Nitrogen Fertilizer Recommendations for Soft White and Hard Red Spring Wheat

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Hard Red

High protein (discounted; protein < 14%)

Soft White

Low protein (discounted; protein < 8.5-10.5%)

Market price varies year-to-year

Can we minimize N for protein?

Focus on Yield?, especially with the availability of ‘Egan’

Focus on Yield?
Goal

Measure and compare yield and protein performance of contrasting market classes

Specific objectives

Fertilizer recommendation
Hard Red
Egan
McNeal
Solano
Vida

Soft White
Alpowa
Alturas
Penewawa
UI-Stone

Planted: 22 Apr
25 seeds/ft^2

TOTAL IRR: 5.7”
(6/10: 1”; 6/23: 1.3”; 6/30: 1”; 7/15: 1.3”; 7/22: 1”)

Hand-line Sprinkler Irrigated

Rainfed (6.2” Rain)
### Yield (Bu/A)

<table>
<thead>
<tr>
<th>Effects</th>
<th>Irrigated</th>
<th>Rainfed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen              : 0.6953</td>
<td>0.4605</td>
<td></td>
</tr>
<tr>
<td>Variety               : &lt;.0001</td>
<td>&lt;.0001</td>
<td></td>
</tr>
<tr>
<td>Nitrogen x Variety    : 0.1062</td>
<td>0.9205</td>
<td></td>
</tr>
</tbody>
</table>
# Protein

<table>
<thead>
<tr>
<th>Effects</th>
<th>Irrigated</th>
<th>Rainfed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>0.041</td>
<td>0.0055</td>
</tr>
<tr>
<td>Variety</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Nitrogen x Variety</td>
<td>0.7361</td>
<td>0.8236</td>
</tr>
</tbody>
</table>
Yield for HRSW (Rainfed)

Yield for HRSW (IRRIGATED)

Protein for HRSW (IRRIGATED)

Yield for SWSW (IRRIGATED OR Rainfed)

Protein for HRSW (Rainfed)

98  138  178  218  258 lbs N/A
### Irrigated

- **Alpowa**: c
- **Alturas**: e
- **Penewawa**: d
- **UI-Stone**: e
- **Egan**: a
- **McNeal**: a
- **Solano**: b
- **Vida**: c
- **SWSW**:
- **HRSW**:

### Rainfed

- **Alpowa**: d
- **Alturas**: f
- **Penewawa**: e
- **UI-Stone**: e
- **Egan**: b
- **McNeal**: a
- **Solano**: c
- **Vida**: d
- **SWSW**:
- **HRSW**:

*Docked Docked Docked*
Adjusted Gross Income

<table>
<thead>
<tr>
<th>Wheat Class</th>
<th>$/bu</th>
<th>$ Protein</th>
<th>$FN</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWSW</td>
<td>3.53</td>
<td>-0.05 (&lt;8.5-10.5&gt;)</td>
<td>-0.25 per 25 sec (FN&lt;300)</td>
</tr>
<tr>
<td>HRSW</td>
<td>5.13</td>
<td>0.06 per .25 (&gt;14); -0.12 per 0.25 (&lt;14)</td>
<td>-0.25 per 25 sec (FN&lt;330)</td>
</tr>
</tbody>
</table>

Irrigation cost: $3/acre-inch
Nitrogen nutrient cost: $0.52/lb N

Effects

Nitrogen : 0.0004
Variety : <.0001
Nitrogen x Variety : 0.1054

Irrigated: <.0001
Rainfed: <.0001

Rainfed: 0.8312
Based on 1-yr (2016) data alone

<table>
<thead>
<tr>
<th>Market Class</th>
<th>IRRIGATED N Treatments (lb/A)</th>
<th>RAINFED N Treatments (lb/A)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>98</td>
<td>138</td>
</tr>
<tr>
<td>SWSW</td>
<td></td>
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</tr>
<tr>
<td>Yield</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Protein</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Adj Gross $</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>HRSW</td>
<td></td>
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<tr>
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Discussion