Economic Impacts of the 2011 Drought on the Southern High Plains

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Abstract

As droughts become more severe and frequent with changing climate, farmers of the Southern High Plains (SHP) of Texas may be forced to adopt new agricultural practices which will enable them to adapt to severe climate conditions. During 2011, scorching temperatures coupled with record low precipitation resulted in catastrophic drought conditions in the SHP. An analysis of the impact of the 2011 drought on producers in the TAWC demonstration sites has shown that producers made in-season crop management decisions to mitigate the effects of drought, which also impacted their 2012 crop mixes.

In-Season Management

Across the TAWC sites in 2011, 30% of the total system acres were abandoned or fallowed, primarily affecting 790 acres of cotton, 161 acres of corn, 62 acres of wheat, and 19 acres of grass seed production. The percentage lost by crop was 30%, 45%, and 69% for cotton, corn, and wheat, respectively. Corn yields per harvested acre were 121 bushels; 58% lower than the average of previous years. Cotton lint yield was 1,166 pounds per harvested acre, representing 90% of the previous six-year average. Thirteen out of the 29 sites collected a total of $406 per acre in crop insurance due to reduced yields as a result of the drought.

Irrigation Applied

Due to the intensity of the heat and lack of rainfall, the amount of irrigation applied to the primary crops in 2011 was 74% greater than the average of previous years. The previous six year average of precipitation was 20.5 inches. Total precipitation received across all TAWC sites in 2011 was 5.3 inches. Table 1 shows the annual and growing season precipitation received at the TAWC sites.

<table>
<thead>
<tr>
<th>Precipitation</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual</td>
<td>28.9</td>
<td>5.3</td>
<td>10.3</td>
<td>14.8</td>
</tr>
<tr>
<td>Growing Season</td>
<td>24.8</td>
<td>3.3</td>
<td>8.9</td>
<td>11.7</td>
</tr>
</tbody>
</table>

Table 1. Precipitation Received at TAWC Project Sites

Table 2 shows the comparison of applied irrigation for 2010, 2011 and the 7-year average for selected crops in the project.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Irrigation 2010</th>
<th>Irrigation 2011</th>
<th>Change 2010 to 2011</th>
<th>7-year average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton</td>
<td>7.4</td>
<td>23.2</td>
<td>124</td>
<td>12.8</td>
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<tr>
<td>Corn Grain</td>
<td>12.8</td>
<td>27.1</td>
<td>112</td>
<td>18.8</td>
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<tr>
<td>Corn Silage</td>
<td>18.0</td>
<td>34.7</td>
<td>93</td>
<td>21.9</td>
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<tr>
<td>Wheat</td>
<td>2.6</td>
<td>11.3</td>
<td>335</td>
<td>6.5</td>
</tr>
<tr>
<td>Grain Sorghum</td>
<td>6.1</td>
<td>27.8</td>
<td>354</td>
<td>10.6</td>
</tr>
</tbody>
</table>

Table 2. Irrigation Applied on TAWC Project Sites

Conclusions

- Producers are shifting from traditional cotton monoculture to multi-crop production systems due to extreme weather variability.
- Grain sorghum production increased significantly in response to the drought.

Post-Drought

Producer reaction to the 2011 drought also manifested in changes in their 2012 crop choices. In 2012, producers planted 603 fewer acres of cotton than compared to 2011. Corn grain acreages remained the same, while corn silage acreage increased by 81. Planted wheat increased by 71 acres and grain sorghum increased by 228 acres.

References

http://blog.chron.com/forecaster/2012/03/texas-drought-takes-toll-on-cotton-planting/


Acknowledgements

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