ↑

• R3: Developing pods, withering flowers, open flowers, and flower buds may all be found at this growth stage
  • Yield is a function of: population, pod number, seeds pod, seed weight

• R4: Rapid pod growth and beginning seed development
  • Period from R4 to middle R5 critical for yield
    • Rapid and steady dry matter accumulation
    • Flowering is complete
    • Young seeds and pods are most prone to abortion

Adopted from Soybean G & D, Pedersen 2004
Soybean Growth and Development Relation to Drought

- **R5**: Rapid seed filling and redistribution of dry matter/nutrients occur
  - Root growth slows
  - Midway between R5 and R6
    - Maximum height
    - Maximum node number
    - Maximum leaf area
    - N-fixation rate peaks then rapidly ↓

- **R6**: Total plant pod weight is maximized
  - Rate of dry weight and nutrient accumulation slows
  - Root growth is complete between R6 and R7

- **R7**: Rapid leaf, seed, and pod yellowing
  - Stress occurring from R7 will have little effect on yield

Adopted from Soybean G & D, Pedersen 2004
## Soybean Crop Growth Stage: Reproductive

<table>
<thead>
<tr>
<th>Growth Stage</th>
<th>Mean number of days</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Beginning bloom: Open flower at any node on the main stem</td>
<td>R1-R2</td>
</tr>
<tr>
<td>R2</td>
<td>Full bloom: Open flower at one of the two uppermost nodes on the main stem</td>
<td>R2-R3</td>
</tr>
<tr>
<td>R3</td>
<td>Beginning pod: A 3/16 inch pod at one of the four uppermost nodes on the main stem.</td>
<td>R3-R4</td>
</tr>
<tr>
<td>R4</td>
<td>Full pod: A ¾ inch pod at one of the four uppermost nodes on the main stem</td>
<td>R4-R5</td>
</tr>
<tr>
<td>R5</td>
<td>Beginning seed: Bean is 1/8th inch long in a pod at one of the four uppermost nodes on the main stem.</td>
<td>R4-R5</td>
</tr>
<tr>
<td>R6</td>
<td>Full seed: A pod containing a green seed that fills the pod cavity is located at one of the four uppermost main stem nodes.</td>
<td>R5-R6</td>
</tr>
<tr>
<td>R7</td>
<td>Beginning maturity: Physiological maturity: one pod on the main stem has reached its mature pod color.</td>
<td>R6-R7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Mean number of days</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>65</td>
</tr>
</tbody>
</table>
Corn-Soybean Rotation Effects on Soil Water Depletion

- The objective was to determine whether altered water uptake or altered WUE was associated with the yield increase observed when corn and soybean are rotated.
- Long-term corn-soybean rotation experiment was monitored in 1987 and 1988.
- Corn and soybean sequences monitored were: monoculture, first-year crop following 5 yrs of the other crop, second-year crop following 5 yrs of the other crop, and CS.
- Compared with monoculture, yield was increased up to 30% when corn followed soybean and up to 11% when soybean followed corn.
- When there was a period with only sparse rainfall in 1988, corn had a greater water depletion than soybean and also a deeper zone of depletion.
- Both crops exhibited a greater water depletion when rotated.
- Increased water use observed in first year corn and increased WUE observed in first-year soybean (compared to monoculture) in both years suggest that rotation allows these crops to increase root surface or root activity and hence to improve grain yield.
Management Impact on Crop Response to Drought

- Tillage
- Planting date
- Row spacing
  - Yield
  - Row closure and ET
- Weed Control
- Foliar fungicides

### Row Spacing vs. May planting date

<table>
<thead>
<tr>
<th>Row Spacing</th>
<th>&lt; 5/5</th>
<th>5/6 to 5/15</th>
<th>5/16 to 5/25</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5</td>
<td>35</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>15</td>
<td>50</td>
<td>45</td>
<td>40</td>
</tr>
<tr>
<td>30</td>
<td>75</td>
<td>70</td>
<td>65</td>
</tr>
</tbody>
</table>

15 vs. 30 inch
6.7% difference

De Witt, Nevada, and Whiting, IA 2004-06

P. Pedersen, 2007
Charcoal rot (*Macrophomina phaseolina*) microsclerotia on lower soybean stems.
For additional information:

http://fyi.uwex.edu/drought2012
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  – Indicate your location, if relevant to question
Corn Drought Issues for 2012

Chad Lee, Ph.D.
Extension Agronomist
University of Kentucky

cdlee2@uky.edu
http://www.uky.edu/Ag/GrainCrops/
http://graincrops.blogspot.com/
Water makes a difference

Daviess County, KY, June 27, 2012: Same Field, Same Row, Same Hybrid, Non-irrigated and Irrigated.
## Yield losses from water and heat

<table>
<thead>
<tr>
<th>Situation</th>
<th>Expected Yield Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>For every 4 hours of leaf rolling during silking</td>
<td>1%</td>
</tr>
<tr>
<td>4 consecutive days above 93 F (w/ moisture)</td>
<td>1%</td>
</tr>
<tr>
<td>5(^{th}) consecutive day above 93 F</td>
<td>2%</td>
</tr>
<tr>
<td>6(^{th}) consecutive day above 93 F</td>
<td>4%</td>
</tr>
<tr>
<td>High night temperatures</td>
<td>?</td>
</tr>
</tbody>
</table>

# Kentucky Climate 2012

<table>
<thead>
<tr>
<th>Date</th>
<th>Mx Temp</th>
<th>Mn Temp</th>
<th>Yield Loss from Heat*</th>
<th>Yield Loss from Leaf Rolling</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 27</td>
<td>91</td>
<td>51</td>
<td>1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 1</td>
<td>Jun 28</td>
<td>101</td>
<td>2%</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Day 2</td>
<td>Jun 29</td>
<td>104</td>
<td>2%</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Day 3</td>
<td>Jun 30</td>
<td>102</td>
<td>2%</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Day 4</td>
<td>Jul 1</td>
<td>101</td>
<td>1%</td>
<td>2%</td>
<td>10</td>
</tr>
<tr>
<td>Day 5</td>
<td>Jul 2</td>
<td>98</td>
<td>2%</td>
<td>2%</td>
<td>14</td>
</tr>
<tr>
<td>Day 6</td>
<td>Jul 3</td>
<td>93</td>
<td>4%</td>
<td>2%</td>
<td>20</td>
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<tr>
<td>Day 7</td>
<td>Jul 4</td>
<td>99</td>
<td>8?</td>
<td>2%</td>
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<tr>
<td>Day 8</td>
<td>Jul 5</td>
<td>102</td>
<td>16?</td>
<td>2%</td>
<td>48</td>
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<tr>
<td>Jul 6</td>
<td>92</td>
<td>69</td>
<td>2%</td>
<td></td>
<td></td>
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</table>

\*Assumes good pollination.
## Kentucky Climate 2012

<table>
<thead>
<tr>
<th>Day</th>
<th>Temperature</th>
<th>Max Temp</th>
<th>Min Temp</th>
<th>Yield Loss from Heat</th>
<th>Yield Loss from Leaf Rolling</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>July 27</td>
<td>94</td>
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<td>2%</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Day 3</td>
<td>Jun 29</td>
<td>103</td>
<td>63</td>
<td>2%</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Day 4</td>
<td>Jun 30</td>
<td>102</td>
<td>64</td>
<td>1%</td>
<td>2%</td>
<td>9</td>
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<td>Jul 1</td>
<td>101</td>
<td>65</td>
<td>2%</td>
<td>2%</td>
<td>13</td>
</tr>
<tr>
<td>Day 6</td>
<td>Jul 2</td>
<td>98</td>
<td>68</td>
<td>4%</td>
<td>2%</td>
<td>19</td>
</tr>
<tr>
<td>Day 7</td>
<td>Jul 3</td>
<td>93</td>
<td>71</td>
<td>8%</td>
<td>2%</td>
<td>29</td>
</tr>
<tr>
<td>Day 8</td>
<td>Jul 4</td>
<td>99</td>
<td>68</td>
<td>16%</td>
<td>2%</td>
<td>47</td>
</tr>
<tr>
<td>Day 9</td>
<td>Jul 5</td>
<td>101</td>
<td>69</td>
<td>32%</td>
<td>2%</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>Jul 6</td>
<td>81</td>
<td>48</td>
<td>2%</td>
<td>2%</td>
<td>83</td>
</tr>
</tbody>
</table>

† Assumes good pollination.
July 9, 2012. Pollination is complete in this field. Kernel set of very poor. These are the better ears in the field. Only about 10% of the ears look like these. The rest did not pollinate. It’s time to give up on grain and to plan for cutting for silage. Woodford County, KY. Photos: Chad Lee
Pollination Off

July 9, 2012. The pollen has dropped from this plant, but the silks are just now emerging. The outer husks were removed from this ear. About 20% of this field is at full pollination. These silks could receive pollen from other plants. Woodford County, KY. Photos: Chad Lee
### Sugar Demand of the Crop

<table>
<thead>
<tr>
<th>Crop</th>
<th>Glucose Needed to produce one Bushel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>77.9</td>
</tr>
<tr>
<td>Soybean</td>
<td>119.3</td>
</tr>
</tbody>
</table>

- **50 bushels of soybeans** requires about 5,965 lbs of glucose
- **200 bushels of corn** requires about 15,580 lbs of glucose

Some people are promoting the application of sugar to a field to help overcome drought conditions. Here are some calculations to help make that decision.

## Corn Removal Rates

<table>
<thead>
<tr>
<th>Crop</th>
<th>$N$</th>
<th>$P_2O_5$</th>
<th>$K_2O$</th>
<th>Yield</th>
<th>$N$</th>
<th>$P_2O_5$</th>
<th>$K_2O$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lbs/unit</td>
<td></td>
<td></td>
<td>lbs/acre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>corn grain</td>
<td>bu</td>
<td>0.7</td>
<td>0.4</td>
<td>0.35</td>
<td>100</td>
<td>bu</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td>bu</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>300</td>
<td>bu</td>
<td>210</td>
</tr>
<tr>
<td>corn stalks</td>
<td>ton</td>
<td>14</td>
<td>7</td>
<td>29</td>
<td>2.8</td>
<td>ton</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.6</td>
<td>ton</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.4</td>
<td>ton</td>
<td>118</td>
</tr>
</tbody>
</table>

**AGR-1: Lime and Fertilizer Recommendations**
Salvage Options for Drought-Stressed Corn

- Silage (best option)
- Baled silage
- Hay and green chop

Photo: Donna Amaral-Phillips
Salvage Options for Drought-Stressed Corn

• Silage (best option)
  – Check for nitrates before starting
  – 60 to 65% whole plant moisture
  – Add inoculant
  – Bags may be best
  – Ensiling reduces nitrate levels
  – Raise cutting height if nitrates are high
  – Check nitrates after ensiling
  – Check feed values (high nitrates could throw off the protein estimates)
Salvage Options for Drought-Stressed Corn

• Baled silage (baleage)
  – Check for nitrates before starting
  – Cut higher if needed
  – 45 to 60% whole plant moisture
  – Crimp or condition stalks before baling . . . A bushhog or knives on a baler could work
  – Use a newer baler.
  – Add inoculant if the baler is equipped.
  – Net wrapping or extra twine works best
  – Extra layers of plastic (7 wraps) are needed
  – Check for nitrates before feeding
Salvage Options for Drought-Stressed Corn

• Hay or Green Chop
  – Check nitrates before starting
  – Nitrates will not be reduced in hay
  – Harvest around 10 to 15% moisture
  – Crimping stalks may be needed
  – Net wrapping or extra twine will help hold bales together
  – Nitrates will not be lowered in hay
<table>
<thead>
<tr>
<th>Total Dietary Nitrate (NO$_3$) in dry matter</th>
<th>Feeding Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5,000 ppm (0.5%)</td>
<td>Generally safe for cattle. Be cautious with pregnant and young animals when nitrate concentrations approach 5,000 ppm and dilute with other feeds</td>
</tr>
<tr>
<td>&gt;5,000 but &lt;10,000 ppm (&gt;0.5% but &lt;1%)</td>
<td>Dilute with other feeds and introduce slowly. Consider options to reduce nitrate in fresh forage (ensiling, delayed harvest, other). Limit to a maximum of 50% of the total dry matter in pregnant animals</td>
</tr>
<tr>
<td>&gt;10,000 ppm (1%)</td>
<td>Very dangerous; can cause acute nitrate poisoning and death in cattle. Do not feed.</td>
</tr>
</tbody>
</table>

Note: All sources of dietary nitrate, including feeds, forages, supplements, and water should be taken into consideration when determining total dietary nitrate concentration. Representative sampling is crucial for proper interpretation of results.

Also: Nitrite, a breakdown product of nitrate that can be found in forages, is much more toxic than nitrate, and much lower levels of nitrite can cause poisoning and death.
Options for Soybean

- **Silage**
  - 60 to 65% moisture
  - Use an inoculant

- **Baled silage (baleage)**
  - 45 to 60% moisture
  - Use an inoculant
  - Crimp stems if possible

- **Hay**
  - Avoid hay if possible
  - 10 to 15% moisture
Websites on Drought 2012

• Drought 2012
  – http://www.uky.edu/Ag/GrainCrops/drought2012.html

• Grain Crops Blog
  – http://graincrops.blogspot.com/

• Grain Crops Website
  – http://www.uky.edu/Ag/GrainCrops/

Or… search these names in google and find the websites.
Managing Through the Drought Webinar

• We welcome your questions and comments:
  – Type in the question queue
  – Please be as brief as possible
  – Indicate which panel member to ask if you have a preference
  – Indicate your location, if relevant to question
Federal Crop Insurance & Drought-Damaged Crops

Tim Hoffmann, Director
Product Administration and Standards Division
USDA – Risk Management Agency
Federal crop insurance policies cover natural disasters, including drought, for both irrigated and non-irrigated crops.

In 2011, the Federal crop insurance program had the highest amount of coverage and paid the highest amount of indemnities in the history of the program!!!!!!!

RMA and its private delivery partners are prepared for 2012 crop year also.

Although, your policies are sold by private companies they are reinsured by the USDA, Federal Crop Insurance Corporation, Risk Management Agency
### A Snapshot:

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liability</td>
<td>$78 Billion</td>
<td>$114.+ Billion</td>
</tr>
<tr>
<td>Acres Insured</td>
<td>256.2 Million</td>
<td>265+ Million</td>
</tr>
<tr>
<td>Total Premium</td>
<td>$7.6 Billion</td>
<td>$11.9 Billion</td>
</tr>
<tr>
<td>Indemnity (Claims Paid So Far)</td>
<td>$4.2 Billion</td>
<td>$10.8 Billion</td>
</tr>
<tr>
<td>Loss Ratio</td>
<td>.56</td>
<td>.91</td>
</tr>
</tbody>
</table>

*Estimate*
What Should A Policyholder Do When Crops Are Drought-Damaged?

- Contact your crop insurance agent prior to putting spring planted crop acres to another use such as harvesting for silage, diverting irrigation from the crops or by abandoning the acres.

- Damage notice must be given within 72 hours of the initial discovery of damage or loss of production, but not later than 15 days after the end of the insurance period, even if the crop has not been harvested.
Very important to work closely with the company before making any changes to the care of the crop.

The company must have a chance to appraise and release the acres before the crop is put to another use, destroyed or abandoned.
What Should A Policyholder Do When Crops Are Drought-Damaged?

- If an accurate appraisal cannot be made, or you disagree with the appraisal at the time the acreage is to be destroyed or no longer cared for, you and the company can work out representative sample areas to be left intact for future appraisal purposes.

- In this case, the representative sample areas must continue to be cared for, with the exception of irrigation, until the final appraisal can be made.
Can I cut my corn insured for grain as silage?

- Yes, you can cut your corn for silage!!

- If any portion of the crop will not be harvested or will be put to another use (i.e., harvested as silage in a grain only county), the crop must be appraised as soon as possible.
Should I Continue To Care For Drought-Damaged Crops?

- Crops that have been damaged and will be taken to harvest must be continued to be cared for and maintained.

- Producers are required to continue to care for the crop, following generally recognized practices.

- Seek advice from ag experts in the area as to what, how much, and when to spray to maintain the production that is currently in the field and protect the crop from further damage.
Under extreme high temperatures and wind conditions, it may be advisable to divert irrigation water away from some crop acres to adequately provide water to the remaining crop.

- For example, irrigation could be stopped over the entire pivot to crops that would not survive and instead apply that water to crops in the rest of that pivot.

- This could prevent the loss of the entire crop by providing enough water to the remaining crop to provide for normal plant growth.

- It is important to notify the company as soon as possible when considering diversion.
Do I Need To Wait To Divert Water Until Instructed To Do So By The Company?

- It is preferred that you notify the company in advance of any diversion, failure to do so will not, in itself, prevent a loss determination.

- Advance notification allows the company the opportunity to verify the appropriateness of such diversion at the same time that the grower makes the decision to divert the water.
All possible documentation to show that diverting the water is appropriate should be maintained.

Recommendations from local Cooperative Extension System (CES) or USDA, Natural Resources Conservation Service (NRCS) (or other source recognized by CES, or NRCS to be an expert in this area) should be used to document this decision.
RMA’s Web Site: www.rma.usda.gov
Managing Through the Drought Webinar

- We welcome your questions and comments:
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  - Please be as brief as possible
  - Indicate which panel member to ask if you have a preference
  - Indicate your location, if relevant to question
About the American Society of Agronomy

• Science-based, dedicated to the development of agriculture in harmony with environmental and human values

• Serves members through publications, recognition and awards, placement service, certification programs, education

• Works closely with the Crop Science Society of America and the Soil Science Society of America

• Annual Meetings October 21-24, Cincinnati, OH
Managing Through the Drought

Today’s slides, links to additional resources at:
https://www.agronomy.org/education/drought-resources