



WINTER WHEAT STAND EVALUATION

Yield is a function of the number of heads/A, seed per head and weight of seed. Wheat has a tremendous capacity to compensate for stand. The largest heads with the most seed are on the main tillers; usually those tillers are produced in the fall. Wheat has the capability to produce new tillers until the stem elongation growth stage (Feekes growth stage 6) in mid-April. Also, not all the tillers will develop heads. For this reason, tiller counts are relative and are only an indicator of potential yield.

In March, you will not be able to estimate the number of heads produced, since not all tillers produce heads. However, assuming each head produces 30 to 35 seed and there are 15,000 seed/lb, it will take about 40 heads/ft of 7.5" row to produce 100 bu/A. If 9 plants/ft of row each have the capacity to produce 3 tillers, for a total of 27 tillers with heads/ft of row, the yield potential would be in the 65 bu/A range. However, if these same 15 plants only produce 2 tillers, the yield potential would be about 45 bu/A. As you can see, an acceptable yield can turn into an unacceptable yield based on how many head bearing tillers develop later this spring.

Each field should be examined individually. Those fields that have lost stand in large areas or patches present big problems and are prime candidates to be converted into another crop. Obviously growing conditions this spring; fertility level, weed pressure and disease will have an impact on the actual yield. To determine the number of plants/ft², use the following steps (each field should be examined individually):

Use a yardstick (or cut a dowel rod to a 3 ft length).

1. Place the measuring stick next to an average-looking row, and count all plants in the 3 ft length of the row.
Record the number.
2. Repeat the counting process in at least five other locations well-spaced around the field. This will give a total of 6 plant counts. Record all numbers.
3. **Calculate the Average** plant stand count from the field by dividing by 6 (or the total number of locations counted).
4. Calculate plants/ft² with the following equation:
 - a. **Plants / ft² = (average plant count) × (4) / row width in inches**

Plants/ft ²	Percent Stand	Percent Yield potential **
30-35	100%	100
24-29	80%	100
18-23	60%	90-95
15-17	50%	75-80
12-14	40%	60-70
6-11	20%	40-50

** This provides an estimate of the relationship of wheat stand to yield potential and is only a guide. Adapted from "A Comprehensive Guide to Wheat Management in Kentucky (ID 125)."

Feekes 3.0: Tillers Formed (late fall or early spring)

Winter wheat can continue to tiller for several weeks. Depending upon the planting date and weather conditions, tillering can either be interrupted by or completed prior to the onset of winter dormancy. Most of the tillers that contribute to grain yield potential are completed during this stage. Many winter wheat tillers are prostrate or "creeping" at Stage 3.

Always read and follow all label directions.



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Feekes 4.0: Beginning of Erect Growth (March – April)

Most tillers have been formed by this stage, and the secondary root system is developing. Winter wheat tillers, which may have a prostrate growth habit during the development of vegetative parts, begin to grow erect. Leaf sheaths thicken. The key management step at Feekes 4.0 is continued scouting for insect and weed infestations.

Feekes 5.0: Leaf Sheaths Strongly Erect (early– mid-April)

Further development of the winter wheat plant requires vernalization, or a period of cool weather. After the appropriate amount of chilling, followed by the resumption of growth, the growing point (located below the soil surface) differentiates. At this stage of growth, the size of heads, or number of spikelets per spike, is determined. No effect on yield is expected from tillers developed after Feekes 5.0. Nitrogen (N) applied at Feekes 5.0 can affect the number of seed per head and seed size, but not the number of heads. This is an ideal stage of growth for the spring top-dress N application.

At this stage, the wheat plant becomes strongly erect. All meaningful tiller development has ceased. Weed control decisions should be made before or during Feekes 5.0 with 2,4-D products such as Shredder[®] LV6 or Rugged[®] and similar phenoxy herbicides, like Sterling Blue[®], being applied during growth Stages 5 and 6.

Feekes 6.0: First Node Visible (mid – late April)

Feekes 6.0 will not occur prior to vernalization, because it is required for spikelet differentiation. Prior to Feekes 6.0, the nodes are all formed but are sandwiched together so that they are not readily distinguishable. At 6.0, the first node is swollen and appears above the soil surface. Above this node is the head or spike, which is being pushed upwards eventually from the boot. The spike at this stage is fully differentiated, containing all potential spikelets and florets or seed forming branches.

Growers should look carefully for the first node to emerge. A sharp knife or razor blade is useful to split stems to determine the location of the developing head. The stem is hollow in most wheat varieties behind this node. By Feekes 6.0, essentially all weed-control applications have been made. Do not apply phenoxy herbicides such as 2,4-D, Banvel[®], or MCPA after Feekes 6.0, as these materials can be translocated into the developing spike, causing sterility or distortion. Sulfonylurea herbicides are safe at this growth stage, but for practical reasons, weed-control should have been completed by now.

Adequate Stands for Top Production Stands of 10-12 plants/ft² are candidates for replanting to corn or soybeans.

Stand establishment of 20-24 plants/ft² with 3-5 tillers per plant is optimal. Data suggests that to achieve 100% relative yield, you must have at least 40 heads/ft² with the optimum numbers between 60-80 heads/ft². The old rule of thumb is 1.3 to 1.6 bu/A for each head/ft².

Don't wait to apply N on a marginal stand of wheat. If stands are thin and tiller counts are low, an early application of N can help induce tillering and consequently increase the number of heads/ft². In this situation a split application may help. Apply 60 lbs of N/A for a first application (before green-up) and another 40 lbs of N at Feekes growth stage 4-5. If a stand is destroyed, a N credit of 50- 70% should be applied to the corn crop

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