

Preplant

- Soft red winter is the main class planted in Tennessee.
 - Well-established market.
 - Generally used for general-purpose milling, pastry and cake flour.
- Adequate winter hardiness to survive lowest normal winter temps.
 - Very low temps may kill aboveground material, but growth should resume in spring.
- Best adapted to well-drained, medium to heavy soils high in fertility.
- Requires firm seedbed. If conventional, shallow (2-4 inches) disking following row crops is sufficient for seedbed prep.
 - Some form of minimum till often helps improve seed/soil contact and thus stands in heavy residue.

Variety Selection

- Plant four to five varieties that represent a range of maturities over multiple planting dates.
- Certified seed provides insurance against poor germ and contamination with weed seeds.
- Earlier maturing varieties will joint and head earlier and are therefore more susceptible to stem and head freeze in spring if planted too early.

Consult the [2016 Wheat Variety Performance Tests in TN](#) for specific variety trial descriptions and results.



Weed Control

- Wild garlic, annual ryegrass and cheat are problem weeds in Tennessee wheat fields.
 - Wild garlic can result in dockage at harvest.
 - Ryegrass and cheat compete for light and nutrients.

- Use of weed-free seed, proper seeding rate, proper seedbed preparation and following a good weed management program in the summer crop will assist in effective weed control.
- A detailed procedure for controlling wild garlic in wheat is contained in PB 1580 (link below).
- A burndown prior to planting may be necessary in no-till production to desiccate remaining summer weeds and possibly winter annuals.
 - Application will result in easier planting and reduce competition with emerging wheat.

Consult [UT Extension PB 1580](#) for additional information on weed control and herbicide recommendations.



Planting

- Ideal planting dates in Tennessee typically fall between Oct. 15 and Nov. 10.
 - **Do not plant prior to fly-free date of Oct. 15.**
 - Planting during latter half of window or applying systemic insecticide reduces incidence of barley yellow dwarf virus.
 - Late planted wheat has a shallower root system and is more susceptible to frost heaving and winter-kill.
- Above dates should allow 3-4 inches of top growth to develop prior to the start of winter (Dec. 21).
- Target depth is 1-1.5 inches, with deeper depths to reach moisture during dry conditions. Do not exceed 2 inches.
- Target plant population should fall between 1.2 to 1.5 million plants/ac.
- Determine seeding rate (lb seed/ac) for target plant population (P#/ac) with germination test as follows:

$$\frac{(\text{Target P\#/ac})}{(\% \text{ germ})} * 100 = \text{seed/ac}$$

$$\frac{(\# \text{ seed/ac})}{(\# \text{ seed/lb})} = (\text{lb seed/ac})$$

Ex: $(1.4 \text{ mill P/ac}) / (80\% \text{ germ}) * 100 = 1.75 \text{ mill sd/ac}$
 $(1,750,000 \text{ sd/ac}) / (12,000 \text{ sd/lb}) = 145.8 \text{ lb sd/ac}$
- Up rate by 30-50% if planting in adverse conditions, if broadcasting, or if using bin-run seed.

Growth Stages

- Understanding growth stage is crucial for properly timing nitrogen, fungicides, herbicides, etc.

Stage	Feekes Scale	Description
Tillering	1	Emergence, one shoot
	2	Beginning of tillering
	3	Tillers formed
	4	Beginning of erect growth
	5	Sheaths strongly erect
Stem Extension	6	First node visible
	7	Second node visible
	8	Flag leaf visible
	9	Ligule of flag leaf visible
	10	Boot stage
Heading	10.1	Awns visible, heads emerging
	10.2	Heading 1/4 complete
	10.3	Heading 1/2 complete
	10.4	Heading 3/4 complete
	10.5	Heading complete
Flowering	10.51	Beginning of flowering
	10.52	Flowering complete at spike top
	10.53	Flowering complete at spike base
	10.54	Kernels watery ripe
Ripening	11.1	Milky ripe
	11.2	Mealy ripe
	11.3	Kernel hard
	11.4	Harvest ready

Fertility

Soil Sampling

- Soil tests are critical to understanding making economical fertilizer application decisions.
- Samples should be collected:
 - By proper, clean equipment.
 - In a zig-zag pattern across the grid/zone.
 - Consist of an adequate sample number.
 - Be air dried (if wet) prior to sending.

Consult [UT Extension PB 1061](#) for additional information on soil sampling and testing.



Lime and pH

- The target pH range for wheat is 6.1-6.5.
 - At pH < 5.6, chances for a response to lime are high; therefore, liming at a pH in this range is strongly encouraged to increase soil pH and avoid yield reductions.

Consult [UT Extension PB 1096](#) for additional information on soil liming and pH.



Nitrogen (N)

- Apply 15-30 lb N starter to support early growth.
- Apply 60-90 lb N as top-dressing Feb. 15-March 30.
- All N should be applied prior to jointing.
- No difference in N source has been noted.
 - If using urea or urea ammonium nitrate (UAN) the use of an NBPT additive can reduce loss under conditions supporting volatilization.

Potassium (K) and Phosphorus (P)

Soil Test	Wheat Alone		Wheat With Double Crop Beans	
	Phosphate (P ₂ O ₅) lb/ac	Potash (K ₂ O) lb/ac	Phosphate (P ₂ O ₅) lb/ac	Potash (K ₂ O) lb/ac
Low	80	40	90	120
Medium	40	20	60	60
High	0	0	0	0
V. High	0	0	0	0

Insect Thresholds/Control

- **Corn Leaf, Oat-bird Cherry and Rice Root Aphid**
 - No threshold; trigger when heavy populations cause leaves to dry up in several areas of field.
 - Seed treatment or foliar insecticide during fall/late winter can help reduce transmission of barley yellow dwarf virus and has shown a significant increase in yield over the past 10 years.
- **Greenbug**
 - Treat when aphids are killing three or more leaves per plant OR
 - If wheat is less than 6 inches tall, treat when greenbugs exceed 50 per row ft.
 - If wheat is between 6 and 10 inches tall, treat when greenbugs exceed 200 per row ft.
- **Armyworms**
 - Treat fall armyworms when four or more larvae are present per square foot.
 - Treat when true armyworms (spring) exceed 6-8 larvae per square foot. Treatment thresholds increase past milk stage given larvae are not cutting wheat heads.
- **Hessian Fly**
 - Foliar applications are only marginally effective.
 - Plant after fly free date and use resistant varieties when possible.
 - Seed treatments at the highest labeled rate will help control fall infestations.
- **Cereal Leaf Beetle**
 - Treat when 25 or more larvae are present per 100 tillers and wheat is still in the milk stage.

Consult [UT Extension PB 1768](#) for additional information on insect control.



Diseases/Management

- Growing wheat in 2-year intervals and planting at recommended populations can reduce infection.

Diseases affecting heads and grain

- **Fusarium head blight:** Plant resistant varieties, avoid planting into corn residue, use foliar fungicides.
- **Loose smut:** Fungicide seed treatment, disease-free seed sources.
- **Sooty mold:** Management not usually needed

Diseases affecting leaves

- **Barley Yellow Dwarf:** Virus transmitted by aphids. Partial control can be attained by delayed planting date and foliar- or seed-applied insecticides.
- **Stripe and Leaf Rust:** Plant resistant varieties, use foliar fungicides.
- **Septoria Leaf Blotch and Stagonospora Glume Blotch:** Genetic resistance, use foliar fungicides.

Diseases affecting lower stems and roots

- **Fusarium and Common Root Rot:** Crop rotation, control grassy weeds.
- **Eyespot:** Genetic resistance, foliar fungicides, and avoid planting into wheat residues.
- **Rhizoctonia Root Rot:** Crop rotation, control grassy weeds two weeks prior to planting.
- **Take-all:** Crop rotation, control grassy weeds.

Consult [UT Extension Wheat Disease ID](#) for information on these and additional diseases.



Harvest

- No moisture-based price discount if ≤13.5 percent.
- Grain is ripe and harvest ready when moisture ≤ 14 percent.
- Delaying harvest can reduce test weights.
- Safe storage moisture for high viability/vigor is ≤12 percent.

Additional information on these and other issues or crops can be found at news.utcrops.com, utcrops.com, or utextension.tennessee.edu/publications.

