University of Illinois SDI System

- Exploring new ways to maintain nutrient availability, ensure adequate moisture, and alleviate season-long crop stress
- CPL installed a 10 acre Subsurface Drip Irrigation (SDI) system with zones regulated for differential application of irrigation, fertigation, or chemigation treatments
- Completed May, 2014
Innovative Delivery System

- Dripperline spaced every 30” buried ~14-16” below ground
- 30 miles of total dripperline
- Thinwall dripperline with emitters every 24”
- Net flow rate = 0.08”/hr
- Distribution and collection manifolds trenched in at 24”
- “Autodrains” installed to “winterize” the system after each use

Drip Line Installation
Innovative Delivery System

• Dripperline spaced every 30” buried ~14-16” below ground

• 30 miles of total dripperline

• Thinwall dripperline with emitters every 24”

• Net flow rate = 0.08”/hr

• Distribution and collection manifolds trenched in at 24”

• “Autodrains” installed to “winterize” the system after each use

Distribution Lines
Innovative Delivery System

• Dripperline spaced every 30” buried ~14-16” below ground

• 30 miles of total dripperline

• Thinwall dripperline with emitters every 24”

• Net flow rate = 0.08”/hr

• Distribution and collection manifolds trenched in at 24”

• “Autodrains” installed to “winterize” the system after each use

Distribution Line Connection To Drip Lines
Innovative Delivery System

- Dripperline spaced every 30” buried ~14-16” below ground
- 30 miles of total dripperline
- Thinwall dripperline with emitters every 24”
- Net flow rate = 0.08”/hr
- Distribution and collection manifolds trenched in at 24”
- “Autodrains” installed to “winterize” the system after each use

Auto Drains to release water when system is shut off
Before (Fall, 2013)
After (Fall, 2014)
Right Time?
Seasonal Phosphorus Uptake of 230 bu. Corn

Bender, Haegele, Ruffo, Below. Agron. J. 2012
All treatments balanced for water. Champaign, 2015.
## Hybrid Response to Fertigation

<table>
<thead>
<tr>
<th>Hybrid</th>
<th>Irrigated</th>
<th>Fertigated</th>
<th>Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yield (Bu Ac^{-1})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>214-45STXRIB</td>
<td>204</td>
<td>238</td>
<td>+34*</td>
</tr>
<tr>
<td>7087VT3P</td>
<td>179</td>
<td>248</td>
<td>+69*</td>
</tr>
<tr>
<td>DKC61-54</td>
<td>180</td>
<td>225</td>
<td>+45*</td>
</tr>
<tr>
<td>DKC64-87</td>
<td>201</td>
<td>257</td>
<td>+56*</td>
</tr>
<tr>
<td>N74R-3000GT</td>
<td>204</td>
<td>260</td>
<td>+56*</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>194</strong></td>
<td><strong>246</strong></td>
<td><strong>+52</strong>*</td>
</tr>
</tbody>
</table>

* Irrigated vs. Fertigated treatments significantly different at α=0.10.

- All treatments balanced for water and received base N rate (180 lbs).
- Fertigated treatments received (113-120-150-12S-1Zn). Champaign, 2015.