Fertilizer Management after a Dry Winter

2013 Grain Sorghum Tour
Brian Arnall
Plans

- No-till
- Early Sorghum
- Full Season
- Double Crop
- Full Season is following?
Drought and N

• In most cases Drought has no NEGATIVE impact on Nitrogen.
• The 1 exception, Soil pH >7.5
  – H is driven off NH4 → NH3
Drought and N

• Limited Moisture will limit Conversion of NH₄ → NO₃.
• NO movement of NO₃ down.
• Mesonet Fractional Water Graph
  • 5cm = 2in
  • 25cm = 10 in
  • 60cm = 24 in
Lahoma and Woodward
Kingfisher and Guthrie
What’s Happening

• The Big Question is what is happening with organic matter and residue.
• This will be site dependent
• What was the last crop, when was it mature.
• Dig through your soil
  – Is there residue?
  – How deep is the moisture?
Organic Matter

- Can release N into the system
- Can tie up N into organic matter
- Straw breaking down will bind N
- Beans breaking down will release
- Corn/Sorghum will be somewhere in between
Following a summer Crop

• Lets look at Mass Balance
  – Units in Units out

<table>
<thead>
<tr>
<th>Crop</th>
<th>Lbs N</th>
<th>Lbs/50 bu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>.9 / bu</td>
<td>45</td>
</tr>
<tr>
<td>Sorghum</td>
<td>.84 / bu</td>
<td>42</td>
</tr>
<tr>
<td>Forage sorghum</td>
<td>40 / ton</td>
<td></td>
</tr>
<tr>
<td>Canola</td>
<td>1.88 / bu</td>
<td>94</td>
</tr>
<tr>
<td>Wheat</td>
<td>1.5 / bu</td>
<td>75</td>
</tr>
</tbody>
</table>
Low soil moisture

• Will turn a deep rooted crop into a shallow rooted crop.
• Meaning if N is deep,

  N is not available.
N-Rich Strip

- Ideal for volatile environments
- Apply 40 to 50 lbs N in a strip.
  - Min 10ft wide and 300 ft long.
- Allows you opportunity to NOT put all of your eggs in one basket.
So what to do

• Unless Soil profile fills.
• Plan for the average or less.

<table>
<thead>
<tr>
<th>Yield Goal Bu/ac</th>
<th>Lbs N/ac</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>40</td>
</tr>
<tr>
<td>54</td>
<td>50</td>
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<tr>
<td>62</td>
<td>60</td>
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<tr>
<td>76</td>
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<td>85</td>
<td>90</td>
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<tr>
<td>94</td>
<td>110</td>
</tr>
<tr>
<td>118</td>
<td>150</td>
</tr>
</tbody>
</table>
Phosphorus

- Very Important for root growth.
- Overall seeing good results from addition of some P, regardless soil test.
- More so in environment with low soil moisture.
- Watch Salt Index.
Wrap-up

• Consider Deep soil Moisture
  – Adjust N rate based on availability
• If you limit N. N-Rich Strips are a MUST!
Thank you!!!

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