

High Yield Wheat Management

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Management practices to obtain high-yielding wheat are based on some key numbers at key points in the development of the crop (Table 1). Emergence needs to be about 25 plants per square foot and tillering needs to be about 70 to 100 tillers per square foot. About 60 to 70 heads per square foot and about 35 kernels per head normally will achieve high yields.

Table 1. Key management numbers for high-yielding wheat.

Crop Stage	Number	Units
Emergence	25	plants/sq.ft.
Tillering	70 to 100	tillers/sq.ft.
Heading	60 to 70	heads/sq.ft.
Heading	35	kernels/head

Proper emergence is based on accurate seeding rates, proper placement of seed and timely seeding. Most wheat seeded in the fall of 2009 was not seeded on time. Some of the wheat was seeded in poor conditions that reduce the chances of getting a good stand. The late planting reduces normally reduces the time between emergence, growth, and cold temperatures that pause wheat growth. Going into the coldest part of winter with about 70 tillers per square foot is ideal. Later plantings usually mean cooler temperatures and slower growth (i.e., fewer tillers). A fall nitrogen application of about 20 to 40 lbs/acre can improve the chances of getting good fall growth and the tillers necessary for maximum yield.

Stands should be assessed again prior to a spring thaw to determine if an early application of nitrogen fertilizer might help increase tiller counts. An early application would occur when wheat is about Feekes 2 to 3. If tiller counts are below 70 tillers per square foot, then an early application of nitrogen fertilizer of about 50 lbs/acre is warranted. If tiller counts are above 70, then only about 30 lbs of N/acre is needed. If tiller counts are above 100 tillers per square foot, then no early fertilizer nitrogen is needed.

When wheat reaches Feekes 5 (just before jointing) a second application of nitrogen is warranted. The rate of nitrogen depends on the earlier application (Feekes 2–3 application) rate; the total of both applications should be about 100 to 120 lbs N/acre for no-till wheat and slightly lower for conventional-till wheat.

While nitrogen can be managed and adjusted to help the growth of wheat, weeds, insects, and diseases cannot be allowed to rob the wheat of any yield potential. Weed control is often accomplished with either a single fall application of herbicides or both fall and spring applications of herbicide. Hessian fly should not be a problem in 2009-10 since most of the wheat was planted after the fly-free dates. Aphids could be a problem and fields should be scouted to determine if an insecticide is necessary. Fields

should be scouted in the spring for foliar diseases. The 2008–09 season had a lot of Fusarium head blight (head scab) and weather trumped almost any fungicide treatment. The 2009–10 season will require scouting and observing weather forecasts to determine if a fungicide treatment is justified.

To gain an idea about final yield potential, head counts can be taken in fields when scouting for disease potential. If head counts are between 60 to 70 heads per square foot, then yield potential is excellent. Head counts above 70 usually result in smaller heads and lower yields. Head counts below 60 usually cannot grow large enough to compensate.

Intensive management of wheat for high yields involves scouting and adjusting agronomic practices to get the crop to the critical numbers. A wheat crop at these critical numbers has the best chance for producing high yields.