Wheat is one of the most versatile plants on planet Earth. Six classes of wheat are produced in 42 states in the United States and in nearly every region on six continents around the world.
World Wheat Production

Planted Winter Wheat Acres

Information provided by Dr. Nathan Mueller, Nebraska Extension Educator
The Retreat of Winter Wheat

1958

2016

U.S. Wheat Growing Regions

Information provided by Dr. Nathan Mueller, Nebraska Extension Educator
Hard Red Winter Wheat

Versatile, with excellent milling and baking characteristics for wheat foods like hearth breads, hard rolls, croissants and flat breads. HRW is also an ideal wheat choice for some types of Asian noodles, general purpose flour and as an improver for blending.

Hard Red Spring Wheat

The aristocrat of wheat when it comes to “designer” wheat foods like hearth breads, rolls, croissants, bagels and pizza crust. HRS is also a valued improver in flour blends.
Soft Red Winter Wheat

SRW is a high-yielding and profitable choice for producing a wide range of confectionary products like cookies, crackers and cakes, and for blending for baguettes and other bread products.

![Soft Red Winter Wheat](image1)

Soft White Wheat

Low moisture wheat with excellent milling results, SW provides a whiter and brighter product for Asian-style noodles and is ideal for exquisite cakes, pastries and other confectionary products.

![Soft White Wheat](image2)
Hard White Wheat

HW receives enthusiastic reviews when used for Asian noodles, whole wheat or high extraction applications, pan breads or flat breads.

Durum Wheat

Hardest of all wheats, durum has a rich amber color and high gluten content. Hard amber durum (HAD) sets the “gold standard for premium pasta products, couscous and some Mediterranean breads.
Wheat Yield Components

1. Plants per unit area (acre)
2. Number of heads (spikes) per plant
3. Number of spikelets per head
4. Number of kernels per spikelet
5. Kernel size

Environmental factors and management practices that determine yield components

<table>
<thead>
<tr>
<th>Yield component</th>
<th>Characteristic</th>
<th>Environmental factors</th>
<th>Management practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants per unit area</td>
<td>Seedling density</td>
<td>NA</td>
<td>Planter adjustment, Seed number, size, and viability</td>
</tr>
<tr>
<td></td>
<td>Soil seed contact</td>
<td>Soil water content, Seedbed condition</td>
<td>Planter adjustment, Planting speed, Tillage and residue</td>
</tr>
<tr>
<td></td>
<td>Germination</td>
<td>Soil temperature, Soil water content, Rainfall</td>
<td>Seeding depth, Tillage</td>
</tr>
<tr>
<td></td>
<td>Seedling survival</td>
<td>Soil temperature, Soil water content, Rainfall</td>
<td>Seeding depth, Irrigation, Tillage</td>
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<th>Characteristic</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Tillers (heads) per plant</td>
<td>Tiller production</td>
<td>Air temperature, Soil water/nutrient content, Interplant competition, Rainfall</td>
<td>Planting date and rate, Plant nutrition, Soil cover/mulch, Irrigation</td>
</tr>
<tr>
<td></td>
<td>Tiller abortion</td>
<td>Air temperature, Soil water/nutrient content, Interplant competition, Radiation</td>
<td>Planting date and rate, Plant nutrition, Soil cover/mulch, Irrigation</td>
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<tr>
<td>Spikelets per head</td>
<td>Spikelet production</td>
<td>Soil water/nutrient content, Interplant competition, Tiller age, Radiation/air temperature</td>
<td>Plant nutrition, Soil cover/mulch, Irrigation</td>
</tr>
</tbody>
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Environmental factors and management practices that determine yield components

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</tr>
</thead>
<tbody>
<tr>
<td>Kernels per spikelet</td>
<td>Kernel set (i.e., pollination)</td>
<td>Soil water/nutrient content, Interplant competition, Tiller age, Radiation/air temperature</td>
<td>Plant nutrition, Soil cover/mulch, Irrigation</td>
</tr>
<tr>
<td></td>
<td>Kernel production</td>
<td>Soil water/nutrient content, Interplant competition, Tiller age, Radiation/air temperature</td>
<td>Plant nutrition, Soil cover/mulch, Irrigation</td>
</tr>
<tr>
<td>Kernel size</td>
<td>Rate of grain filling</td>
<td>Soil water/nutrient content, Interplant competition, Tiller age, Radiation/air temperature</td>
<td>Plant nutrition, Soil cover/mulch, Irrigation</td>
</tr>
<tr>
<td></td>
<td>Duration of grain filling</td>
<td>Soil water/nutrient content, Interplant competition, Tiller age, Radiation/air temperature</td>
<td>Plant nutrition, Soil cover/mulch, Irrigation</td>
</tr>
</tbody>
</table>
Winter Wheat Yield Trends

Winter Wheat Yields for Crop Reporting Districts

2017 = 50.5 bu/ac in Southeast NE

Information provided by Dr. Nathan Mueller, Nebraska Extension Educator

Corn Yields in w/Wheat in Rotation

Monmouth 1998-2014

http://web.extension.illinois.edu/nwiardc/downloads/58547.pdf

Information provided by Dr. Nathan Mueller, Nebraska Extension Educator
Soybean Yields w/Wheat in Rotation

Monmouth 1998-2014

<table>
<thead>
<tr>
<th>Rotation</th>
<th>Tilled</th>
<th>No-till</th>
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</thead>
<tbody>
<tr>
<td>Cont. soy</td>
<td>56.3</td>
<td>57.3</td>
</tr>
<tr>
<td>Corn-soy</td>
<td>62.5</td>
<td>62.1</td>
</tr>
<tr>
<td>Wheat-corn-soy</td>
<td>66.0</td>
<td>65.0</td>
</tr>
<tr>
<td>Corn-wheat-soy</td>
<td>67.9</td>
<td>66.6</td>
</tr>
</tbody>
</table>

http://web.extension.illinois.edu/nwiardc/downloads/58547.pdf

Information provided by Dr. Nathan Mueller, Nebraska Extension Educator

Crop Rotation Research

• Two long-term (14 & 15 years) crop rotation studies in the Midwest
  1. Increase in water stable aggregates
  2. Higher total nitrogen
  3. Higher potentially mineralizable nitrogen

Information provided by Dr. Nathan Mueller, Nebraska Extension Educator

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Water Stable Aggregates

15-year rotation study – 0 to 8 inch depth

Information provided by Dr. Nathan Mueller, Nebraska Extension Educator

Winter Wheat Can Help

• Manure management flexibility

• Consider all potential profits streams
  • Value of straw
  • More opportunities for diverse cover crops in late summer/early fall
  • Potential nitrogen credit for proceeding cover crop
  • Corn and soybean yield improvement in 3-yr rotation
  • EQIP and CSP opportunities

• Weed Control & herbicide cost
  • Marestail, Palmer Amaranth, & Waterhemp

• Soil health and conservation
  • Soil structure, erosion control, cost-share and priority

• Workload management

• Manage weather risks

Information provided by Dr. Nathan Mueller, Nebraska Extension Educator

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https://cropwatch.unl.edu/wheat/production