Uniform Field Conditions Don't Exist: Why Plant Uniform Prescriptions?

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Trial Methodology

Environment information is appended to the treatment polygon and target scouting location for analysis

- Understanding plant mechanism helps to quantify environmental influence and management. 
  \[ P_s - R_M = \text{Growth} + \text{Storage} \]
- Carbohydrate storage is the result of photosynthesis, growth, and respiration process
- Quantifying the “signal” of field environments influence on physiological processes will add clarity to “why” yield is altered and will also lead to better future prediction

**Early season corn development**

Ambient temperature = 94° F
V6 to V8 corn stage

Canopy = 20%
Soil Temperature = 115°
Stalk Temperature = 104°

Canopy = 90%
Soil Temperature = 90°
Stalk Temperature = 87°
Rate of Gain (V6-R1)

% Above or below the location by environment average

<table>
<thead>
<tr>
<th>Hybrid A</th>
<th>Hybrid B</th>
<th>Hybrid C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Limited</td>
<td>Saturated</td>
<td>Water Limited</td>
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</tbody>
</table>

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R1 Sucrose Content - % Above or below the location by environment average

R6 Sucrose Content - % Above or below the location by environment average

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Soil Attribution within hybrid Comparisons

Select a combination:
Location, Product A, and Product B

<table>
<thead>
<tr>
<th>Location</th>
<th>Product A</th>
<th>Product B</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Locations</td>
<td>Yield A 257.6</td>
<td>Yield B 238.3</td>
</tr>
</tbody>
</table>

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Hybrid Placement Predicted by Environmental Matching

Hybrid A

Hybrid B

Hybrid C

Probability of Fit
- 0.000000 - 0.250507
- 0.250508 - 0.428071
- 0.428072 - 0.586423
- 0.586424 - 0.749319
- 0.749320 - 0.895885
- 0.895886 - 1.000000

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Summary

- Understanding environment to the grid cell level
- Trial Setup: introducing variability to the products
- Measuring plant growth rate and plant carbohydrate utilization by environment
- Environmental matching, probability of product fit.