Drought Marketing

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U.S. Drought Monitor
March 13, 2012
1. Droughts happen!
2. Short crops have long tails
3. 2013 new crop implications and pre-harvest marketing plans
4. 2012 old crop implications and post harvest marketing plans
Drought Marketing

1. Droughts happen!
2. Short crops have long tails
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Droughts Happen!

Short crop defined: a crop with average yields more than 10% below trend

Over the past four decades, the U.S. has suffered six short corn crops:

### Ten Worst Years for U.S. Corn Yields, 1912-2011

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual Yield (bu./acre)</th>
<th>Trend Yield* (bu./acre)</th>
<th>Actual vs. Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>84.6</td>
<td>118.0</td>
<td>-28.3%</td>
</tr>
<tr>
<td>1983</td>
<td>81.1</td>
<td>110.5</td>
<td>-26.6%</td>
</tr>
<tr>
<td>1934</td>
<td>18.7</td>
<td>24.2</td>
<td>-22.6%</td>
</tr>
<tr>
<td>1930</td>
<td>20.5</td>
<td>26.0</td>
<td>-21.2%</td>
</tr>
<tr>
<td>1974</td>
<td>71.9</td>
<td>90.8</td>
<td>-20.8%</td>
</tr>
<tr>
<td>1936</td>
<td>18.6</td>
<td>23.4</td>
<td>-20.5%</td>
</tr>
<tr>
<td>1913</td>
<td>22.7</td>
<td>27.8</td>
<td>-18.2%</td>
</tr>
<tr>
<td>1924</td>
<td>22.1</td>
<td>27.0</td>
<td>-18.2%</td>
</tr>
<tr>
<td>1993</td>
<td>100.7</td>
<td>121.9</td>
<td>-17.4%</td>
</tr>
<tr>
<td>1980</td>
<td>91.0</td>
<td>103.7</td>
<td>-12.2%</td>
</tr>
</tbody>
</table>

2012** | 122.8 | 160.0 | -23.3%

* Trend yield is estimated using a simple 30 year regression
** Yield estimate from September USDA WASDE report

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### U.S. Corn Yields, 1962-2011

- **1974**: 60.0 bu./acre
- **1980**: 77.4 bu./acre
- **1983**: 80.2 bu./acre
- **1988**: 84.6 bu./acre
- **1993**: 100.7 bu./acre
- **2012**: 122.8 bu./acre
Droughts Happen!

Short crop defined: a crop with average yields more than 10% below trend

What is a “trend” yield – how is it measured?

U.S. Corn Yields, 1962-2011

Ten Worst Years for U.S. Soybean Yields, 1962-2011

(estimated relative to trend)

<table>
<thead>
<tr>
<th>Years</th>
<th>Actual Yield (bu./acre)</th>
<th>Trend Yield* (bu./acre)</th>
<th>Actual vs. Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>27.0</td>
<td>32.1</td>
<td>-15.9%</td>
</tr>
<tr>
<td>1974</td>
<td>23.7</td>
<td>28.0</td>
<td>-15.4%</td>
</tr>
<tr>
<td>1983</td>
<td>26.2</td>
<td>30.9</td>
<td>-15.2%</td>
</tr>
<tr>
<td>2003</td>
<td>33.9</td>
<td>40.0</td>
<td>-15.2%</td>
</tr>
<tr>
<td>1980</td>
<td>26.5</td>
<td>30.0</td>
<td>-11.7%</td>
</tr>
<tr>
<td>1984</td>
<td>28.1</td>
<td>30.4</td>
<td>-7.7%</td>
</tr>
<tr>
<td>1976</td>
<td>26.1</td>
<td>28.2</td>
<td>-7.4%</td>
</tr>
<tr>
<td>1964</td>
<td>22.8</td>
<td>24.5</td>
<td>-6.8%</td>
</tr>
<tr>
<td>2008</td>
<td>39.7</td>
<td>42.4</td>
<td>-6.4%</td>
</tr>
<tr>
<td>1993</td>
<td>32.6</td>
<td>34.2</td>
<td>-4.8%</td>
</tr>
</tbody>
</table>

2012** 35.3 44.0  -19.8%

* Trend yield is based on a simple 30-year regression
** Yield estimate from September USDA WASDE report
On average, short crops in corn occur about 1 in 7 years. Most are caused by drought.

Twice in the last century (1913, 1993) short crops were caused by excess moisture and lack of heat. Other short crops have been caused by disease (1970) and early frost (1974).

Droughts Happen!
Drought Marketing

1. Droughts happen!

2. **Short crops have long tails**

3. 2013 new crop implications and pre-harvest marketing plans

4. 2012 old crop implications and post harvest marketing plans
Short Crops have Long Tails

Chicago December Corn Futures, 1974 and 1975 Contracts
Chicago December Corn Futures, 1980 and 1981 Contracts

- 1980 contract
- 1981 contract

Chicago December Corn Futures, 1983 and 1984 Contracts

- 1983 contract
- 1984 contract
Why do “short crops have long tails?”

- Prices quickly spike to reflect a smaller crop and available supplies
- Demand responds to higher prices and declines over a longer time period
- Higher prices promote more planted acres and production
- Demand is slow to rebuild
Chicago December Corn Futures, 1993 and 1994 Contracts

1993 contract

1994 contract

short crop...

long tail

approximate dates

cents per bushel

Chicago December Corn Futures, 2012 and 2013 Contracts

2012 contract

2013 contract

short crop...

long tail??

approximate dates

cents per bushel
Short crops have long tails

In these short crop years, the Dec futures contract for the post-drought year was lower in price a year later than it was during harvest of the drought year (e.g. Dec’89 price in October 1989 vs. October 1988).

<table>
<thead>
<tr>
<th>Short crop</th>
<th>Post SC Contract</th>
<th>1-Oct (t-1)</th>
<th>1-Oct</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td>1975</td>
<td>3.34</td>
<td>3.06</td>
<td>(0.28)</td>
</tr>
<tr>
<td>1980</td>
<td>1981</td>
<td>3.48</td>
<td>2.87</td>
<td>(0.62)</td>
</tr>
<tr>
<td>1983</td>
<td>1984</td>
<td>3.08</td>
<td>2.78</td>
<td>(0.31)</td>
</tr>
<tr>
<td>1988</td>
<td>1989</td>
<td>2.59</td>
<td>2.39</td>
<td>(0.20)</td>
</tr>
<tr>
<td>1993</td>
<td>1994</td>
<td>2.48</td>
<td>2.14</td>
<td>(0.34)</td>
</tr>
<tr>
<td>2012</td>
<td>2013</td>
<td>6.55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chicago December Corn Futures, 1988 and 1989 Contracts

The “long tail” eventually dragged next year’s new crop prices lower.
Quiz Time!
How long is the American Birkebeiner?

a) 23 kilometers
b) 27k
c) 42k
d) 54k

162 days to the Birkie - registration is still open!
Drought Marketing

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2013 New Crop Implications

Buy crop insurance and have a pre-harvest marketing plan
**Corn 2013 Pre-Harvest Marketing Plan**

Objective: Buy crop insurance to protect my production risk and have 75% of my anticipated corn crop (based on APH yield) priced by June.

Price 10,000 bushels at $4.60 cash price ($5.10 Dec. futures) using forward contract/futures hedge/HTA contract
Price 10,000 bushels at $4.90c/5.40f, or by Mar 27, pricing tool tbd
Price 10,000 bushels at $5.20c/5.70f, or by Apr 25, pricing tool tbd
Price 5,000 bushels at $5.50c/6.00f, or by May 9, pricing tool tbd
Price 10,000 bushels at $5.80c/6.30f, or by May 23, pricing tool tbd
Price 10,000 bushels at $6.10c/6.60f, or by June 6, pricing tool tbd
Price 10,000 bushels at $6.40c/6.90f, or by June 20, pricing tool tbd

Plan starts on January 1, 2013. Earlier sales will be made at a 50 cent premium and will be limited to 30,000 bushels.

Ignore decision dates and make no sale if prices are lower than $4.60 local cash price/$5.10 December futures.

Exit all options positions by mid-September 2013.
**Corn 2013 Pre-Harvest Marketing Plan**

Objective: Buy crop insurance to protect my production risk and have 75% of my anticipated corn crop (based on APH yield) priced by June.

- Price 10,000 bushels at $4.60 cash price ($5.10 Dec. futures) using forward contract/futures hedge/HTA contract.
- Price 10,000 bushels at $4.90c/5.40f, or by Mar 27, pricing tool TBD.
- Price 10,000 bushels at $5.20c/5.70f, or by Apr 25, pricing tool TBD.
- Price 5,000 bushels at $5.50c/6.00f, or by May 9, pricing tool TBD.
- Price 10,000 bushels at $5.80c/6.30f, or by May 23, pricing tool TBD.
- Price 10,000 bushels at $6.10c/6.60f, or by June 6, pricing tool TBD.
- Price 10,000 bushels at $6.40c/6.90f, or by June 20, pricing tool TBD.

Plan starts on January 1, 2013. Earlier sales will be made at a 50 cent premium and will be limited to 30,000 bushels.

Ignore decision dates and make no sale if prices are lower than $4.60 local cash price/$5.10 December futures.

Exit all options positions by mid-September 2013.

**Soybeans 2013 Pre-Harvest Marketing Plan**

Objective: Buy crop insurance to protect my production risk and have 75% of my anticipated corn crop (based on APH yield) priced by June.

- Price 2,500 bushels at $9.50 cash price ($10.30 Nov. futures) using some form of fixed price contract: forward contract, HTA, sell futures.
- Price 2,500 bushels at $9.90c/10.70f, or by Mar 27, pricing tool TBD.
- Price 2,500 bushels at $10.30c/11.10f, or by Apr 25, pricing tool TBD.
- Price 2,500 bushels at $10.70c/11.50f, or by May 9, pricing tool TBD.
- Price 2,500 bushels at $11.10c/11.90f, or by May 23, pricing tool TBD.
- Price 2,500 bushels at $11.50c/12.30f, or by June 6, pricing tool TBD.
- Price 2,500 bushels at $11.90c/12.70f, or by June 20, pricing tool TBD.

Plan starts on January 1, 2013. Earlier sales will be made at a 75 cent premium to price targets noted above and be limited to 10,000 bushels.

Ignore decision dates and make no sale if prices are lower than $9.50 local cash price/$10.30 November futures.

Exit all options positions by mid-September 2013.
Spring Wheat
2013 Pre-Harvest Marketing Plan

Objective: Buy crop insurance to protect my production risk and have 75% of my anticipated wheat crop (per APH yield) priced by early June.

Price 5,000 bushels at $6.20 cash price/$6.80 Sep wheat futures using forward contract/HTA contract/sell futures
Price 5,000 bushels at $6.60c/$7.20f, or pricing tool tbd
Price 5,000 bushels at $7.00c/$7.60f, or by March 27, pricing tool tbd
Price 2,500 bushels at $7.40c/$8.00f, or by April 25, pricing tool tbd
Price my last 5,000 at $7.80c/$8.40f, or by June 20, pricing tool tbd

Plan starts on November 1, 2012. Earlier sales will be made at a 50 cent premium to price targets noted above and are limited to 15,000 bushels.

I will consider the December futures contract for new crop sales at a 15 cent premium to September.

Ignore decision dates and make no sale if prices are lower than $6.20 local cash price/$6.80 September futures.

Meet my kids
Drought Marketing

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2012 Old Crop Implications

Long tails = sell early?

Seasonal Price Movements in Minnesota Corn Prices, 1970-2011
2012 Old Crop Implications

What do years 2012 and 1995 have in common?
U.S. Corn Ending Stocks, 1970-2012 Crop Years

ending stocks in weeks of usage

U.S. Corn Ending Stocks, 1970-2012 Crop Years

ending stocks in weeks of usage

1995/96
In 8 of 10 “tight stocks” years, the cash price in June was higher than the previous October.

cash price = futures price + basis
cash price = futures price + basis

New crop (Dec'13)
cash price = \textbf{futures price} + basis

\textbf{Carrying Charges in the Corn Market}

Could a 120 cent old crop/new crop inverse increase to 150-200 cents?

CBOT Corn Futures, September 7, 2012
\[ \text{cash price} = \text{futures price} + \text{basis} \]

I am an (old crop) basis bull!

\[ \text{cash price} = \text{futures price} + \text{basis} \]
Carrying Charges in the Corn Market

CBOT Corn Futures, September 7, 2012
2012 Old Crop Implications

- Jul’13/Dec’13 (old crop/new crop) inverse could reach record levels
- Corn basis next spring will go to strong “overs” (again)

Corn: 2012 Post-Harvest Marketing Plan

(preliminary)

<table>
<thead>
<tr>
<th></th>
<th>Southwest MN</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec’12 futures</td>
<td>$7.99</td>
<td></td>
</tr>
<tr>
<td>new crop basis</td>
<td>30 under</td>
<td></td>
</tr>
<tr>
<td>harvest price</td>
<td>$7.69</td>
<td></td>
</tr>
<tr>
<td>Jul’13 futures</td>
<td>$7.85</td>
<td></td>
</tr>
</tbody>
</table>
The corn market is inverted and there is no carry to sell
Basis is good and prices are high – harvest sales make sense
Gut check time; basis will get much better, but do you want to hold $7.70 corn in storage?
Re-owning harvest sales with call options is an expensive idea worth consideration

Corn: 2012 Post-Harvest Marketing Plan

Objective: Get a good average price! Hold no unpriced corn beyond July 1, 2013.

60,000 bushels: Sell at harvest.

30,000 bushels: Place unpriced corn in storage. Exit plan: Sell 10k @ $8.50, sell 10k @ $9.00 and sell 10k @ $9.50. Bushels unpriced on May 1 will be sold in May and June. Risk no more than $1 below the harvest price
Soybeans: 2012 Post-Harvest Marketing Plan

Soybeans

<table>
<thead>
<tr>
<th>Southwest MN</th>
<th>(preliminary)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 7</td>
<td></td>
</tr>
<tr>
<td>Nov’12 futures</td>
<td>$17.47</td>
</tr>
<tr>
<td>new crop basis</td>
<td>59 under</td>
</tr>
<tr>
<td>harvest price</td>
<td>$16.88</td>
</tr>
<tr>
<td>Jul’13 futures</td>
<td>$15.85</td>
</tr>
</tbody>
</table>

- There is a very strong inverse from November to July
- Basis is average and with prices over $15, harvest sales make sense
- Re-owning harvest sales with call options is an expensive idea worth consideration
- I am reluctant to hold unpriced soybeans in storage
**Soybeans: 2012 Post-Harvest Marketing Plan**

*(assumes no pre-harvest marketing)*

Objective: Get a good average price! Hold no unpriced soybeans beyond July 1, 2013.

**25,000 bushels:** Sell at harvest (and re-own with options?)

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**HRS Wheat: 2012 Post-Harvest Marketing Plan**

**Spring Wheat**

<table>
<thead>
<tr>
<th></th>
<th>Red River Valley</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>August 24</strong></td>
<td></td>
</tr>
<tr>
<td>Sep’12 Futures</td>
<td>$9.19</td>
</tr>
<tr>
<td>Harvest Basis</td>
<td>82 under</td>
</tr>
<tr>
<td>Harvest Price</td>
<td>$8.37</td>
</tr>
<tr>
<td>May’12 Futures</td>
<td>$9.46</td>
</tr>
</tbody>
</table>
HRS Wheat: 2012 Post-Harvest Marketing Plan

- The opportunity to sell the carry can be found in basis, and not in the futures market
- Holding $8.40 wheat in storage is too risky for me
- Selling the carry hedges downside risk and buys time for basis improvement

How to “Sell the Carry”

MGEX Spring Wheat Futures: August 24, 2012

Place wheat in storage and sell May futures - expect a basis of option price or "overs" by next spring.
HRS Wheat: 2012 Post-Harvest Marketing Plan

Objective: Get a good average price! Hold no unpriced wheat beyond June 1, 2013.

**25,000 bushels:** Place in storage and sell the carry with May futures. Exit plan: Unwind my storage hedge when the cash basis narrows to option price May futures, or by the last week of April.

Summary

• Droughts (and short crops) happen
• Short crops have long tails
• Be prepared to price 2013 crop early
• Corn basis remains strong thru the current crop year