

Tennessee Corn Quick Facts

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Summary

- 780,000 average harvested acres
- 85,000 irrigated acres
- 136 bushel per acre 6-year average
- 56 lbs = 1 bu
- 15.5% moisture is dry by USDA standards

Benefits of Corn in Rotation

- Corn allows producers to use unique chemistries to manage weeds. Corn deposits substantial residue on the soil surface. Corn increases soil aggregate stability (ability of soil to withstand impact of raindrops), water infiltration and hydraulic conductivity of silt loam soil when included in rotation with soybean or cotton. (Jaehoon Lee, et al., 2017)

Planting Date

- Plant early April for optimal yields.
- Consider late March planting if soil conditions will allow.
- May 20-25 full coverage crop insurance cutoff.

Seeding Information

- Plant when soils reach 55 degrees at 2 inches by 9 a.m. for three days.
- Set planter for uniform spacing at 1.5-2 inches deep.
- Drop 28,000 to 34,000 seeds per acre in dryland fields.
- Drop 35,000 to 38,000 seeds per acre in IRR fields.
- At \$295.00 a bag, every 1,000 seeds costs \$3.69 (about a bushel yield).

Seeding Rate per acre	Row Spacing (inches)		
	30"	20"	15"
	Seeds per 10 Feet of Row		
28,000	16.1	10.71	8.03
30,000	17.2	11.48	8.6
32,000	18.4	12.24	9.2
34,000	19.5	13.04	9.75
36,000	20.7	13.77	10.35
38,000	21.8	14.54	10.9
40,000	23.0	15.36	11.5
Row ft/ac	17,424	26,146	34,848

Estimating Stand and Yield

Feet of row representing 1/1000 th of an acre at different row widths	
Row Spacing	Row Length
15 inch	34 ft 10 in
20 inch	26 ft 2 in
30 inch	17 ft 5 in
38 inch	13 ft 9 in

- **Stand estimate:** count plants in 1/1000th acre length in 5 or more representative areas, obtain average and multiply by 1,000.
- **Yield estimate:** count harvestable ears in 1/1000th acre. On multiple ears, count kernel rows and kernels per row avoiding ear ends. Repeat process several times throughout field for an average.

Yield (bu/A) under average growing conditions = (number harvestable ears X number of rows per ear X number kernels per row) divided by 90

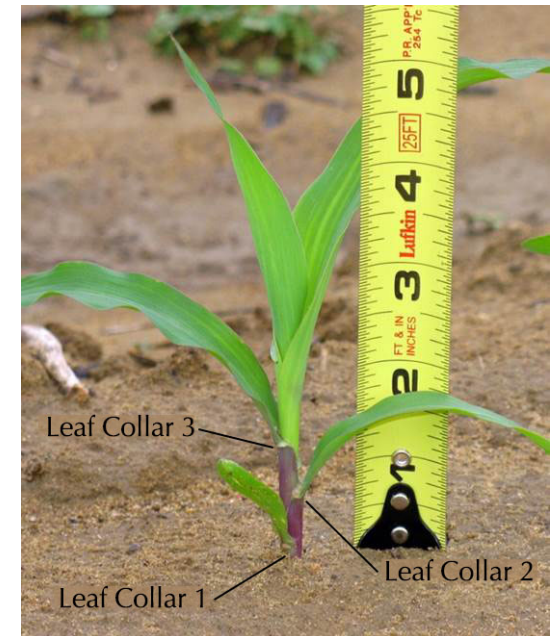


Figure 1 V-3 corn that is 5 inches tall.

Planting Window	Percent Max Dryland Yield*
Late March	94%
Early April	100%
Late April	88%
Early May	86%
Late May	75%
Early June	61%

*Based on dryland plant date studies 2010-2014 Milan, TN; Dataset includes two wet, two typical, and one drought year.

Corn Growth and Development

- Heat unit (DD50) accumulation based on 86 degree max and 50 degree min temp.
- A corn plant will produce 18-21 leaves.
- New leaves are produced every 3-4 days (1-2 days closer to tassel).
- Rounded leaf is V-1 or first true leaf (Fig 1.).
- Count leaves with collars to stage young corn (Fig 1.).
- Measure seedling height to break in newest droopy leaf (Fig 1.).
- VT (tassel) about 60 days from emergence.

The Corn Ear

- Ear pollinates from base to tip over 7-10 days.
- Ears have even number of kernel rows.
- At R6 or physiological maturity “black layer” forms where seed attaches to cob about 60 days after silking.
- Liquid starch converts to hard starch forming “milk line” (Fig 2.).
- Twenty-one days for “milk line” to move from tip to base of seed.



Figure 2

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Soil Fertility

Nitrogen (N):

- Apply ¼ to ½ of N at planting.
- Sidedress N between V4 and V6.
- Pretassel N may increase yield in irrigated corn (granular N may not be economical).
- For pretassel N, apply 30 to 40 units of N as fertigation about one week prior to tassel (V14-V16 corn). See UT Extension Publication W 303 for more fertigation information.

Nitrogen sources:

- 28% UAN (1 gal = 3.0 lbs N)
- 32% UAN (1 gal = 3.5 lbs N)
- 23% urea solution (1 gal = 2.2 lbs N) non corrosive for fertigation
- Urea (46-0-0)
- DAP (18-46-0)
- Ammonium Sulfate (21-0-0-24)

N, P, K Recommendations

Yield Goal	Units of N per acre	P205 or K20 (lbs/A) for Soil Test Level		
		Low	Medium	High
100-125	120	100	50	0
126-150	150	120	60	0
151-175	180	140	70	0
176-200	210	160	80	0
≥ 200	240	180	90	0

Zinc (Zn):

- Apply 5 lbs Zn/A when Zn is low (soil levels < 2 lbs/A) usually when soil pH is above 6.1 and phosphorus is high.
- 15 lbs/A preplant Zinc Sulfate equals 5 lbs of actual Zn.

Sulfur (S):

- Apply 10 lbs/A S when a deficiency has occurred in the past or is confirmed by a tissue test.
- Elemental Sulfur (88-98% S) should be spread in the fall for maximum benefit.
- 50 lbs/A of Ammonium Sulfate gives 12 lbs of actual S and can be spread near planting.

Irrigation

Growth Stage	Importance	Est. Crop Water Use
V-9 to V12	Rapid vegetative growth	1.75 in per week
V12-V17	Ear length determined	2.0 in per week
V17-R2 (blister)	Final ear size determined	2.3 in per week
R3 (milk) – R4 (dough)	Grain fill	1.75 in per week
R5 (dent) R6 (black-layer)	Grain weight	1.25 in per week 0.7 in per week
Irrigation may not be needed past ¾ milk line during dent. Under hot, drought conditions, producers should water until black layer.		

Diseases and Fungicide Timing

- Fungicide may protect yield if corn follows corn, disease present with susceptible hybrid, irrigation.
- VT-R1 application best timing for Gray Leaf Spot control.
- Southern rust has an orange pustule usually on upper leaf surface, comes in later in the year, and can require a fungicide.

Weed Control

- Apply residual PRE followed by POST with residual.
- Everything looks better with atrazine.
- Apply up to 2.5 lb ai/a atrazine by < 12-inch corn.
- Status @ 2 oz/a is alternative to atrazine.
- Prevent seed release from Palmer amaranth in fall.
- Check UT Extension publication PB 1580 for the latest corn weed control recommendations.

Insect Control Traits

- Tennessee has “corn” and “cotton” counties, which determine Bt refuge of older traits.
- For help calculating the proper refuge go to refuge.irmcalculator.com.

More detailed information about corn management and additional copies of this fact sheet are at utcrops.com and utextension.tennessee.edu/publications.