Considerations When Planting Winter Wheat After a Spring Crop

- Best management practices for wheat seeded after a spring crop may vary substantially due to the difference in the amount and type of crop residue left in the field after harvesting.
- Optimum seeding rate may differ due to expected available moisture during the growing season, seedbed condition and anticipated stand loss, timely versus late planting date, and geography.

After harvesting soybean, corn, grain sorghum, or other crops, winter wheat can be seeded in those fields during late summer/early fall. Management practices for wheat after corn or grain sorghum, versus soybean, may be different due to the difference in the amount and type of crop residue after harvest. For example, lower amounts of crop residue may facilitate less tillage needed for seedbed preparation, a more favorable environment for no-till, and shorter term nitrogen (N) tie-up from decaying plant residue.

Tillage and Residue Management
Residue management begins by confirming that the stalk choppers and spreaders are distributing residue evenly when combining the spring planted crop. If adjustments are needed, always refer to the manufacturer’s manual before performing any maintenance.

If soil moisture is lacking after harvest, no-till wheat seeding may be an option to conserve moisture which can contribute to quicker wheat emergence. If considering no-tilling wheat, the practice may be more successful after soybean harvest versus corn due to less crop residue on the surface.

The amount of corn residue produced per acre will vary by yield, weather, soil type, and corn product. As corn yields have increased during the past decade, the amount of residue has increased proportionally. Generally the ratio of corn grain weight to residue weight is about 1:1 on a dry matter basis. Residue is desirable for soil erosion protection; however, excess corn residue can be problematic, if considering no-tilling wheat. Also, corn stalks and cobs are low in N and have a high carbon to N ratio. As the residue breaks down, N may be tied up initially, which may reduce its availability for the wheat crop.

University of Kentucky conducted a 3-year research project focusing on corn residue management for no-till wheat after corn harvest. Treatments in the study, conducted at three locations, included removing residue, chopping with a rotary mower, and chopping with a flail mower prior to seeding. Additionally, if corn residue was not shredded wheat was either no-tilled parallel to the harvested corn rows or no-tilled diagonally to the corn rows.

Results of the study showed minimal significant difference in yield potential between residue treatments when no-tilling wheat under favorable growing conditions (mild fall/winter and early/warm spring). However, under unfavorable weather (cool fall and/or spring or severe winter), the following observations were noted. When corn residue was not shredded, planting diagonally to the corn rows resulted in higher yield potential during all 3 years. Also, the use of a flail mower resulted in more uniform distribution of residue compared to using a rotary mower.

When wheat is no-tilled into substantial corn residue there may be concern about achieving uniform planting depth, especially shallow seed placement. Wheat plants developed from shallow planting may be more prone to freeze injury during harsh winter conditions. Shredded residue, with smaller pieces and uniformly distributed prior to planting, may result in a more uniform planting depth.

Good seed-to-soil contact is needed for quick germination and emergence. If no-till seeding, consider that the drill must be able to cut through surface residue so care should be taken to confirm the residue is dry enough prior to seeding. “Hairpinning” may occur when residue is not cut but stuffed into the seed slot thus preventing adequate seed-to-soil contact.

Herbicide Product Selection
Consider re-cropping restrictions for seeding wheat when choosing herbicide products to be applied for spring planted crops such as corn, soybean, sorghum, and others. Some of the soil applied residual herbicides may have a 3 to 4 month re-cropping restriction in order to seed wheat. Always read and follow pesticide label directions.

Nutrient Requirements
A current soil test should be used to determine existing soil nutrient levels, especially pH, phosphorus (P), and potassium (K) to avoid future over or under fertilizer applications. P and K removals per harvested bushel of wheat, soybean, corn, and grain sorghum are listed in Table 1. Also, included are corn silage (67% moisture) and wheat straw P and K removal per harvested ton. If needed, consider applying P and K fertilizer for

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both the spring crop and winter wheat prior to spring planting. Generally, N is the nutrient needed in the greatest quantity for winter wheat and its application usually provides the largest contribution to maximizing yield potential. N application rates are influenced by expected yield, soil type, previous crop residue, and other factors. Contact your local county extension office for recommended N application rates for your area.

### Table 1. Nutrient removal from harvested winter wheat grain, wheat straw, soybean grain, corn grain, corn silage, and grain sorghum.

<table>
<thead>
<tr>
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<th>P₂O₅</th>
<th>K₂O</th>
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</thead>
<tbody>
<tr>
<td>Winter wheat grain (lb/bu)</td>
<td>0.48</td>
<td>0.29</td>
</tr>
<tr>
<td>Wheat straw (lb/ton)</td>
<td>3.7</td>
<td>29.0</td>
</tr>
<tr>
<td>Soybean grain (lb/bu)</td>
<td>0.73</td>
<td>1.2</td>
</tr>
<tr>
<td>Corn grain (lb/bu)</td>
<td>0.35</td>
<td>0.25</td>
</tr>
<tr>
<td>Corn silage, 67% moisture (lb/ton)</td>
<td>3.1</td>
<td>7.3</td>
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<tr>
<td>Grain sorghum (lb/bu)</td>
<td>0.39</td>
<td>0.27</td>
</tr>
</tbody>
</table>


### Product Selection

Evaluating and selecting wheat products with high yield potential, high test weight and grain quality, winter hardness, and resistance or tolerance to insects and diseases in your geography is the first step to produce maximum economic yields. Since each seed product will have specific strengths and weaknesses, more than one product should be considered. Choosing multiple products of varying maturities can also help in managing risk associated with agronomic challenges such as late spring freezes and diseases such as *Fusarium* head blight, and can aid in harvest scheduling.

State, local, and seed company performance trials can help identify top products, allowing farmers to best position products on their farms. Evaluating test data from two or more years will provide a more accurate indication of potential yield performance. Purchasing certified seed can help ensure the wheat product is free of weed seed and certain diseases and offers the desired germination percentage.

### Seeding Rate

Like planting dates, recommended seeding rates will vary from state to state and even within a state. For example, in low rainfall areas such as western Kansas, seeding rates are generally lower than in central and eastern Kansas. In western Kansas, recommended seeding rates range from 600,000 to 900,000 seeds/acre (40 to 60 lbs/acre with 15,000 seeds/lb products). Recommended seeding rates increase to 705,000 to 900,000 seeds/acre in central Kansas and 900,000 to 1,250,000 seeds/acre in eastern Kansas. Under irrigation, the seeding rate recommendation may increase to 1,350,000 seeds/acre.

Additionally, University of Wisconsin recommends seeding rates for timely planted wheat from 1,300,000 to 1,500,000 seeds/acre, while University of Illinois suggests seeding rates of 1,500,000 to 1,700,000 seeds/acre.  

Consider contacting your local county extension office for recommended seeding date, and seeding rate for timely planted or late planted wheat for your area.

### Sources:


For additional agronomic information, please contact your local seed representative. Developed in partnership with Technology, Development & Agronomy by Monsanto.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. All other trademarks are the property of their respective owners. ©2016 Monsanto Company. 160127090901 053016DLB