Use our knowledge of crop physiology and partner with industry leaders to maximize corn and soybean’s yield potential.
Corn Management Considerations: 

Pre-Plant

- Foundational rate of N, banded P, broadcast K (210-100-180-25S-2.5Zn-1.5B)
- Racehorse hybrids selected to tolerate high populations and planted in 20” rows
Corn Management Considerations: Vegetative Growth

- Fertigated N, P, K, S, and micronutrients directly into the root zone based on nutrient uptake
- V5 Foliar application of fungicide and PGR to maintain crop health
Corn Management Considerations: Reproductive Growth

- Foliar B and foliar N a week prior to tassel emergence
- Fungicide + insecticide applied at flowering and early grain filling
- Fertigated nutrients, especially N, P, S, and Zn
## Quest for 500 average Hybrid Yield

| Hybrid               | Yield  
|----------------------|--------
| 214-45 STXRIB        | 316    
| 7087VT3P             | 309    
| DKC61-54 SSTX        | 295    
| DKC62-77 SSTX        | 287    
| DKC64-87 SSTX        | 252    
| N74R-3000GT          | 314    
| **Average**          | **296**

Base Fertility = 210-100-180-25S-2.5Zn-1.5B.

Average of 5 populations and based on selected high fertility group during 2015.
# Quest for 500 average Population Yield

<table>
<thead>
<tr>
<th>Population</th>
<th>Yield (bu Ac(^{-1}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>32,000</td>
<td>263</td>
</tr>
<tr>
<td>38,000</td>
<td>293</td>
</tr>
<tr>
<td>44,000</td>
<td>301</td>
</tr>
<tr>
<td>50,000</td>
<td>304</td>
</tr>
<tr>
<td>56,000</td>
<td>316</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>295</strong></td>
</tr>
</tbody>
</table>

Base Fertility = 210-100-180-25S-2.5Zn-1.5B.

Average of 6 hybrids and based on selected high fertility group during 2015.
### Effect of Base Fertility on Hybrid and Plant Population on Yield of Fertigated Corn

<table>
<thead>
<tr>
<th>Hybrid</th>
<th>Plant Population (plants acre$^{-1}$)</th>
<th>Bushels ac$^{-1}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>32K</td>
<td>38K</td>
</tr>
<tr>
<td>214-45 STXRIB</td>
<td>258</td>
<td>285</td>
</tr>
<tr>
<td>7087VT3P</td>
<td>255</td>
<td>300</td>
</tr>
<tr>
<td>DKC61-54 SSTX</td>
<td>262</td>
<td>263</td>
</tr>
<tr>
<td>DKC62-77 SSTX</td>
<td>267</td>
<td>270</td>
</tr>
<tr>
<td>DKC64-87 SSTX</td>
<td>243</td>
<td>267</td>
</tr>
<tr>
<td>N74R-3000GT</td>
<td>280</td>
<td>291</td>
</tr>
</tbody>
</table>

Base Fertility: 210-100-180-25S-2.5Zn-1.5B
## Effect of Base Fertility and Plant Population on Yield of Fertigated Corn

<table>
<thead>
<tr>
<th>Plant Population plants acre⁻¹</th>
<th>No Base Fertility bu acre⁻¹</th>
<th>Base Fertility bu acre⁻¹</th>
<th>Δ Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td>32,000</td>
<td>223</td>
<td>261</td>
<td>38</td>
</tr>
<tr>
<td>38,000</td>
<td>246</td>
<td>279</td>
<td>33</td>
</tr>
<tr>
<td>44,000</td>
<td>251</td>
<td>292</td>
<td>41</td>
</tr>
<tr>
<td>50,000</td>
<td>255</td>
<td>296</td>
<td>41</td>
</tr>
<tr>
<td>56,000</td>
<td>276</td>
<td>305</td>
<td>29</td>
</tr>
</tbody>
</table>

Average of six hybrids
### Effect of Base Fertility and Hybrid Selection on Yield of Fertigated Corn

<table>
<thead>
<tr>
<th>Hybrid</th>
<th>No Base Fertility</th>
<th>Base Fertility</th>
<th>Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td>214-45 STXRB</td>
<td>244</td>
<td>294</td>
<td>50</td>
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<td>294</td>
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<td>238</td>
<td>265</td>
<td>27</td>
</tr>
<tr>
<td>N74R-3000GT</td>
<td>271</td>
<td>302</td>
<td>31</td>
</tr>
</tbody>
</table>

Average of 5 plant populations
Compaction Challenges
<table>
<thead>
<tr>
<th>Compaction</th>
<th>Base Fertility</th>
<th>Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>Fertility</td>
</tr>
<tr>
<td>Compacted</td>
<td>226.4</td>
<td>277.3</td>
</tr>
<tr>
<td>No Compaction</td>
<td>273.4</td>
<td>295.6</td>
</tr>
<tr>
<td>Increase from no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>compaction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significantly different at \( P \leq 0.0001 \).

Base Fertility = 210-100-180-25S-2.5Zn-1.5B.
Average of 4 trials at 3 locations during 2015.
Conclusions

• Understanding those factors that have the biggest impact on corn yield each year (i.e. the Seven Wonders of Corn Yield) gives growers the opportunity to increase corn yield with better crop management.
Conclusions

• Hybrid selection is crucial for high yields but hybrids require different management to realize their yield potential

• Narrow rows (20 inch spacing) has to be the future of corn production in order to manage a higher population of plants
Conclusions

• For maximum corn yield a systems approach is needed that combines individual practices known to impact productivity.

• High yield starts with plant nutrition which sets the growth trajectory and the potential for high yields.
Conclusions

• Banded fertility can ensure that key nutrients are placed for maximum root interception and lower loss from surface runoff

• Fertilizer banded within 3” of the row produced greater yields than broadcast fertilizer

• Banding fertilizer further than 6 inches from the row resulted in lower yields than broadcast
Conclusions

• Mineral nutrients with a high Harvest Index (N, P, S and Zn), are the most important for high corn yields

• Soil test values may not be calibrated for higher plant populations especially for nutrients like P, S, and Zn
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• Mosaic
• Nachurs
• Netafim
• Orthman
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• West Central
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• Wolf Trax
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For more information:
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