

SOFT WHITE WINTER WHEAT QUICK FACTS

2020 Winter Wheat Facts

(National Agricultural Statistics Service-Idaho
<https://quickstats.nass.usda.gov/results/6E8A49B7-5547-3EE5-A456-590B197EF9F5>)

- Harvested Area: 660,000 acres
- Average Yield: 101 bu/A
- Production: 66,660,000 bu (60 lb = 1 bu)

Growth and Development

Using Feekes Growth Scale: Vegetative stage is through Feekes 5, reproductive stage begins at 6.

- **Germination** – when seed is exposed to adequate moisture, oxygen, and temperature
- **Seedling Growth** – until 9 or more leaves have unfolded
- **Tillering** – from 1 to 5 tillers
- **Stem Elongation** – starting from detection of first node
- **Booting** – flag leaf sheath extended to first visible awns
- **Inflorescence Emergence** – spikelet visible to complete emergence
- **Anthesis** – 5–7 days after heading, beginning to completion of flowering
- **Milk** – kernel development to late milk
- **Dough** – early (mealy), soft to hard dough
- **Ripening** – kernel approaches harvest moisture (hard dough to harvest ready)

Rotation and Seeding

- Wheat grows well in rotations—not recommended after corn or small grains when alternatives are available
- Good seed-to-soil contact is needed
- Seed depth should be 1–1.5 inches under irrigation with good soil moisture
- Row spacing of 6–8 inches with commercial drills provides good distribution of seed
- Seeding rate depends on seed size
 - » Irrigated: 1–1.2 million seeds/acre (60–120 lb/A based on seed weight)
 - » Dryland: 700,000 seeds/acre (50–85 lb/A)
- Optimum Germination—when soil temperature is between 55°F and 75°F

Table 1. Optimum planting date estimates.

Location	Timing
Treasure Valley	Late Oct to mid-Nov
Magic Valley	Mid-Oct to early Nov
Upper Snake River Plain	Late Sept to late Oct

Irrigation

- Timed to meet crop requirements
- Greatest yield reduction occurs with moisture stress at
 - » Tillering
 - » Boot to flowering

- Evapotranspiration (ET)
 - » ~ 15–19 inches of water
 - » Peak ET occurs in mid-June to mid-July 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 1–2 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
 - » Except on sandy soil – first irrigation should occur at 50% ASM
 - » At least 50% ASM maintained from tillering to soft dough

Fertilization

- Soil Sampling
 - » One to two weeks prior to planting
 - » 0–12-inch and 12–24-inch sample depth for nitrogen (N) and sulfur (S) separated by depth
 - » 0–12 inches 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 N/A (estimated typically at 45 lb N/A)
 - » Crop residues
 - › Potato/sugar beet/onion residue is accounted for by soil test
 - › Alfalfa provides an additional 40–80 lb N/A not measured in early season soil tests
 - › Small grain residue—ADD 15 lb N for each ton of residue returned to soil (up to 50 lb N/A)

Table 2. Pounds of P₂O₅ applied based on soil test and percent free lime.

Olsen Soil Test (0-12 in)	Percent free lime			
	0	5	10	15
ppm	lb P ₂ O ₅ /acre			
0	240	280	320	360
5	160	200	240	280
10	80	120	160	200
15	0	40	80	120
20	0	0	0	40

- » Application timing
 - › Loamy soil – single preplant or 40% preplant, 60% at tillering
 - › Sandy soil – split 40% preplant, 60% at tillering
 - › No N recommended after tillering for soft white winter wheat
- Phosphorus (**P**, P2O5)
- Potassium (**K**, K2O)
 - » Response can be expected in soil with <75 ppm K (0–12-inch sample)
- Sulfur (**S**, SO4)
 - » 0–24-inch sample depth
 - » At < 10 ppm (or <35 lb/A) and low-sulfur irrigation water
 - › 20–40 lb/A of sulfate-based fertilizer can result in yield response

Growth Regulators

- Ethephon (Cerone) and/or Palisade

Apply at labeled rates and timing to reduce lodging and plant height

Common Diseases

- Stripe rust, root rots (take-all, Fusarium crown rot, eyespot, Rhizoctonia), smut (loose, common, and dwarf smut), bacterial blight, WSMV and barley yellow dwarf, nematodes

Common Insect Pests

- Aphids, cereal leaf beetle, thrips, wireworms, armyworms, and cutworms

Common Weeds

- Annuals: wild oat, green foxtail, kochia, common lambsquarters, redroot pigweed, feral rye, jointed goatgrass, wild buckwheat, downy brome (cheatgrass), Russian thistle, mustards
- Perennials: Canada thistle, field bindweed, quackgrass

References

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