Winter Wheat Management
Tips for Higher Yields

Volume Two - Spring Management

Stand Assessment: This is the first thing that you will do as the snow leaves your fields and dormancy breaks. There are two major methods to do this. The one for frozen ground I will ignore in this bulletin!

Post Dormancy Evaluation (Non-Frozen Ground)

Step One
- Dig several randomly chosen plants throughout field.
- Dig each plant with as many of roots attached as possible.
- Shake each seeding to free excess soil.
- If soil adheres to roots in columns, root hairs are alive, as is plant

Step Two
- Cut into crown at base of plant and expose tissue.
- If crown tissue is white or light green, plant is alive.
- If tissue if brownish, plant is likely dead

Step Three (if you’re still not sure)
- Dig some plants
- Pot them indoors
- Add water
- See if growth resumes.

Stand Counts
After determining that the field is alive, a stand count should be taken.
A stand of **30-35 plants/ft²** (1.3 – 1.5 million plants) is considered optimum or what is required to maximize the yield potential of the field!

- 5 or more plants per foot of row (**minimum, but will never be your high yielding field**)
- 18 or more plants per foot of row (**Acceptable**)
- For Straw Only – 6-8 per foot of row
How to make the call?

Yield loss is not directly related to % winterkill

Tough to determine this!
- Variety winterhardiness
- Desiccation on hill tops or slopes or open fields
- Cold temps or lack of moisture
- Growth of crop and stage going into winter

**Kansas State Winterkill Study**

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<tr>
<td>Winterkill %</td>
<td>Yield</td>
<td>% Loss</td>
<td>Winterkill %</td>
<td>Yield</td>
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<tr>
<td>0</td>
<td>59</td>
<td>-</td>
<td>0</td>
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<td>46.8</td>
<td>21.0</td>
<td>75</td>
<td>18.5</td>
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As you can see from the above chart, making a decision based solely on percentage winterkill is not the best method! A field evaluation is required:

- How large an area was winterkilled
- Was it just small patches or entire sections of a field
- Are the remaining plants healthy or show various levels of injury
- How many live plants/ft² remain

**Assuming** you have an acceptable stand, what’s next?

**Nitrogen:** Wheat requires about 1.3 lbs. of N for each bushel of grain produced. Intensively managed wheat should have 3 (three) application splits. The first was done last fall. Your next application will occur shortly after dormancy has broken. This application should be made between beginning tillering (Feekes 2.0) to the end of tillering (Feekes 3.0). Rates should be 25-35 lbs. N. If this is no-till wheat add an additional 10-15 lbs N. This application will optimize the number of tillers and potential heads produced.

**Form of Nitrogen:** With even application, all nitrogen sources should perform equally at this time of year. However, leaf burn can be a concern when using liquid nitrogen. The burn is made worse as the temperature during application goes up. Once temperatures are in the mid -70’s expect damaged tissue! Leaf burn can be reduced by “streaming” or “dribbling” the liquid nitrogen or using large flood nozzles; diluting liquid nitrogen in a 50/50 mix with water; or applying less than 60 lb/acre of nitrogen per application. Although the burning of wheat with liquid nitrogen looks bad, there is little evidence to indicate that it reduces yields at early growth stages. However the more mature the wheat is, the greater the potential yield loss due to damaged tissues.
**Sulfur**: For yields above 100 bushel per acre, having sufficient available becomes more of a challenge. Research at these levels is rare. Field trials have shown that 15-25 lbs. of applied sulfate sulfur (AMS or ATS) ensures both sufficient tissue sulfur levels and may help the plant better utilize nitrogen. Best timing of this is with the 2nd nitrogen application made just after dormancy break.

**Weed Control**: This is a critical time for weed control, competition from Feekes 3.0 and beyond can significantly limit yield potential.

Many wheat herbicides can be applied using liquid nitrogen as a partial or complete spray carrier. Harmony®, Affinity® Tank Mix or Affinity® Broadspec must first be dissolved (pre-slurry) with water prior to adding to liquid nitrogen (UAN) solutions. If using lower rates of liquid nitrogen in the spray solution (less than 50% of the spray volume), add nonionic surfactant such as Preference® at 8-16 oz/acre. If using higher rates of liquid nitrogen or when tank-mixing with or using 2,4-D herbicide, do not add a surfactant. Leaf burn potential may be increased by applying herbicides with liquid nitrogen. E-99® may mix better with UAN if it is pre-mixed in water first at a ratio of 1:4 (1 part E-99: 4 parts water). Do Not apply 2,4-D or other growth regulator herbicides past the jointing stage.

What will be in Future Issues of “Wheat Management?”
Future issues of Wheat Management will come as we move thru early spring. They will contain timely information on the following topics:

- **Your third split on Nitrogen**
- **Ascend application timing**
- **NutriSolutions Tool & Foliar Micro Nutrients**
- **Foliar nitrogen yes/no/?**
- **Fungicide recommendations and timing**

Disclaimer: As with any recommendation there are many other variables that need to be taken into consideration for it to be right for a specific application. Soil type, moisture, temperature etc. will impact your specific recommendation.

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