Spring Wheat Facts (NASS-ID)
- Harvested Area
  - 2020 – 495,000 acres
- Average Yield
  - 2020 – 91 bu/A
- Production
  - 2020 – 45,045,000 bu
  - 60 lb = 1 bu

Rotation and Seeding
- Wheat grows well in rotation – not recommended after corn or small grains when alternatives are available
- Good seed-to-soil contact is needed
- Seed depth should be 1 to 1.5 in under irrigation and good soil moisture
- Row-spacing of 6 to 8 in with commercial drills provides uniform distribution of seed
- Seeding rate* depends on seed size
  - Irrigated: 1 – 1.2 million seeds per acre (65 to 120 lb/A)
  - Dryland: 700,000 seeds per acre (55 to 90 lb/A)
  - *Increased seeding rates recommended with delayed planting or poor seed bed.
- Optimum germination - when soil temperature is between 55 and 75°F

Optimum Planting Date Estimates

<table>
<thead>
<tr>
<th>Location</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treasure Valley</td>
<td>Late Feb to mid-March</td>
</tr>
<tr>
<td>Magic Valley</td>
<td>Mid-March to early April</td>
</tr>
<tr>
<td>Upper Snake River Plain</td>
<td>Late March to late April</td>
</tr>
</tbody>
</table>

Irrigation
- Time to meet evapotranspiration (ET) and seasonal crop needs
- Greatest yield reduction occurs with moisture stress at:
  - Tillering
  - Boot to flowering
- Evapotranspiration (ET)
  - ~ 15 to 19 in of water
  - Peak ET occurs in mid-June to mid-July at heading and decreases after soft dough
- Water Holding Capacity (WHC) – the amount of water held in soil for crops
  - Soil texture WHC estimates
    - Loamy > 2 in/ft
    - Sandy loams 1 to 2 in/ft
    - Sandy < 1 in/ft
- Available Soil Moisture (ASM) – the difference between existing soil moisture content and permanent wilting point
  - ASM can be estimated by subtracting ET from the WHC if the soil profile WHC and soil moisture lost to ET are known
- Center Pivot Systems
  - Early season - supply soil root zone with moisture
  - Late season, pivot may not supply sufficient water to keep up with ET in which case additional soil water reserves will be needed
**Surface Irrigation Systems**
- 1st irrigation should occur at 50% ASM (earlier on sandy soil)
- At least 50% ASM maintained from tillering to soft dough

**Fertilization**
- **Soil Sampling**
  - One to two weeks prior to planting
  - 0- to 12-in and 12- to 24-in sample depth for nitrogen (N) and sulfur (S) separated by depth
  - 0- to 12-in for other nutrients
- **Estimate of Nitrogen rate – 2.0-2.5 units N/bu yield based on:**
  - Inorganic soil test N
  - Mineralizable N from OM = 30-60 lbs N/A (estimated typically at 45 lb N/A)
  - Crop residues
    - Potato/sugar beet/onion residue is accounted for by soil test
    - Alfalfa provides 40 to 80 lb N/A beyond soil testing
    - Small grain residue – ADD 15 lb N for each ton of residue returned to the soil (up to 50 lb N/A)
  - Application timing
    - Loamy soil – single preplant or 40% preplant, 60% at tillering
    - Sandy soil – split 40% preplant, 60% at tillering
- **Phosphorus (P, P₂O₅) - Pounds of P₂O₅ applied based on soil test and percent free lime.**

<table>
<thead>
<tr>
<th>Olsen Soil Test (0-12 in)</th>
<th>Percent free lime</th>
</tr>
</thead>
<tbody>
<tr>
<td>ppm</td>
<td>lbs P₂O₅/acre</td>
</tr>
<tr>
<td>0</td>
<td>240</td>
</tr>
<tr>
<td>5</td>
<td>160</td>
</tr>
<tr>
<td>10</td>
<td>80</td>
</tr>
<tr>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>20</td>
<td>0</td>
</tr>
</tbody>
</table>

- Potassium (K, K₂O)
  - Response can be expected in soil with <75 ppm K (0-12 in sample)
- Sulfur (S, SO₄)
  - 0- to 24 in sample depth
  - At < 10 ppm S (or <35 lb A) and low-S irrigation water
    - 20 to 40 lbs/A of sulfate-based fertilizer can result in yield response
- Other important nutrients: Chloride (Cl), Fe, Mn, Fe, Zn, Cu, B

**Growth Regulators**
- Ethephon (Cerone) and/or Palisade
  - Apply at labeled rates and timing to reduce lodging, plant height

**Common Diseases**
- Stripe rust, Fusarium head blight (FHB), root rots (Fusarium crown rot, Rhizoctonia, take-all), cereal cyst nematode, bacterial blight, loose smut, seedling blight (Pythium) and other nematodes

**Common Insect Pests**
- Aphids, cereal leaf beetle, thrips, Haanichen barley mealybug, wireworms, armyworms, cutworms

**Common Weeds**
- Annuals: wild oat, green foxtail, kochia, common lambsquarters, redroot pigweed, feral rye, wild buckwheat, and various mustards
- Perennials: Canada thistle, field bindweed, quackgrass

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**References:**