2020 Southern Idaho Hard Spring Wheat Quick Facts

Spring Wheat Facts (NASS-ID)

- Harvested Area – all spring wheat
  - 2020 – 495,000 acres
- Average Yield
  - 2020 – 91 bu/A
- Production
  - 2020 – 45,045,000 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 temp.
- Seedling growth – until 9 or more leaves have unfolded
- Tillering – from 1 to 5 tillers
- Stem elongation – starting from detection of 1st node
- Booting – flag leaf sheath extended to first visible awns
- Inflorescence emergence – spikelet visible to complete emergence
- Anthesis – 5 to 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 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
- 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/A (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 75ºF

Optimum Planting Date Estimates

Location	Timing
Treasure Valley	Late Feb to mid-March
Magic Valley	Mid-March to early April
Upper Snake River Plain	Late March to late April

Irrigation

- Time to meet evapotranspiration (ET), 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 and decreases after soft dough
- Water Holding Capacity (WHC) – the amount of water held in soils 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 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

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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 **N**itrogen rate – 2.5-3.5 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/sugarbeet/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 (up to 50 lb N/A)
  - Application timing
    - Loamy soil – single preplant
    - Sandy soil – split 40% preplant, 60% at tillering
  - High protein red spring wheat
    - Topdress at flowering ~ 20 to 50 lb N/A for higher grain protein
    - Depends on flag leaf N (4.2 - 4.5% N ensures higher grain protein). High rates of early fertility may not require additional topdress N.

Grain quality in hard wheat varieties is a function of N (response differs considerably among varieties) and S.

- Phosphorus (**P**, P_2O_5) - Pounds of P_2O_5 applied based on soil test and percent free lime.

Olsen Soil Test (0-12 in)	Percent free lime			
	0	5	10	15
ppm	lbs P_2O_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

- Potassium (**K**, K_2O)
  - Response can be expected in soil with <75 ppm K (0-12 in sample)
- Sulfur (**S**, SO_4)
  - 0- to 24 in sample depth
  - At < 10 ppm S (or <35 lb/A) and low-S irrigation water, add:
    - 20 to 40 lbs/A of sulfate-based fertilizer (can result in yield response)
    - Target 10:1 to 5:1 N:S ratio
- 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, take-all, Rhizoctonia), cereal cyst nematodes, bacterial blight, loose smut, seedling blight (Pythium), and other nematodes

Common Insect Pests

Aphids, cereal leaf beetle, thrips, Haanchen barley mealybug, wireworms, armyworm and 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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